

ANNUAL PUBLICATIONS

2024



**Graduate School of
Medical and Dental Sciences
Institute of Science Tokyo**

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Graduate School of Medical and Dental Sciences

Medical and Dental Sciences

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Oral Pathology

Department of Oral Pathology
Professor Naozumi Ishimaru, DDS., PhD.
Lecturer Aya Ushio, DDS., PhD.
Research Associate Yuki Fukawa, DDS., PhD.
Clinical Laboratory Technician Miwako Hamagaki

Graduate Students
XIE CANG YOU (Master' s course 2nd)
Yuri Kinoshita (Doctor' s course 3rd, Department of Orthodontic Science)
Asami Ishii (Doctor' s course 1st, Department of Dental Anesthesiology)

Collaborative Researcher
RANNY RAHANINGRUM HERDIANTOPUTRI (Tokyo U)

(1) Outline

(1) Research regarding various diseases, such as autoimmunity and oral cancer, (2) pathological education for dental students and graduate students, and (3) pathological diagnosis in Institute Science Tokyo Hospital are performed in Department of Oral Pathology.

(2) Research

The seven research projects are actively progressed by pathological, immunological, molecular biological approaches using animal models of various diseases or patient subjects.

1. Molecular pathogenesis of Sjögren' s syndrome
2. T cell signaling in autoimmunity
3. Macrophage in autoimmunity
4. Sex dimorphism in the onset of autoimmunity
5. Tumor immunity
6. Nanomaterials and endocrine disruptors in immune system
7. Pathogenesis of oral cancer and new therapeutic strategy

(3) Education

Lecture and practical training are actively going on for dental students. In addition, research guidance as well as lecture and exercise is performed for graduate students. Two graduate students of clinical departments were instructed during 2024.

(4) Lectures & Courses

Educational policy in our department is understanding the pathogenesis of various diseases from the pathological aspect based on scientific evidences. The aim is to understand pathogenesis of systemic diseases as well as the

structure and functions of human body for undergraduate students. In particular, undergraduate students should understand the detailed pathogenesis of various oral diseases as a specialist in the oral science field. In addition, graduate students have to train research ability and mind toward the goal of the research.

(5) Clinical Services & Other Works

Clinical affairs as to pathological diagnosis in Institute of Science Tokyo Hospital is performed by the staffs in this department. Three board certified oral pathologists are engaging over 2,000 pathological diagnostic tests, such as biopsy and cytology, a year in the oral region. In addition, we cooperate with autopsy in our hospital.

(6) Clinical Performances

This department contributes to the pathological affairs in our hospital as well as basic science, and serves as a bridge between clinical medicine and basic science. We play a critical roles in precise diagnosis, appropriate treatment policy, and prognosis prediction by clarifying the pathogenesis of various oral disorders.

(7) Publications

[Original Articles]

1. Kazutaka Nakamura, Masayuki Tsukasaki, Takaaki Tsunematsu, Minglu Yan, Yutaro Ando, Nam Cong-Nhat Huynh, Kyoko Hashimoto, Qiao Gou, Ryunosuke Muro, Ayumi Itabashi, Takahiro Iguchi, Kazuo Okamoto, Takashi Nakamura, Kenta Nakano, Tadashi Okamura, Tomoya Ueno, Kosei Ito, Naozumi Ishimaru, Kazuto Hoshi, Hiroshi Takayanagi. The periosteum provides a stromal defence against cancer invasion into the bone. *Nature*. 2024.10; 634(8033); 474-481
2. Aota Keiko, Kani Koichi, Ono Shinji, Naniwa Kohei, Momota Yukihiro, Fukui Makoto, Ishimaru Naozumi, Azuma Masayuki. Activation of Janus kinase 2 contributes to the autoimmune pathology in the salivary glands of patients with Sjogren's syndrome(タイトル和訳中) *Oral Science International*. 2024.09; 21(3); 415-424
3. Hajime Tanaka, Yuki Fukawa, Kouhei Yamamoto, Kousuke Tanimoto, Akira Takemoto, Takayasu Mori, Hisashi Hasumi, Mayumi Kinoshita, Takumi Kanazawa, Asuka Furukawa, Koichiro Kimura, Hiroyuki Sato, Akihiro Hirakawa, Shohei Fukuda, Yuma Waseda, Soichiro Yoshida, Steven C Campbell, Yasuhisa Fujii. Prognostic impact and genomic backgrounds of renal parenchymal infiltration or micronodular spread in non-metastatic clear cell renal cell carcinoma. *Mod Pathol*. 2024.08; 100590
4. Jia Qi, Yoshiro Matsumoto, Cangyou Xie, Fatma Rashed, Takashi Ono and Kazuhiro Aoki. Prevention of bone dehiscence associated with orthodontic tooth movement by prophylactic injection of bone anabolic agents in mice *Scientific Reports*. 2024.07;
5. Daishiro Kobayashi, Masaya Deda, Junya Hayashi, Kota Hidaka, Yutaka Kohmura, Takaaki Tsunematsu, Kohei Nishino, Harunori Yoshikawa, Kento Ohkawachi, Kiyomi Nigorikawa, Tetsuro Yoshimaru, Naozumi Ishimaru, Wataru Nomura, Toyomasa Katagiri, Hidetaka Kosako, Akira Otake. Sulfoxide-Mediated Cys-Trp-Selective Bioconjugation that Enables Protein Labeling and Peptide Heterodimerization. *Chem Eur*. 2024.07; e202400014
6. Herdiantoputri RR, Komura D, Ochi M, Fukawa Y, Kayamori K, Tsuchiya M, Kikuchi Y, Ushiku T, Ikeda T, Ishikawa S. Benchmarking Deep Learning-Based Image Retrieval of Oral Tumor Histology. *Cureus*. 2024.06; 16(6); e62264
7. Akiko Yamada, Akira Watanabe, Atsushi Nara, Naozumi Ishimaru, Kosuke Maeda, Yusuke Ido, Kazumasa Kotake, Masatake Asano, Yasuo Shinohara, Takenori Yamamoto. Longitudinal Analysis of Mitochondrial Function in a Choline-Deficient L-Amino Acid-Defined High-Fat Diet-Induced Metabolic Dysfunction-Associated Steatohepatitis Mouse Model. *Int J Mol Sci*. 2024.06; 25(11);
8. Aya Ushio, Mami Matsuda-Lennikov, Felix Kalle-Youngoue, Akihide Shimizu, Abdalla Abdelmaksoud, Michael C Kelly, Naozumi Ishimaru, Yousuke Takahama. Functionally diverse thymic medullary epithelial cells interplay to direct central tolerance. *Cell Rep*. 2024.04; 43(4); 114072

9. Hiroaki Tawara, Takaaki Tsunematsu, Shojiro Kitajima, Ruka Nagao, Shigefumi Matsuzawa, Kunihiro Otsuka, Aya Ushio, Naozumi Ishimaru. The noncanonical function of borealin, a component of chromosome passenger complex, promotes glycolysis via stabilization of survivin in squamous cell carcinoma cells. *Biochem Biophys Res Commun.* 2024.04; 706; 149741
10. Keiko Aota, Koichi Kani, Shinji Ono, Kohei Naniwa, Yukihiro Momota, Makoto Fukui, Naozumi Ishimaru, Masayuki Azuma. Activation of Janus kinase 2 contributes to the autoimmune pathology in the salivary glands of patients with Sjögren's syndrome *Oral Science International* . 2024.03; (21); 415-424
11. Iwasaki T, Harazono Y, Fukawa Y, Kaida A, Kayamori K, Sasaki Y, Harada H, Yoda T. Retrospective analysis of odontogenic myxoma and odontogenic myxofibroma in the oral and maxillofacial region: a fibrous tissue-related differentiation. *The British journal of oral & maxillofacial surgery.* 2024.02; 62; 464-470
12. Yosuke Harazono, Hiroyuki Yoshitake, Yuki Fukawa, Tohru Ikeda, Tetsuya Yoda. Osteoblastoma in the mandible of an older adult patient without FOS gene rearrangement: A case report and literature review *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology.* 2024.01;
13. Therapeutic Strategy Based on the Pathogenesis for Sjögren's Syndrome 2024; 37(1); 1-5
1. Keiko Aota, Koichi Kani, Shinji Ono, Kohei Naniwa, Yukihiro Momota, Makoto Fukui, Naozumi Ishimaru, Masayuki Azuma. Activation of Janus kinase 2 contributes to the autoimmune pathology in the salivary glands of patients with Sjögren's syndrome *Oral Science International.* 2024.04;
2. Daishiro Kobayashi, Masaya Deda, Junya Hayashi, Kota Hidaka, Yutaka Kohmura, Takaaki Tsunematsu, Kohei Nishino, Harunori Yoshikawa, Kento Ohkawachi, Kiyomi Nigorikawa, Tetsuro Yoshimaru, Naozumi Ishimaru, Wataru Nomura, Toyomasa Katagiri, Hidetaka Kosako, Akira Otaka. Sulfoxide-mediated Cys-Trp-selective bioconjugation that enables protein labeling and peptide heterodimerization 2024.01;

[Misc]

1. Borealin-Survivin 複合体は頭頸部扁平上皮癌の分化を直接的に制御する (Borealin-Survivin complex directly regulates keratinocyte differentiation in HNSCC) 2024.02; 113(1); 296
2. CRTC1::MAML2 融合遺伝子の検出で確定診断に至った粘表皮癌の 2 例 (Detection of the CRTC1::MAML2 fusion gene in two atypical cases of mucoepidermoid carcinoma) 2024.02; 113(1); 346
3. がん特殊化リボソームの同定と機能解析 (Identification and characterization of cancer-specialized ribosomes) 2024.02; 113(1); 295
4. シェーグレン症候群の病態形成に対する T 細胞の共抑制性受容体の役割の解析 (Analysis of the role of co-inhibitory receptors on T cells to the pathogenesis of Sjogren's syndrome) 2024.02; 113(1); 297
5. 多層カーボンナノチューブが免疫システムに及ぼす影響 (The influence of multi-walled carbon nanotube for immune systems) 2024.02; 113(1); 370

[Conference Activities & Talks]

1. 布川 裕規, 山本 浩平, 倉田 盛人, 清水 六花, 西井 直人, 黒嶋 雄志, 道 泰之, 原田 浩之, 石丸 直澄. 小唾液腺に発生したアミロイド沈着を伴った Low-grade B-cell lymphoma の 3 例 (Three cases of low-grade B-cell lymphoma with amyloid deposition involving the minor salivary glands). *日本病理学会会誌* 2024.10.01
2. 牛尾 綾, 松田 真実, 石丸 直澄, 高濱 洋介. 機能的に異なる胸腺髄質上皮細胞欠損マウスにおける自己免疫病変の病理組織学的検討 (Pathological analysis of autoimmune phenotype in mice lacking functionally distinct thymic medullary epithelial cells). *日本病理学会会誌* 2024.10.01
3. 俵 宏彰, 常松 貴明, 永尾 瑠佳, 松澤 鎮史, 大塚 邦紘, 牛尾 綾, 石丸 直澄. Borealin-Survivin 複合体は頭頸部扁平上皮癌の分化を直接的に制御する (Borealin-Survivin complex directly regulates keratinocyte differentiation in HNSCC). *日本病理学会会誌* 2024.02.01
4. 富田 満, 堀口 英久, 小川 博久, 上原 久典, 坂東 良美, 常松 貴明, 佐藤 真美, 石丸 直澄, 常山 幸一. CRTC1::MAML2 融合遺伝子の検出で確定診断に至った粘表皮癌の 2 例 (Detection of the CRTC1::MAML2 fusion gene in two atypical cases of mucoepidermoid carcinoma). *日本病理学会会誌* 2024.02.01

5. 永尾 瑠佳, 山本 安希子, 牛尾 綾, 大塚 邦紘, 松澤 鎮史, 常松 貴明, 石丸 直澄. シェーグレン症候群の病態形成に対する T 細胞の共抑制性受容体の役割の解析 (Analysis of the role of co-inhibitory receptors on T cells to the pathogenesis of Sjogren's syndrome). 日本病理学会会誌 2024.02.01
6. 常松 貴明, 吉川 治孝, 永尾 瑠佳, 松澤 鎮史, 大塚 邦紘, 牛尾 綾, 石丸 直澄. がん特殊化リボソームの同定と機能解析 (Identification and characterization of cancer-specialized ribosomes). 日本病理学会会誌 2024.02.01
7. 牛尾 綾, 大塚 邦紘, 常松 貴明, 高橋 祐次, 菅野 純, 石丸 直澄. 多層カーボンナノチューブが免疫システムに及ぼす影響 (The influence of multi-walled carbon nanotube for immune systems). 日本病理学会会誌 2024.02.01

Bacterial Pathogenesis

Professor
SUZUKI Toshihiko
Associate Professor
ASHIDA Hiroshi
Assistant Professor
OKANO Tokuju
Graduate Student
HSU Chen Wei
Graduate Student
Onsoi Poramed
Graduate Student
Saki Higano
Technical Assistant Staff
IIDA Tamako

(1) Research

Research Subjects

- 1) Molecular mechanisms of infection by pathogenic bacteria
- 2) Mechanisms of activation and regulation of inflammasomes via Nod-like receptors and caspase activation
- 3) Study of virulent genes based on comparative genomics
- 4) Relationship between persistent bacterial infection and chronic inflammatory diseases such as adipose or diabetes

(2) Lectures & Courses

Purpose of Education

The aim of our laboratory in the graduate course is to understand molecular mechanism of pathogen infection and host immune responses. Students also learn planning of research, experiments and methods for evaluating.

(3) Publications

[Original Articles]

1. Hsu CW, Okano T, Niinuma Y, Leewananthawet A, Iida T, Onsoi P, Boonyaleka K, Ashida H, Suzuki T. A complex of NLRP3 with caspase-4 is essential for inflammasome activation by *Tannerella forsythia* infection. *International immunology*. 2024.12;
2. Bonney JHK, Pratt D, Ofori M, Hayashi T, Abankwa A, Awuku-Larbi Y, Kumordjie S, Agbodzi B, Salisu M, Mante AAO, Bour S, Eshun M, Amaning JNDA, Ketorwoley P, Enimil N, Koomson J, Stephens G, Asiedu-Bekoe F, Laryea D, Dadzie S, Suzuki T. Molecular detection of dengue virus from febrile patients in Ghana. *BMC infectious diseases*. 2024.12; 24(1); 1382

3. Okano T, Ashida H, Komatsu N, Tsukasaki M, Iida T, Iwasawa M, Takahashi Y, Takeuchi Y, Iwata T, Sasai M, Yamamoto M, Takayanagi H, Suzuki T. Caspase-11 mediated inflammasome activation in macrophages by systemic infection of *A. actinomycetemcomitans* exacerbates arthritis. International journal of oral science. 2024.08; 16(1); 54
4. Ota Y, Yasunaga K, Mahazu S, Prah I, Nagai S, Hayashi T, Suzuki M, Yoshida M, Hoshino Y, Akeda Y, Suzuki T, Gu Y, Saito R. Comparative evaluation of analytical pipelines for illumina short- and nanopore long-read 16S rRNA gene amplicon sequencing with mock microbial communities. Journal of microbiological methods. 2024.04; 221; 106929
5. Ali T, Nguyen HM, Abbas N, Takeuchi O, Akira S, Suzuki T, Matsuzaki G, Takaesu G. TAK1-binding proteins (TAB)2 and TAB3 are redundantly required for TLR-induced cytokine production in macrophages. International immunology. 2024.04; 36(9); 439-450
6. Mahazu S, Prah I, Ota Y, Hayashi T, Suzuki M, Yoshida M, Hoshino Y, Akeda Y, Suzuki T, Ishino T, Ablordey AS, Saito R. Colistin Resistance Mediated by Mcr-3-Related Phosphoethanolamine Transferase Genes in Aeromonas Species Isolated from Aquatic Environments in Avaga and Pakro Communities in the Eastern Region of Ghana. Infection and drug resistance. 2024; 17; 3011-3023

[Conference Activities & Talks]

1. Tokuju Okano. Hypoxia enhances IL-1 β release by inflammasome activation with *P. gingivalis* infection.. 29th Japan Endotoxin and Innate Immunity Society 2024.11.09 Musashino University
2. Saki Higano, Tokuju Okano. *Clostridioides difficile* progresses protein degradation and apoptosis under hypoxia.. 29th Japan Endotoxin and Innate Immunity Society 2024.11.09 Musashino University
3. Tokuju Okano, Toshihiko Suzuki. *A. actinomycetemcomitans* exacerbates arthritis via caspase-11 mediated inflammasome activation in macrophages . 第66回歯科基礎医学会学術大会 2024.11.04 Nagasaki
4. Chenwei Hsu, Tokuju Okano, Toshihiko Suzuki. *Tannerella forsythia* induces inflammasome activation by triggering both NLRP3 and Caspase-4. The 97th Annual Meeting of Japanese Society for Bacteriology. 2024.08.07 Sapporo
5. Chenwei Hsu, Tokuju Okano, Toshihiko Suzuki. *Tannerella forsythia* induces inflammasome activation by triggering both NLRP3 and Caspase-4. The 52nd Annual Meeting of the Japanese Society for Immunology 2024.01.17 Chiba
1. Saki Higano, Tokuju Okano, Toshihiko Suzuki. *Clostridioides difficile* specifically promotes proteolysis and apoptosis in a hypoxic environment. 89th Annual Meeting of the Stomatological Society, Japan 2024.12.06 Tokyo

Department of Oral Biology

From July, 2024

【Professor】 Sayaka Katagiri

【Associate Professor】 Shigenori Nagai

【Assistant Professor】 Yujin Ohsugi, Peiya Lin(Dec~)

【Graduate Students】 Farzana Sultana, Yi Lu

(1) Outline

The Department of Oral Biology was established in July 2024 as the successor to the Department of Molecular Immunology (Professor Miyuki Azuma), which was newly established in April 2000 as part of the university's focus on graduate school education. There have been many reports of the relationship between oral and systemic diseases. The oral cavity is a very unique organ, with teeth protruding from the oral epithelium, and the epithelial barrier that separates the self from the external environment is disrupted. The reason why the body's homeostasis is not disrupted even though the body and external environment are connected is because the various bacteria in the mouth live together in a delicate balance. Therefore, the disruption of this balance in the oral bacterial flora, or 'oral dysbiosis', means that the epithelial barrier has been disrupted. The disruption of the epithelial barrier caused by oral dysbiosis leads to a disruption of the body's homeostasis. As a result, it has been reported that it can affect the development and exacerbation of metabolic diseases such as diabetes and obesity, cardiovascular diseases, and pregnancy-related diseases such as preterm labor. Although there have been reports of a link between the oral cavity and the whole body, the molecular basis of the cross-talk between the oral cavity and the whole body has not been established. so we aim to establish the molecular basis and develop new prevention and treatment methods for diseases based on the oral cavity.

(2) Research

Research goal: In order to establish new disease prevention strategies for all generations, we are conducting research to elucidate the cross-talk between the oral cavity, which is considered to be an organ, and the liver, fat, and muscles, which are important for energy metabolism. We are focusing on metabolic diseases that are becoming a social problem in each generation, such as sarcopenic obesity in the elderly, disorders of glucose and lipid metabolism including diabetes and obesity in middle-aged and elderly people, and growth failure related to metabolic disease in fetuses and young people. We are also aiming to elucidate the mechanisms of diseases that have been said to be related for some time, but for which the molecular basis has not yet been established. In addition, we aim to clarify the expression control and functional roles of a wide variety of auxiliary signaling molecules on tissue cells in various organs, and to develop immunotherapy targeting these molecules. We will clarify how oral dysbiosis and the accompanying loss of teeth and decline in masticatory function affect the whole body, and develop new treatment methods such as the application of light energy, leading to the development of treatment methods for oral diseases and treatment methods for systemic diseases from the oral cavity.

(3) Education

Undergraduate education:

Faculty of Dentistry, Department of Dentistry, 1st year: Introduction to Dentistry (History of Dentistry), 3rd year: Infection and Biological Defense Lecture and practical training Unit 1: Introduction to Infection and Biological Defense, Unit 5: Biological Immune Response, Pathological Science Seminar Module in charge

of diabetes, Adjoining Medicine: Dentistry and Pregnancy 4th year: Research training field assignment, Mixed-grade elective seminar, Elective Course 1-A: Overseas study and overseas cooperation
2nd year: “Pathogenic Microorganisms and Biological Defense” 3rd year: “Advanced Dental Medicine”
1st year: “Infection Prevention”, “Structure and Function of the Human Body”
Graduate School Education:
Doctoral Program (Graduate School of Medical and Dental Sciences) Advanced Studies in Oral Biology, Seminar, Experiments
Periodontology II (Photoperiodontics)

(4) Lectures & Courses

Undergraduate education: Students will deepen their understanding of infection and immunity, tumor immunity, allergies, immunodeficiency diseases, and autoimmune diseases, and also learn systematically how the oral cavity affects the whole body.

Graduate education: In addition to providing lectures that are not limited to specialized fields or previous research themes, we will also educate students in technical methods such as molecular biology, immunology, and bioinformatics. Students will acquire the ability to propose solutions to clinical questions.

(5) Publications

[Original Articles]

1. Noritake K, Tsuruta J, Mizutani K, Kondo K, Suzuki H, Adachi N, Seki N, Cao R, Mikami R, Katagiri S, Kabasawa Y, Nitta H. Educational effects of dental hygiene student intervention in dental student clinical practicum *Journal of Dental Sciences*. 2024.10;
2. Nagai T, Shiba T, Komatsu K, Watanabe T, Nemoto T, Maekawa S, Kobayashi R, Matsumura S, Ohsugi Y, Katagiri S, Takeuchi Y, Iwata T. Optimal 16S rRNA gene amplicon sequencing analysis for oral microbiota to avoid the potential bias introduced by trimming length, primer, and databas *Microbiology Spectrum*. 2024.10; 12(12); e0351223
3. Nose M, Nitta A, Zheng Y, Kizukuri R, Nagao Y, Nagai S, Aizawa M. Bioceramics Enhance the Anti-Tumor Activity of Immune Cells in Adoptive Immunotherapy *International Journal of Molecular Sciences*. 2024.09; 25(19); 10567
4. Liu A, Hayashi M, Ohsugi Y, Katagiri S, Akira S, Iwata T, Nakashima T. The IL-33/ST2 axis is protective against acute inflammation during the course of periodontitis *Nature Communications*. 2024.03; 15(1); 2707
5. Lin P, Niimi H, Hirota T, Ohsugi Y, Shimohira T, Toyoshima K, Katagiri S, Iwata T, Aoki A. Effects of low-level Er:YAG laser irradiation on proliferation and gene expression in primary gingival fibroblasts isolated from mouse maxilla. *J Biophotonics*. 2024.02; 17(2); e202300166

[Misc]

1. Aoki A, Mizutani K, Taniguchi Y, Lin T, Ohsugi Y, Mikami R, Katagiri S, Meinzer W, Iwata T. Current status of Er:YAG laser in periodontal surgery. *Jpn Dent Sci Rev*. 2024.12; 60; 1-14
2. Shiba T, Komatsu K, Takeuchi Y, Koyanagi T, Taniguchi Y, Takagi T, Maekawa S, Nagai T, Kobayashi R, Matsumura S, Katagiri S, Izumi Y, Aoki A, Iwata T. Novel flowchart guiding the non-surgical and surgical management of peri-implant complications: a narrative review *Bioengineering*. 2024.01; 11(2); 118

[Conference Activities & Talks]

1. Katagiri S. Oral-gut-brain axis in ligature induced periodontitis in mice /Effects of maternal ligature-induced periodontitis on brain in offsprings. Data club 2024.11.15 Boston

2. Toyoshima K, Lin P, Ohsugi Y, Niimi H, Katagiri S, Iwata T, Aoki A. Effects of Er:YAG laser irradiation on cell proliferation and gene expression in osteocyte-like cells. The 18th Congress of World Federation for Laser Dentistry 2024.11.12 Sao Paulo
3. Lin P, Shimohira T, Ohsugi Y, Shiba T, Hirota T, Katagiri S, Aoki A. Effect of near-infrared phototherapy on medication-related osteonecrosis of the jaw in mice. The 18th Congress of World Federation for Laser Dentistry 2024.11.11 Sao Paulo
4. Moreira BA, Mizutani K, Saito N, Takemura S, Chen L, Ohsugi Y, Iwata T, Aoki A. Effects of Low-Level Er: YAG Laser Irradiation on Human Umbilical Vein Endothelial Cells in Hyperglycemia. The 18th Congress of World Federation for Laser Dentistry (WFLD) 2024.11.11 Sao Paulo
5. Wang B, Inokoshi M, Katagiri S, Ohsugi Y, Lin P, Nakai H, Iwata T, Minakuchi S, Kanazawa M. Determination of the optimal cell density for immunofluorescence observation of MC3T3-E1 cells on zirconia. The 89th annual meeting and scientific session of the Pacific Coast Society for Prosthodontics 2024.06.21 Monterey
6. Zhang C, Lu Y, Nagai S, Azuma M. Alternation of anti-tumor responses and PD-L1 blockade. The 1st International Symposium on Cancer Immunology and Immunotherapy. 2024.03.24
7. Sultana F, Zhang C, Azuma M, Nagai S. A new immune checkpoint molecule ILDR2 expression on CD206+ macrophages is enhanced after repeated antigen-painting onto sublingual mucosa. The 52nd Annual Meeting of the Japanese Society for Immunology 2024.01.18
1. Takada K, Shiba T, Nagai T, Kobayashi R, Matsumura S, Komatsu K, Katagiri S, Iwata T. Exploring the Relationship between Oral Bacteria and Infective Endocarditis through Next-Generation Sequencing. The 89th Annual Meeting of Stomatological Society 2024.12.06
2. Toyoshima K, Ohsugi Y, Lin P, Komatsu K, Shiba T, Takeuchi Y, Shimohira T, Tsuchiya Y, Katagiri S, Iwata T, Aoki A. Effects of blue LED irradiation on oral microbiome of ligature-induced periodontitis in mice. The 36th Annual meeting of Japanese Society for Laser Dentistry 2024.10.19 Nagoya

Department of Dental Radiology and Radiation Oncology

Professor	Masahiko MIURA
Associate Professor	HiroshiI WATANABE
Lecturer	Atsushi KAIDA
Senior Assistant Professor	Shin NAKAMURA
Assistant Professor	Ami KURIBAYASHI
	Akiko IMAIZUMU
	Hitomi NOJIMA (Aug~)
SA Assistant Professor	Hitomi NOJIMA (~Sep)
Clinical Fellow	Yoshikazu NOMURA
	Miharu TAGUCHI
	Sakiko Kume (Apr~)
Graduate Students	Yomtako SUPASITH
	Arisa OKI
	Carulina MESQUITA
Graduate Research Student	Sakiko Kume (~Mar)

(1) Outline

Main objective of this department is to provide opportunities to learn and study image diagnosis for oral and maxillofacial lesions and radiation oncology for oral cancer. It also makes clinical contribution to diagnosis and radiotherapy for above described lesions.

(2) Research

- Differential diagnosis for oral and maxillofacial lesions using MRI including diffusion-weighted MRI and dynamic MRI and development of novel MRI diagnosis
- Clinical study on the prediction of prognosis after oral cancer treatment using CT diagnosis
- Clinical study on radiotherapy for oral cancer and development of novel therapeutic modalities
- Molecular and cellular study on signal transduction, DNA repair, and cell cycle checkpoint following irradiation

(3) Education

Our department is a branch of radiology and radiation oncology specifically dealing with image diagnosis for oral and maxillofacial legions and radiotherapy for oral cancer. The educational policy for post-graduates is to cultivate the ability to extract problems and to resolve them by themselves. Our department also aims to make them obtain certificate of specialists for oral radiology and oral radiation oncology.

(4) Lectures & Courses

Basic lectures for radiation physics, radiation biology, radiology, and radiation oncology are provided for under-graduates. Film conference on oral and maxillofacial lesions, cancer board on oral cancer, journal club, and research in progress are regularly held especially for post-graduates.

(5) Clinical Services & Other Works

Our clinic provides image diagnosis for oral and maxillofacial lesions mainly using CT and MRI, and radiotherapeutic treatment for oral cancer using external beam radiation (IMRT) and brachytherapy.

(6) Clinical Performances

Our clinic provides high quality image diagnosis for oral and maxillofacial lesions and a high level of treatment outcomes for oral cancer by high precision radiotherapy and brachytherapy.

(7) Publications

[Original Articles]

1. Atsushi Kaida, Hitomi Nojima, Masahiko Miura. Estimating Impacts of p16 Status on Tumor Radiosensitivity in Head and Neck Cancer using Predictive Models. *Radiat Res.* 2024.09; 202(3); 605-609
2. Takuya Nagano, Yusuke Matsuya, Atsushi Kaida, Hitomi Nojima, Takuya Furuta, Kaoru Sato, Ryoichi Yoshimura, Masahiko Miura. In vitro and in silico study of biological effects on cancer cells in the presence of metallic materials during radiotherapy. *J Radiat Res.* 2024.09; 65(5); 628-639
3. Shinya Kotaki, Hiroshi Watanabe, Junichiro Sakamoto, Ami Kuribayashi, Marino Araragi, Hironori Akiyama, Yoshiko Arijii. High-resolution magnetic resonance imaging of teeth and periodontal tissues using a microscopy coil. *Imaging Sci Dent.* 2024.09; 54(3); 276-282
4. Hitomi Nojima, Atsushi Kaida, Yusuke Matsuya, Motohiro Uo, Ryo-Ichi Yoshimura, Lior Arazi, Masahiko Miura. DNA damage response in a 2D-culture model by diffusing alpha-emitters radiation therapy (Alpha-DaRT). *Sci Rep.* 2024.05; 14(1); 11468
5. Supasith Yomtako, Hiroshi Watanabe, Ami Kuribayashi, Junichiro Sakamoto, Masahiko Miura. Differentiation of radicular cysts and radicular granulomas via texture analysis of multi-slice computed tomography images. *Dentomaxillofac Radiol.* 2024.04;
6. Iwasaki T, Harazono Y, Fukawa Y, Kaida A, Kayamori K, Sasaki Y, Harada H, Yoda T. Retrospective analysis of odontogenic myxoma and odontogenic myxofibroma in the oral and maxillofacial region: a fibrous tissue-related differentiation. *The British journal of oral & maxillofacial surgery.* 2024.02; 62; 464-470
7. Akiko Imaizumi, Ryoichi Hirayama, Yoko Ikoma, Nobuhiro Nitta, Takayuki Obata, Sumitaka Hasegawa. Neon ion (20 Ne¹⁰⁺) charged particle beams manipulate rapid tumor reoxygenation in syngeneic mouse models. *Cancer Sci.* 2024.01; 115(1); 227-236
8. Tomioka, H; Nishii, N; Oikawa, Y; Kugimoto, T; Kuroshima, T; Hirai, H; Kayamori, K; Kaida, A; Miura, M; Harada, H. Clinicopathological analysis of 134 patients with squamous cell carcinoma of the mandibular gingiva *HELIYON.* 2024.01; 10(1); e23120

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1. Andy Wai Kan Yeung, Abeer AlHadidi, Rutvi Vyas, Michael M Bornstein, Hiroshi Watanabe, Ray Tanaka. Nonionizing diagnostic imaging modalities for visualizing health and pathology of periodontal and peri-implant tissues. *Periodontol 2000.* 2024.07;

[Conference Activities & Talks]

1. Supasith Yomtako, Hiroshi Watanabe, Ami Kuribayashi, Junichiro Sakamoto, Masahiko Miura,. Differentiation of radicular cysts and radicular granuloma via texture analysis of multi-slice computed tomography images. 89th Annual Meeting of the Stomatological Society 2024.12.06 Tokyo
2. Watanabe H.. Imaging of the mandibular canal. The 14th Asian Congress of Oral Maxillo-Facial Radiology 2024.06.13 Kaohsiung, Taiwan
3. Arisa Oki, Shin Nakamura, Junichiro Sakamoto, Hiroshi Watanabe, Masahiko Miura. Relationship between Nodal Metastasis and MRI Radiomic Features in Patients with Tongue Squamous Cell Carcinoma. 2024.06.13 Taiwan, Kaohsiung
4. Watanabe H.. Image characteristics of the mandibular canal. The 40th scientific and technical conference and The 46th annual scientific conference of dental research 2024.04.02 Ho Chi Minh City, Vietnam

Department of Oral and Maxillofacial Surgical Oncology

Professor: Hiroyuki HARADA

Associate Professor: Yasuyuki MICHl

Junior Associate Professor: Fumihiko TSUSHIMA, Hirofumi TOMIOKA

Assistant Professor: Takeshi KUROSHIMA, Takuma KUGIMOTO, Yu OIKAWA,

Naoto NISHII, Naoya KINOSHITA,

Specially Appointed Assistant Professor: Rikuka SHIMIZU, Ruri KOMIYA

Graduate Student: Haruka IBI, Takahiro NAITO, Makiko YATOMI, Tatsuhiro YOKOYAMA,

Mio NAKAYAMA, Kenta HATA, Yuji TSUYAMA, SU YUYA, Yu Jie, Syunya HAYASHI,

Yuta NAKANO, Yuto MOGi

(1) Outline

Clinical Services

The Oral and Maxillofacial Surgery Clinic examines yearly more than 4,000 new patients with various diseases arising in oral and maxillofacial regions. The clinic has diplomat of the Japanese Society of Oral and Maxillofacial Surgeons and accepts many referrals from dentists and medical doctors. We provide a full range of services including extractions, removal of wisdom teeth and management of facial trauma, oral mucosal disease, temporomandibular joint disease, and benign and malignant tumors. The special outpatient clinics are organized by the specialists to offer the best service, especially for patients with malignant tumor and oral mucosal disease which need high degree of specialty and long term follow up. We also prepare some groups for inpatients with an emphasis on specialties, to provide the recent and advanced treatment.

(2) Research

Research Subjects

- 1) Development of multidisciplinary treatment of oral cancer.
- 2) Clinical study on sentinel node navigation surgery for oral cancer.
- 3) Study on molecular markers for lymph node metastasis of oral cancer.
- 4) Development of multidisciplinary treatment of oral mucosal diseases

(3) Education

Purpose of Education

The program is designed for acquiring the broad knowledge and basic skills of oral and maxillofacial surgery, mainly concerning the diagnostic procedure, treatment technique and the perioperative patient care. Also throughout the professional education, we promote the system in which each graduate student can select his or her special field in the full scope of oral and maxillofacial surgery in the future.

(4) Publications

[Original Articles]

1. Tomoka Matsumura, Jun Aida, Yushi Abe, Yu Oikawa, Takeshi Kuroshima, Hiroyuki Harada, Shigeru Maeda. Obesity and postoperative flap complications in maxillofacial reconstruction surgery ORAL SURGERY ORAL MEDICINE ORAL PATHOLOGY ORAL RADIOLOGY. 2024.12; in press;
2. Mito S, Miyajima M, Tomioka H, Sato H, Takeuchi T, Muto H, Kabasawa Y, Harada H, Eguchi K, Kato S, Kano M. Postoperative Delirium Prediction Based on Preoperative Electrocardiogram and Electroencephalogram 2024 Asia Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC). 2024.12;
3. Noji R, Tohyama K, Nakamura S, Naito T, Oikawa Y, Kuroshima T, Tomioka H, Michi Y, Ikeda S, Asakage T, Miura N, Hamamoto Y, Harada H, Kano Y. Dynamic Changes in Circulating Tumor DNA During Immunotherapy for Head and Neck Cancer: SHIZUKU-HN Study International Journal of Molecular Sciences. 2024.12; 26(1); 235
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5. Otsuru M, Yamakawa N, Kirita T, Yamada SI, Kurita H, Kugimoto T, Harada H, Hasegawa T, Akashi M, Takeshita A, Uzawa N, Umeda M, Yanamoto S, Yamada T. Efficacy and safety of molecularly targeted agents and immune checkpoint inhibitors for unresectable or recurrent/metastatic oral cancer in Japan JOURNAL OF DENTAL SCIENCES. 2024.07; 19(3); 1628-1637
6. Ibi H, Takahashi K, Harada H, Watabe T, Podyma-Inoue KA. Transforming growth factor- β signals promote progression of squamous cell carcinoma by inducing epithelial-mesenchymal transition and angiogenesis. Biochem Biophys Res Commun. 2024.06; 714; 149965
7. Kim CY, Takeshita Y, Kugimoto T, Harada H, Park JS, Tubbs RS, Iwanaga J. Anatomy of the Buccal Space: Surgical and Radiological Perspectives. The Journal of craniofacial surgery. 2024.06;
8. Yamaguchi K, Okumura T, Oikawa Y, Nakagawa K, Yoshimi K, Harada H, Tohara H. Effect of oral intake initiation-establishment interval on hospital stay after oral cancer surgery Oral Diseases. 2024.05;
9. Kuroshima T, Kitagawa Y, Sato J, Watanabe S, Asaka T, Abe T, Harada H, Hirata K, Kuge Y. Correction: Maximum standardized uptake value in (11)C-methionine positron emission tomography may predict the prognosis of patients with oral squamous cell carcinoma. Odontology. 2024.05;
10. Suenaga M, Yamauchi S, Morikawa R, Noji R, Kano Y, Tokunaga M, Kinugasa Y. Chemotherapy and COVID-19 Vaccination in Patients With Gastrointestinal Cancer in vivo. 2024.05; 38(3); 1278-1284
11. Iwasaki T, Harazono Y, Fukawa Y, Kaida A, Kayamori K, Sasaki Y, Harada H, Yoda T. Retrospective analysis of odontogenic myxoma and odontogenic myxofibroma in the oral and maxillofacial region: a fibrous tissue-related differentiation. The British journal of oral & maxillofacial surgery. 2024.02; 62; 464-470
12. Tomioka, H; Nishii, N; Oikawa, Y; Kugimoto, T; Kuroshima, T; Hirai, H; Kayamori, K; Kaida, A; Miura, M; Harada, H. Clinicopathological analysis of 134 patients with squamous cell carcinoma of the mandibular gingiva HELIYON. 2024.01; 10(1); e23120
13. Tokizaki S, Podyma-Inoue KA, Matsumoto T, Takahashi K, Kobayashi M, Ibi H, Uchida S, Iwabuchi S, Harada H, Hashimoto S, Miyazono K, Shirouzu M, Watabe T. Inhibition of transforming growth factor- β signals suppresses tumor formation by regulation of tumor microenvironment networks Cancer Science. 2024.01; 115(1); 211-226
1. SATO Y, KINOSHITA N, MICHY Y, FUKAWA Y, IKEDA T, HARADA H. A clinico-pathological study of methotrexate-associated lymphoproliferative disorders arising in the oral cavity Japanese Journal of Oral & Maxillofacial Surgery. 2024.10; 70(10); 412-418

[Books etc]

1. Hiroyuki Harada. Internal Medicine for Dental Treatments. Springer, 2024.02

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1. Okuyama K, Yanamoto S. Saliva in Balancing Oral and Systemic Health, Oral Cancer, and Beyond: A Narrative Review *Cancers*. 2024.12; 16(24); 4276

[Conference Activities & Talks]

1. Gong W, Taner HF, Wu Y, Li Z, Cheng W, Hu Q, Donnelly CR, Nor F, He Y, Zhai Z, Fitzsimonds ZR, Broses L, Li J, Bellile E, Okuyama K, Demehri S, Nagrath D, Wolf GT, Yu Y, Wen H, Wei L, Sikora AG, Chinn SB, Akira S, Xie Y, Moon JJ, Lei YL. Metabolic inhibition of BATF2 dampens type-I interferon-mediated immune sensing of cancer . Allison Institute Second Annual Scientific Symposium at UT MD Anderson Cancer Center 2024.10.10 Houston, Texas, USA
2. Oikawa Y, Kinoshita N, Nishii N, Shimizu R, Kugimoto T, Kuroshima T, Tomioka H, Michi Y, Harada H. Clinicopathological study of cervical lymph node metastasis in patients with oral tongue squamous cell carcinoma with depth of invasion ≤ 5 mm. KAOMS2024 2024.04.11 Seoul, Korea
3. Shimizu R, Kuroshima T, Nishii N, Oikawa Y, Kugimoto T, Tomioka T, Michi Y, Harada H. Clinico-pathological study on the double cancers of oral squamous cell carcinoma and malignant lymphoma. KAOMS2024 2024.04.11 Seoul, Korea
4. Kuroshima T, Michi Y, Harada H. Prognostic factors of squamous cell carcinoma arising in maxillary gingiva.. Taiwanese Association of Oral & Maxillofacial Surgeons The 36th Annual Congress on Oral and Maxillofacial Surgery 2024.03.10 台湾
5. Kuroshima T, Michi Y, Harada H. Surgical Treatment for Superficial Oral Cancer. Taiwanese Association of Oral & Maxillofacial Surgeons The 36th Annual Congress on Oral and Maxillofacial Surgery 2024.03.10 台湾
6. Michi Y, Kuroshima T, Harada H. Surgical Treatment of Superficial Oral Cancer. Taiwanese Association of Oral & Maxillofacial Surgeons The 36th Annual Congress on Oral and Maxillofacial Surgery 2024.03.10 台湾
1. Haruka Ibi, Katarzyna A. Inoue, Kazuki Takahashi, Takehisa Matsumoto, Mikako Shirouzu, Hiroyuki Harada, Tetsuro Watabe. TGF- β promotes progression of squamous cell carcinoma by regulating multiple components of tumor microenvironment. The 83rd Annual Meeting of the Japanese Cancer Association 2024.09.19 Fukuoka

Department of Dental Anesthesiology

Professor: Shigeru MAEDA

Associate Professor: Ryo WAKITA,

Junior Associate Professor: Tomoka MATSUMURA

Assistant Professors: Yukiko BABA, Yoko YAMAZAKI, Takaya ITO

Specially Appointed Assistant Professor: Aki KAWAUCHI, Hiroko IMURA, Ryoko KURISU

Hospital Staffs: Yushi ABE, Masami HASEGAWA, Akihiro KUGA, Maya SAKAMOTO, Mako CHIBA, Chihiro KUTSUMIZU, Nanako IKEDA, Erika YAMAHARA

Graduate Students: Keiko ABE, Kotomi UCHINUMA, Nozomi UTSUMI, Miki YOKOYAMA,

Ayumi NAKAYAMA, Hikari TOMINAGA, Asami ISHII

Research Students: Hidemasa KUSUNOKI, Hirokazu SUGITA, Mana NAKAMURA, Satoshi YAMADA

(1) Outline

Our department is responsible for both dental anesthesiology and orofacial pain control. In clinical practice, approximately 900 cases of general anesthesia and 1,800 cases of sedation are managed annually, representing an overwhelmingly high number of anesthesia cases among national and public universities. Oral and maxillofacial surgeries primarily involve malignant tumors and orthognathic surgery, as well as the extraction of impacted teeth that are difficult to manage in private dental clinics. In this field, collaboration with the intensive care unit is integral to our operations.

In the outpatient setting, in addition to sedation, we perform approximately 200 cases of day-case general anesthesia annually, primarily for comprehensive dental treatment of pediatric and special needs patients, as well as for the extraction of impacted teeth. The primary indications for sedation are implant-related surgeries and oral and maxillofacial surgeries. Notably, our department houses a specialized clinic for orofacial pain management, a rare specialty nationwide, where dedicated pain clinic staff provide specialized care.

In the field of dental anesthesiology, our objective is to ensure that patients receive safe and minimally painful dental treatment. Our educational program encompasses lectures and hands-on training on local anesthesia, general anesthesia, sedation techniques, and patient monitoring. Furthermore, we engage in both fundamental and clinical research to advance these objectives.

(2) Research

- 1) Etiology and treatment of neuropathic pain in the maxillofacial region
- 2) Development of new local anesthetics
- 3) Management methods to improve satisfaction with sedation
- 4) The pathogenesis of perioperative brain ischemia
- 5) Research on Improving the Quality of Anesthesia Management for Orthognathic Surgery

(3) Education

The purpose of our department is to provide knowledge and basic skills in local anesthesia for daily dental practice, sedation and general anesthesia for specialized anesthesia management, systemic management of patients with complications, and maxillofacial pain treatment. Lectures are given on dental anesthesia (general anesthesia, local anesthesia, sedation, cardiopulmonary resuscitation) and orofacial pain. In the section on general anesthesia, students learn the physiology of respiration and circulation, and the pharmacological effects

and mechanisms of anesthetics. In the section on sedation, students learn about the differences between general anesthesia and sedation. As a first aid training, students learn not only basic life support but also advanced life support using a cardiopulmonary resuscitation training system. In orofacial pain clinic, students are instructed on the basis of physiology and pharmacology as a field of neuroscience.

(4) Lectures & Courses

The specialty of dental anesthesia is to provide safe and painless dental care. For this purpose, information about the patient's health status is collected and evaluated, which is an important prerequisite for dental care, regardless of the administration of anesthetics. The importance of such patient assessment is emphasized to undergraduate students. In addition, the meaning of anesthesia management by dentists is discussed with the students. In graduate school, the main objective is to accumulate clinical experience and learn basic and clinical research methods and concepts while aiming for certification and specialist training. After graduation, students are expected to obtain research funding and become involved in clinical practice, research, and education as potential supervisors.

(5) Clinical Services & Other Works

In the operating room, about 1,000 cases of general anesthesia are performed annually for oral surgery. These include lengthy surgeries like as reconstruction with free flap, and 2 jaw osteotomies. In the outpatient dental anesthesia clinic, we perform more than 2,000 sedation procedures per year to treat patients, who is difficult to receive in general dentistry, as well as long procedures such as implant-related procedures. In addition, we respond promptly to emergencies that occur in our hospital on average several times a month, and if necessary, we collaborate with the ER of the medical school hospital. The Department of Orofacial Pain Clinic and the Department of Temporomandibular Joint Treatment are two of the few specialized outpatient clinics in Japan, and we accept referrals from inside and outside the hospital. In the Orofacial Pain Clinic, we mainly treat neuropathic pain and trigeminal neuralgia, and provide multidisciplinary treatment with medication, nerve blocks, oriental medicine and physical therapy.

(6) Clinical Performances

In the central operating room, appropriate management including general anesthesia is provided for all types of oral surgery. Postoperative management is provided in collaboration with the ICU for long surgeries. In the outpatient clinic, we provide intravenous sedation for extraction of wisdom teeth and implant surgery to ensure safe and stress-free dental treatment. For patients who are fearful of dental treatment or with intellectual disabilities, general anesthesia and intravenous sedation are used. In the oro-facial pain clinic, we provide holistic care for all kinds of pain, abnormal sensation, nerve palsy, etc. in the oral and maxillofacial region, incorporating medication, physical therapy, Oriental medicine, and psychosomatic medicine.

(7) Publications

[Original Articles]

1. Tomoka Matsumura, Jun Aida, Yushi Abe, Yu Oikawa, Takeshi Kuroshima, Hiroyuki Harada, Shigeru Maeda. Obesity and postoperative flap complications in maxillofacial reconstruction surgery ORAL SURGERY ORAL MEDICINE ORAL PATHOLOGY ORAL RADIOLOGY. 2024.12; in press;
2. Baba Y, Sato Y, Takahashi K, Ito T, Wakita R, Maeda S. Allergic clinical symptoms and distribution of stimulation index of drug lymphocyte stimulation test for local anesthetics. Oral and maxillofacial surgery. 2024.11; 29(1); 5
3. Wakita, R; Aida, J; Baba, Y; Utsumi, N; Nakayama, A; Maeda, S. Transient bradycardia during local anaesthesia to the oral cavity under intravenous sedation and its associate factors: a prospective observational study BMC ORAL HEALTH. 2024.10; 24(1); 1165

4. Tomoka Matsumura, Shigeru Maeda, Tsutomu Iwamoto, Takehiko Iijima. Differences in perception of general anesthesia for pediatric dental treatment between pediatric dentists and dental anesthesiologists in Japan *Pediatric Dental Journal*. 2024.07;
5. Hitoshi Higuchi, Kota Miyake, Saki Miyake, Maki Fujimoto, Yukiko Nishioka, Shigeru Maeda, Takuya Miyawaki. Optimising the oral midazolam dose for premedication in people with intellectual disabilities and/or autism spectrum disorder *Journal of Applied Research in intellectual Disabilities*. 2024.06; 37(4); e13265
6. Wakita R, Kusumoto Y, Shinozuka O, Tokyo Metropolitan Hachinan Dental Association, Fukayama H, Maeda S. Dental findings and intravenous sedation in a patient with Potocki-Lupski syndrome: A case report. *Special care in dentistry : official publication of the American Association of Hospital Dentists, the Academy of Dentistry for the Handicapped, and the American Society for Geriatric Dentistry*. 2024.05;
7. Three Cases of Persistent Laryngeal Edema Postradiation Therapy. 2024.05; 71(1); 24-28
8. Asano Sayaka, Hirotoshi Yamamoto, Shigeru Maeda. Factors Affecting Intraoperative Blood Loss in Orthognathic Surgery: A Monocentric Retrospective Study *The Journal of the Stomatological Society, Japan*. 2024.03; 91(1); 29-34
9. Saki Okabe, Yasuhiro Nakagawa, Yu Sato, Ryo Wakita, Shigeru Maeda, Toshiyuki Ikoma. Preparation and Drug Release Properties of Poly(lactic-co-glycolic acid) Microparticles Co-encapsulating Dual Drugs, Lidocaine and Capsaicin *The Journal of the Stomatological Society, Japan*. 2024.03; 91(1); 35-46
10. Shigeru Maeda, Atiphan Pimkhaokham, Michihiro Yoshida, Hiroki Hosoi, Ayako Ohshima, Ryoko Kurisu, Nozomi Utsumi, Hitoshi Higuchi, Takuya Miyawaki. Retrospective Analysis of the Safety of High-Volume Dental Articaine Preparations for Japanese Patients *Acta Medica Okayama*. 2024;
1. Hiroko Imura, Yoko Yamazaki, Maya Sakamoto, Ryoko Kurisu, Masato Kawashima, Shigeru Maeda. A case report: treatment for lingual nerve paralysis following a mandibular third molar extraction *Japanese journal of orofacial pain*. 2024.03; 16(1); 65-69

[Conference Activities & Talks]

1. Shigeru MAEDA. What makes us select the anesthetic method in the case?. IADH (international association of disability and oral health) 2024.09.29 Seoul
2. Ryoko Kurisu, Yoko Yamazaki, Shigeru Maeda. Involvement of Lysophosphatidic acid in mechanical allodynia in neuropathic pain of orofacial region. IASP 2024 World Congress on Pain 2024.08.06 Amsterdam
3. Ryoko KURISU, Yoko YAMAZAKI, Shigeru MAEDA. Involvement of Lysophosphatidic acid in mechanical allodynia in neuropathic pain of orofacial region. IASP 20th World congress on Pain 2024.08.06 Amsterdam
1. Kotomi Uchinuma, Ryo Wakita, Naoya Kinoshita, Shimizu, Hiroyuki Harada, Shigeru Maeda. Post-tracheostomy tracheal stenosis in oral surgery: case report and retrospective evaluation of associated factors. *Japanese Stomatological Society* 2024.07.20 Tokyo
2. Asami Ishii, Tomoka Matsumura, Nanako Ikeda, Hirokazu Sugita, Mana Nakamura, Shigeru Maeda. A case of . The 40th Kanto Clinical Dental Anesthesia Conference 2024.06.15 Tokyo

Department of Pediatric Dentistry / Special Needs Dentistry

Professor

Tsutomu Iwamoto

Junior Associate Professor

Satoko Kakino

Assistant Professor

Yasuka Kusumoto, Kanae Wada, Atsushi Oishi, Asuna Sugimoto

Hospital staff

Kokoro Iwata, Rika Kurogoushi, Haruka Naito, Karen Inoue(-Mar), Kaori Kohi(-Mar),
Gen Takahashi(-Mar), Yuga Toyomura, Chika Hirawada, Kanade Yamaki(-Mar),

Rei Takenaga(Apr-), Ruriko Nitta(May-)

Yusuke Iwabuchi, Risa Tamenaga(-Mar), Yuki Shindo, Chihiro Soma(Apr-), Mayuko Yano(Apr-)

Graduate Student

Hiroaki Oki, Manami Tanaka, Yumiko Nakashima, Yuika Yamanaka, Misaki Hamashima,
Yudai Kitaichi(Apr-), Muhammad Dhiaulfikri Nauval Hadiana(Apr-)

Research Student

Rei Takenaga(-Mar), Ruriko Nitta(-Apr), Cho Li, Yujeong Shin

Special Research Student

Aiko Hoshiai

Adjunct Lecturer

Ryu Matsubara, Shoji Takahashi, Asiri jayawardena,

Yuko Matsumura, Taki Sekiya, Kenichi Miura,

Natsumi Tsuchihashi(-Mar), Shigeki Nagahiro(Apr-), Kaori Kohi(Apr-),

Minoru Inada, Yosuke Kinoshita, Seiji Sakurai,

Osamu Shinozuka, Tomo Suzuki, Moriyuki Nakamura,

Taiji Hoshiai, Takae Aida

(1) Publications

[Original Articles]

1. Manami Tanaka, Asuna Sugimoto, Kokoro Iwata, Yumiko Nakashima, Muhammad Dhiaulfikri Nauval Hadiana, Yusuke Iwabuchi, Kanae Wada, Atsushi Oishi, Tsutomu Iwamoto. Prrx2, the paired-related homeobox transcription factor, functions as a potential regulator of pannexin 3 expression in odontoblast differentiation. J Oral Biosci. 2024.12; 100601
2. Wada K, Wada J, Uctasli MB, Uctasli S, Yavuz Y, Iwamoto T, Vallittu PK, Garoushi S, Lassila L. Impact of restorative material on fracture behaviors of class II restoration in endodontically treated deciduous molars. Dental materials journal. 2024.08;

3. Wakita R, Kusumoto Y, Shinozuka O, Tokyo Metropolitan Hachinan Dental Association, Fukayama H, Maeda S. Dental findings and intravenous sedation in a patient with Potocki-Lupski syndrome: A case report. *Special care in dentistry : official publication of the American Association of Hospital Dentists, the Academy of Dentistry for the Handicapped, and the American Society for Geriatric Dentistry.* 2024.05;
4. Lippo Lassila, Mine B. Uctasli, Kanae Wada, Pekka K. Vallittu, and Sufyan Garoushi. Effect of different beverages and polishing techniques on colour stability of CAD/CAM composite restorative materials. *Biomaterial Investigations in Dentistry.* 2024.04; 11; 34-41
5. Junichiro Wada, Paulina Heponiemi, Kanae Wada, Sufyan Garoushi, Noriyuki Wakabayashi, Tsutomu Iwamoto, Pekka K. Vallittu, Lippo Lassila. Effect of ethylene oxide unit number in bis-EMA on the physical properties of additive-manufactured occlusal splint material *Journal of Prosthodontic Research.* 2024.01;

[Misc]

1. Sugimoto Asuna, Iwata Kokoro, Muhammad Dhiaulfikri Nauval Hadiana, Iwamoto Tsutomu. Biological Roles of Mechanosensitive Ion Channels in Mesenchymal Stem Cells *The Journal of the Stomatological Society, Japan.* 2024.11; 91(2,3); 93-101

[Conference Activities & Talks]

1. Wada J, Wada K, Gibreel M, Garoushi S, Wakabayashi N, Iwamoto T, Vallittu PK, Lassila L. Adhesion of *Streptococcus mutans* to additive-manufactured occlusal splint materials. *The 72nd Annual Meeting of Japanese Association for Dental, Oral, and Craniofacial Research* 2024.11.17 Kagoshima
2. Satoko Kakino, Yuko Matsumura, Hiroaki Ohki, Zhao Li, Tsutomu Iwamoto. Measurement of pulpal circulation after traction of inversely impacted maxillary young permanent incisors using TLP . *The 13th BIENNIAL CONGRESS OF THE PEDIATRIC DENTISTRY ASSOCIATION OF ASIA* 2024.11.01 Bangkok, Thailand
3. Yoshihito Yamakawa, Kimiko Ueda, Yuki Akazawa, Tomokazu Hasegawa, Yumiko Nakashima, Kokoro Iwata, Asuna Sugimoto, Tomonori Iwasaki, Tsutomu Iwamoto. Analysis of FBS components to find and identify factor that promotes cell differentiation in dental epithelial cells. *The 13 th BIENNIAL CONGRESS OF THE PEDIATRIC DENTISTRY ASSOCIATION OF ASIA* 2024.10.30 Bankok
4. Satoko Kakino, Hiroaki Ohki, Zhao Li, Yuko Matsumura, Tsutomu Iwamoto. Six-year follow-up with CBCT and pulpal circulation measured by TLP after horizontal root fracture in a young permanent upper central incisor . *The 22nd World Congress on Dental Traumatology* 2024.07.14 Tokyo
1. Chika Hirawada, Yusuke Iwabuchi, Yasuka Kusumoto, Asuna Sugimoto, Yuki Shindo, Chihiro Soma, Mayuko Yano, Tsutomu Iwamoto. Dental treatment for a patient with Hallermann-Streiff syndrome. *The 41st Annual Meeting of the Japanese Society for Disability and Oral Hearth* 2024.12.14 Okinawa
2. Yuki.Shindo, Asuna Sugimoto, Yusuke Iwabuchi, Yasuka Kusumoto, Mako Chiba, Takaya Ito, Ryo Wakita, Shino Aoki, Rena Ichikawa, Shigeru Maeda, Tsutomu Iwamoto. A case of dental treatment performed under general anesthesia for a patient with sever motor and intellectual, and permanent tracheal stoma. *The 41st Annual Meeting of the Japanese Society for Disability and Oral Hearth* 2024.12.14
3. Yusuke Iwabuchi, Taiji Hoshiai, Asuna Sugimoto, Yuki Shindo, Chika Hirawada, Yasuka Kusumoto, Takae Aida, Tomo Suzuki, Mariko Watanabe, Aiko Hoshiai, Chihiro Soma, Mayuko Yano, Osamu Shinozuka, Kaori Sagawa, Tsutomu Iwamoto. A case of oral management for a patient with SATB2-associated syndrome. *The 41st Annual Meeting of the Japanese Society for Disability and Oral Hearth* 2024.12.14 Okinawa
4. Asuna Sugimoto, Muhammad Dhiaulfikri Nauval Hadiana, Kokoro Iwata, Rika Kurogoshi, Yumiko Nakashima, Manami Tanaka, Tsutomu Iwamoto. The Role of the R-Ras Binding Domain of PIEZO1 in Promotion of Osteoblast Differentiation from BMSCs. 2024.11.28
5. Satoko Kakino. Development of a pulp diagnostic method for traumatized teeth by Transmitted-light plethysmography. 2024.09.14

6. Wada K, Kohi K, Shin Y, Yamanaka Y, Hamashima M, Sugimoto A, Ohishi A, Iwamoto T. Evaluation of mechanical and chemical properties and microstructure of CAD/CAM blocks to determine their suitability for deciduous teeth. 2024.05.17
7. Yumiko Nakashima, Rika Kurogoushi, Tsutomu Iwamoto. Childhood caries severity is associated with lifestyle. 2024.05.17 Yokosuka
8. Atsushi Oishi, Yusuke Iwabuchi, Asuna Sugimoto, Rika kurogoshi, Yumiko Nakashima, Yuika Yamanaka, Rei Takenaga, Kanade Wada, Go Inoue, Hiroaki Adachi, Takayoshi Sakai, Tsutomu Iwamoto. Applicability of an on-demand chlorine dioxide aqueous solution (MA-T) in root canal cleaning. 2024.05.16

[Awards & Honors]

1. Satoko Kakino : Case Competition 1st Place, The 22nd World Congress on Dental Traumatology, 2024.07
2. Satoko Kakino : QUINTESSENCE PUBLISHING Award, The 22nd World Congress on Dental Traumatology, 2024.07

Department of Cariology and Operative Dentistry

(1) Publications

[Original Articles]

1. Elseoudy, N; Sanon, K; Hiraishi, N; Tamura, Y; Tagami, J; Shimada, Y. MMP inhibition, marginal integrity and cytotoxicity of zinc-releasing GIC JOURNAL OF DENTISTRY. 2024.12; 151; 105450
2. Takashi Hatayama, Tomoko Tabata, Kota Kibe, Masaomi Ikeda, Yasunori Sumi, Yasushi Shimada . Bonding Performance of a New Resin Core System with a Low-Polymerization-Shrinkage Monomer to Root Canal Dentin Polymers. 2024.11; 16(23);
3. Takaaki Sato, Keiichi Hosaka, Junji Tagami, Hirofumi Tashiro, Hitoshi Miki, Kazunori Otani, Miho Nishimura, Masahiro Takahashi, Yasushi Shimada, Masaomi Ikeda. Clinical evaluation of direct composite versus zirconia resin-bonded fixed dental prostheses for a single missing anterior tooth: A short-term multicenter retrospective study. Journal of Dentistry. 2024.10; 151; 105401
4. Tabata, T; Nakagawa, H; Matin, K; Otsuki, M; Aoki, A; Sumi, Y; Shimada, Y; Sumi. Analysis of cariogenic biofilms by using a swept-source optical coherence tomography in vitro ARCHIVES OF ORAL BIOLOGY. 2024.09; 165; 106009
5. Citra Kusumasari, Takashi Hatayama, Junji Tagami, Yasushi Shimada. Resin-Build-Up as A Direct Monoblock Concept for Root Canal Dentin, Core, and Crown Restoration on Anterior Endodontically Treated Tooth Journal of Dentistry Indonesia. 2024.09; vol.31(No.2);
6. Lee SY, Shimada Y, Sadr A, Tabata T, Sato T, Byun JE, Han SH. Degree of conversion and interfacial adaptation of touch-cure resin cement polymerized by self-curing or dual-curing with reduced light. Clinical oral investigations. 2024.08; 28(8); 463
7. Tadamu Gondo, Noriko Hiraishi, Azusa Takeuchi, David Moyes, Yasushi Shimada. Comparative analysis of microbiome in coronal and root caries. BMC Oral Health. 2024.07; 24(1); 869
8. Kanamori Y, Takahashi R, Nikaido T, Nitta H, Shimada Y, Tagami J, Kunzelmann KH. Influence of resin-coating techniques on the marginal adaptation and the bond strengths of CAD/CAM-fabricated hybrid ceramic inlays. Dent Mater J. 2024.06; 43(3); 407-414
9. Chen X, Inoue G, Fan L, Sekizawa O, Nitta K, Ikeda M, Shimada Y. Enhancement of mineral density and mechanical properties in root caries treated with silver diammine fluoride and glass ionomer cement, with emphasis on silver ion distribution. Journal of dentistry. 2024.05; 146; 105041
10. Ushijima K, Hiraishi N, Ikeda M, Tsuji Y, Tsuchida Y, Shimada, Y. Effect of water glass treatment for zirconia and silane coupling on bond strength of resin cement. Clin Oral Investig. 2024.05; 28(6); 305
11. Reziwanguli Aili, Hidemi Nakata, Munemitsu Miyasaka, Shinji Kuroda, Yukihiro Tamura, Taishi Yokoi, Masakazu Kawashita, Yasushi Shimada, Shohei Kasugai, Eriko Marukawa. Evaluation of a hydroxyapatite-crosslinked fish gelatin membranes. J Dent Sci. 2024.04; 19(2); 900-908
12. Ishihara H, Yonekura K, Ikeda M, Inoue G, Nakajima M, Shimada Y, Hosaka K. Comparative bonding performance of coronal dentin disks and CAD/CAM resin composite disks for biological restoration: The impact of resin-coating technique. Dental materials journal. 2024.03; 43(2); 303-311

13. Panchanit Ubolsa-Ard, Kittisak Sanon, Noriko Hiraishi, Mahmoud Sayed, Yuriko Sakamaki, Cynthia Kar Yung Yiu, Yasushi Shimada. Influence of surface pre-reacted glass-ionomer (S-PRG) filler eluate on collagen morphology, remineralization, and ultimate tensile strength of demineralized dentin. *J Mech Behav Biomed Mater.* 2024.02; 150; 106295
14. Noriko Hiraishi, Tadamu Gondo, Yasushi Shimada, Fumiaki Hayashi. Effect of borate, fluoride and strontium ions on biomimetic nucleation of calcium phosphate studied using solid-state nuclear magnetic resonance and X-ray diffraction. *Dent Mater.* 2024.02; 40(2); 210-218
15. Rana Al-Wakeel, Go Inoue, Amr SAAD, Manal Badawi, Sayed GHORAB, Rehab Alwakeb, Heba A. El-Deeb, Junji TAGAMI. Evaluation of Flexural Strength, Micro-Tensile Bond Strength and Fluoride Release of a Glass Hybrid Restorative Material TWIST International Multidisciplinary Journal. 2024.02; 19 (1); 358 -365
16. Yang Y, Inoue G, Hosaka K, Tichy A, Ikeda M, Tagami J, Shimada Y. The Effect of a Deproteinizing Pretreatment on the Bonding Performance and Acid Resistance of a Two-step Self-etch Adhesive on Eroded Dentin. *Operative dentistry.* 2024.01; 49(1); 65-75
1. Takashi Ohya, Xuefei Chen, Soichiro Ishikawa, Atsushi Takeda, Nobuhide Ohashi, Yuichiro Hayashi, Senri Oguri, Toshiyuki Koizumi, Mitomu Kioi, Kenji Mitsudo. Analysis of nutritional status of 119 patients treated with retrograde superselective chemoradiotherapy for tongue cancer *Japanese Journal of Oral & Maxillofacial Surgery* . 2024.08; 70(8); 327-335

[Conference Activities & Talks]

1. Boyu Ning, Go Inoue, Xuefei Chen, Morihiro Takamatsu, Yasushi Shimada . The relationship between soaked time, enamel area and solution volume with enamel mineral loss. The89th Meeting of the The Stomatological Society, Japan 2024.12.07 Tokyo
2. Kyaw Htet, Noriko Hiraishi, Panchanit Ubolsa-ard, Yasushi Shimada. Effect of zinc-releasing glass ionomer cement on preventing dentin demineralization . The 161st Meeting of the Japanese Society of Conservative Dentistry 2024.11 Himeji, Japan
3. Xuefei Chen, Go Inoue, Hiroshi Sekiguchi, Yasushi Shimada. Advancing Caries Therapy: Insights from X-ray Microbeam Diffraction on SDF and GIC Combination for Tooth Structure Restoration. 12th World Biomaterials Congress 2024.05.29 Daegu, Korea
4. Khin Myanmar, Go Inoue, Xuefei Chen, Yasushi Shimada. Effect of remineralization of zinc containing glass ionomer cement on enamel in vitro. The 160th Meeting of the Japanese Society of Conservative Dentistry 2024.05.17 Sendai
5. Siqi Zeng, Rena Takahashi, Masaomi Ikeda, Yasushi Shimada. The influence of zirconia thickness on bonding performance of dual-cured and light-cured resin cements. The 160th Meeting of the Japanese Society of Conservative Dentistry 2024.05.17 Miyagi, Japan
6. Chen ZENG, Tomoko TABATA, Rena TAKAHASHI, Junichi SHINAGAWA, Masaomi IKEDA, Shunsuke TAKANO, Yasunori SUMI, Junji TAGAMI, Yasushi SHIMADA. Marginal Adaption Analysis of CAD/CAM Resin Crown with Non-invasive Methods. The 160th Meeting of the Japanese Society of Conservative Dentistry 2024.05.16 Miyagi, Japan
7. Hirotoishi Iwabuchi, Go Inoue, Masaomi Ikeda, Yasushi Shimada. Acid resistance and bond strength of calcium-containing adhesive on enamel. 2024 IADR/AADOCR/CADR General Session & Exhibition 2024.03.16 Ernest N. Morial Convention Center, New Orleans, Louisiana, USA
8. T. Yoshikawa, A. Sadr, Y. Shimada . Polymerization Behavior of Composites at Top/Bottom of Cavity using Different-LED-Light. 102nd, IADR 2024.03.16 New Orleans, LA
9. Otsuki Masayuki, Du Zijuan, Shimada Yasushi. Effect of Light Exposure on in-Office Bleaching. 2024 IADR/AADOCR/CADR General Session 2024.03.16 New Orleans, US
10. Xuefei Chen, Go Inoue, Yasushi Shimada. Mechanical Properties of Natural Carious Lesion Under the SDF+GIC Treatment. 2024 IADR/AADOCR/CADR General Session 2024.03.15 New Orleans, US

11. Gondo T, Hiraishi N, Takeuchi A, David M, Shimada Y,. Comparative Analysis of the Coronal and Root CariesMicrobiome. 2024 IADR/AADOCR/CADR General Session 2024.03.15 New Orleans, Louisiana
12. A. Khaled, T. Sato, T. Tabata, M. Zhao, K. Kibe, T. Hatayama, M. Ikeda, Y. Shimada. Comparing gap detection using OCT and leakage test. 102nd General Session & Exhibition of the IADR, NEW ORLEANS, LA, USA 2024.03.13
13. Noriko Hiraishi. Scientific Evidence on Restorative Ability of S-PRG Filler for Enamel and Dentin . Industry-sponsored Symposium (Invited speaker) The 102nd 2024 IADR/AADOCR/CADR General Session & Exhibition the IADR/APR General Session & Exhibition 2024.03
14. Noriko Hiraishi, Fumiaki Hayashi Tadamu Gondo, Toru Nikaido, Yasushi Shimada . 19F-NMR Study of Fluoride Reaction of Various Formulations on Enamel.. The 102nd 2024 IADR/AADOCR/CADR General Session & Exhibition the IADR/APR General Session & Exhibition 2024.03
15. Nader Ahmed Elseoudy, Kittisak Sanon², Noriko Hiraishi, Yukihiro Tamura, Yasushi Shimada. Chemical, Biological, and Mechanical Properties of a Novel Glass Ionomer. The 102nd 2024 IADR/AADOCR/CADR General Session & Exhibition the IADR/APR General Session & Exhibition 2024.03
16. Yasushi Shimada. Development of a new technology for management of dental caries and adhesive restoration. Essential updates on operative dentistry and endodontics 2024.01.29 Chulalongkorn University
1. Go Inoue, Lin Fan, Masaomi Ikeda, Yasushi Shimada. Adhesive evaluation of a new self-adhesive resin composite, SA-100R, on uncut enamel. The 161th Meeting of the Japanese Society of Conservative Dentistry 2024.11.22 Himeji,Japan
2. Kazuhiko Miyagi, Go Inoue, Xuefei Chen, Yasushi Shimada. Evaluation of Enamel Remineralization Using Fluoride Varnish with Bioactive Glass Additives. The 161th Meeting of the Japanese Society of Conservative Dentistry 2024.11.22 Himeji,Japan
3. Otsuki Masayuki, Hiraishi Noriko, Hosaka Keiichi, Shimada Yasushi, Kobayashi Mikihiro, Niitsuma Yuiko, Sugai Rintaro, Manabe Atsufumi, Tagami Junji. Clinical Research on At-Home Bleaching Using Universal Tray. The 161th Meeting of the Japanese Society of Conservative Dentistry 2024.11.22 Himeji,Japan
4. LIN FAN, Go Inoue, Xuefei Chen, Yasushi Shimada. Evaluation of Bond Strength and Acid-Base Resistant Zones in Demineralized Dentin Using NACP Solution Combined with Fluoride-Contained Adhesive. The 161th Meeting of the Japanese Society of Conservative Dentistry 2024.11.21 Himeji,Japan
5. Azusa Takeuchi, Tadamu Gondo, Elseoudy Nader, Wang Xinyu, Yukihiro Tamura, Fumiaki Hayashi, Noriko Hiraishi, Yasushi Shimada. Effects of strontium-substituted bioglasses on human dental pulp stem cells and evaluation of interfacial reactivity by solid-state NMR. The 161st meeting of the Japanese Society of Conservative Dentistry 2024.11.21 Himeji, Japan
6. Ryohei Fujimori, Motoi Takahashi, Noriko Hiraishi, Motohiro Uo, Toru Nikaido, Yasushi Shimada. Effect of silver diammine fluoride on precipitated silver compounds and resin-dentin bond properties. The 161th Meeting of the Japanese Society of Conservative Dentistry 2024.11.21 Himeji, Japan
7. Kumiko Matsuzaki, Tomoko Tabata, Naoko Ohara, Kei Takahashi, Yoshihiko Soga, Yasushi Shimada. Analysis of the microstructure of irradiated teeth using SS-OCT. The 161th Meeting of the Japanese Society of Conservative Dentistry 2024.11.21 Himeji,Japan
8. Tomoko Tabata, Noriko Hiraishi, Rena Takahashi, Yosuke Minato, Yasushi Shimada. A case of tooth cervical hypersensitivity symptoms treated with Caredyne Restore SS-OCT observation. The 36th Annual meeting of Japanese Society for Laser Dentistry 2024.10.20 Aichi,Japan
9. Akira Nakane, Shigeyuki Nagai, Noriko Hiraishi, Yosuke Minato, Tomoko Tabata, Masayuki Otsuki, Yasushi Shimada. Changes in staining in dentin caries detection solution irradiated with Er:YAG laser. The 36th Annual meeting of Japanese Society for Laser Dentistry 2024.10.19 Aichi,Japan
10. Noriko Hiraishi. Comparative analysis of microbiome in coronal and root caries.. 8020 Promotion Foundation Public Research Presentation 2024.07.31
11. Xuefei Chen, Go Inoue, Hiroshi Sekiguchi, Yasushi Shimada. Evaluation of SDF and GIC Combination for Tooth Structure Restoration. The 5th Meeting of the Dentin Pulp Treatment Association 2024.07.20

12. Shunsuke TAKANO, Rena TAKAHASHI, Tomoko TABATA, Chen ZENG, Masaomi IKEDA, Yasushi SHIMADA. Bonding performance of resin cements with universal adhesives. The 160th Meeting of the Japanese Society of Conservative Dentistry 2024.05.17 Miyai, Japan
13. Yasushi Shimada. Application of optical equipment and devices for diagnosis of dental caries. The 82th Meeting of the Japanese Society of Dental Materials and Devices 2024.04.21 Kagoshima

[Awards & Honors]

1. IADR Cariology Research Group Student Research Prize 1st, The 102nd 2024 IADR/AADOCR/CADR General Session & Exhibition the IADR/APR General Session & Exhibition, 2024.03
2. Cariology Research Group Student Research Award 1st Place, IADR Cariology Research Group, 2024.03

[Social Contribution]

1. Polymers , MDPI Postfach, CH-4020 Basel, Switzerland, Polymers , <http://www.mdpi.com/journal/polymers>, 2023.01 - Now
2. IADR Institutional Booth, 2024.03

Masticatory Function and Health Science

Professor: Kenji FUEKI
Associate professor: Wataru KOMADA
Junior associate professor: Hiroshi CHUREI, Yuka INAMOCHI
Assistant professor : Shiho OTAKE, Kairi HAYASHI, Hiroyuki ISHIYAMA, Mina TAKITA
Project assistant professor: Mayuko MASTUMURA, Sinya OISHI
Clinical staff: Taisuke OZAKI, Daiki KONDO, Yasuyuki KOWAKA, Yayoi OISHI,
Taku NEMOTO, Ryuichiro BENIYA, Ayaka MATSUMOTO, Kaito TOGAWA,
Teisuke AKIMOTO, Keisuke MIYAZONO, Yoko HOTTA

(1) Outline

This department researches the association between oral function with prosthetic treatments and health, and provides dental care and education on prosthodontics, sports dentistry, and TMD.

(2) Research

Research on the association between oral function and health, AI and data science, dental education, dental materials, dental allergy, sports dentistry, and TMD

(3) Education

Basic and clinical education on prosthodontics (fixed prosthodontics and removable partial denture), sports dentistry, and TMD

(4) Lectures & Courses

Evidence-based clinical education

(5) Clinical Services & Other Works

Dental care at prosthetic clinic, advanced dental clinic, dental allergy clinic, sports dentistry clinic, and TMD clinic

(6) Clinical Performances

Prosthetic treatments using digital technology, examination of allergies to dental materials, specialized treatment to sports injury using mouth guard and face guard, diagnosis and treatment of TMD

(7) Publications

[Original Articles]

1. G Tanabe, T Hasunuma, Y Takeuchi, H Churei, K Hayashi, K Togawa, N Moriya, T Ueno. Assessment of Exercise-Induced Dehydration Status Based on Oral Mucosal Moisture in a Field Survey Dentistry Journal. 2024.12; 13(1); 5
2. Otake Shiho, Ozaki Taisuke, Komada Wataru, Oishi Shinya, Takita Mina, Fueki Kenji. Influence of the Color of Adhesive Resin Cement and Type of Foundation Restoration on the Color of CAD/CAM Resin Crowns J. Stomatol. Soc. Jpn.. 2024.11; 91(2-3); 102-107
3. S.Shimizu, K.Hayashi, Y.Takeuchi, G.Tanabe, H.Churei, H.Kobayashi, T.Ueno, K.Fueki. Effect of Porphyromonas gingivalis Infection on Healing of Skeletal Muscle Injury: An In Vivo Study Dentistry Journal. 2024.10; 12(11); 346
4. Towithelertkul C, Haraguchi M, Tanabe G, Fujita H, Ali IE, Han X, Sumita YI. Two-piece detachable interlocking mold for low-dose-rate brachytherapy: A dental technique for radiotherapy prosthesis fabrication. J Prosthet Dent. 2024.08; 132(2); 467-472
5. Hiroyuki Ishiyama, Shaoyuan Liu, Akira Nishiyama, Kenji Fueki. Morning headache caused by obstructive sleep apnea misdiagnosed as temporomandibular disorders-related headache: A case report. Journal of Prosthodontics Research. 2024.08;
6. Ozaki, T; Otake, S; Komada, W; Oishi, S; Fueki, K. Effects of immersion in 4-methacryloyloxyethyl trimellitate anhydride/methyl methacrylate-tri-n-butyl borane resin-activated liquid on microtensile bond strength of root canal dentin JOURNAL OF DENTAL SCIENCES. 2024.07; 19(3); 1601-1608
7. Yin, Y; Nozaki, K; Nemoto, R; Saleh, O; Oishi, Y; Matsumura, M; Komada, W; Miura, H; Fueki, K. Marginal fit and retention force of zirconia resin-bonded fixed dental prostheses in the posterior region with different designs JOURNAL OF DENTAL SCIENCES. 2024.07; 19(3); 1587-1594
8. Kondo, D; Komada, W; Oishi, S; Fueki, K. Surface strain at the cervical area and fracture strength of flared root canals reinforced using a zirconia tube and glass-fiber post JOURNAL OF DENTAL SCIENCES. 2024.07; 19(3); 1571-1577
9. Mieko Mizutani-Yoshimura, Saneyuki Mizutani, Naoyuki Uchida, Shuichi Taniguchi, Kenji Fueki. Do oral conditions influence the incidence of bloodstream infection after hematopoietic stem cell transplantation? A retrospective study in Japan. Support Care Cancer. 2024.05; 32(6); 398
10. Chenyuan Li, Takahiro Wada, Yumi Tsuchida, Kairi Hayashi, Gen Tanabe, Toshiaki Ueno, Hiroshi Churei. Optimizing additively manufactured mouthguards: An evaluation of multi-layer materials for improved shock absorption and durability compared to conventionally fabricated samples 2024.03;
11. Daiki Kondo, Wataru Komada, Shinya Oishi, Kenji Fueki. Surface strain at the cervical area and fracture strength of flared root canals reinforced using a zirconia tube and glass-fiber post Journal of Dental Sciences. 2024;
1. Tanabe G, Komazawa Y, Hasunuma T, Togawa K, Hayashi K, Churei H, Moriya N, Yasui T, Ueno T. Assessment of similarity of association between athlete's subjective fatigue and subjective oral-maxillofacial symptoms Journal of Sports Dentistry. 2024.08; 28(1); 14-19
2. Kenji Fueki, Yuta Manabe, Keiichi Sasaki, Mamoru Hashimoto, Katsuhiko Kimoto, Tomohisa Ishikawa, Takayuki Ueda, Kumiko Utsumi, Yoshihiro Kugimiya, Naru Shiraishi, Yuka Abe, Yuka Inamochi, Kazuyoshi Baba, Takuo Kuboki, Manabu Ikeda. A questionnaire study in medical doctors and dentists on correlation between cognitive function and oral function: medical-dental collaboration ECCO project Japanese Journal of Geriatric Psychiatry. 2024.03; 35(3); 283-289

[Books etc]

1. Decision making in abutment tooth selection for fixed/removable prostheses. 2024.06 (ISBN : 978-4-263-46180-8)

[Misc]

1. Eiko Yoshida-Kohn, Kenji Fueki, Amal A Wanigatunga, Thomas K M Cudjoe, Jun Aida. Social Relationships and Tooth Loss in Adults Aged 60 Years and Older: A Systematic Review and Meta-Analysis. *Community Dent Oral Epidemiol.* 2024.10;
2. Yoshihiro Yamaguchi, Kazuhiro Ooi, Hidemichi Yuasa, Akira Nishiyama, Yoshizo Matsuka, Takahiro Abe, Shinpei Matsuda, Yuki Watanabe, Yoshitaka Suzuki, Miki Kashiwagi, Azuma Kosai, Kenichi Sugai, Keika Hoshi, Yasuhiro Ono, Toshihiro Fukazawa, Hidehisa Matsumura, Yuko Fujihara, Hiroyuki Ishiyama. Efficacy of initial conservative treatment options for temporomandibular disorders: A network meta-analysis of randomized clinical trials *Journal of Prosthodontic Research.* 2024.09;
3. Kenji Fueki, Yuta Manabe, Keiichi Sasaki, Katsuhiko Kimoto, Mamoru Hashimoto, Takayuki Ueda, Kumiko Utsumi, Tomohisa Ishikawa, Kazuyoshi Baba, Manabu Ikeda, Takuo Kuboki. Medical-dental collaboration on an exploratory research project on the correlation between cognitive and oral function: The ECCO project. *J Prosthodont Res.* 2024.07;
4. Yuka Inamochi, Yoichiro Ogino, Kae Harada, Kenji Fueki, Yasunori Ayukawa, Masahiro Nishimura, Kenji Maekawa, Youngnam Kang, Toshihiro Hirai, Takuo Kuboki. Do oral care and rehabilitation improve cognitive function? A systematic review of clinical studies *Journal of Evidence-Based Dental Practice.* 2024.03; 24(1); 101948

[Conference Activities & Talks]

1. Fares Raafat Elsayed Mohamed Moustafa, Kenji Fueki, Akira Nishiyama, Hiroyuki Ishiyama. Relationship between TMD-related symptoms and personal computer use, psychosocial factors, and behavioral factors in Japanese working population. The 14th Biennial Congress of the Asian Academy of Prosthodontics 2024.07.06 Chiba City, Chiba Prefecture, Japan
1. Li Yajie, Yuka Inamochi, Tatsuhiko Anzai, Noriyuki Wakabayashi, Kunihiro Takahashi, Kenji Fueki. An Explainable Artificial Intelligence for Designing Removable Partial Denture Framework. The 89th Annual Meeting of the Stomatological Society, Japan 2024.12.07 Institute of Science Tokyo
2. Keisuke Miyazono, Hiroyuki Ishiyama, Akira Nishiyama, Kenji Fueki. Influences of pressure pain threshold and muscle stiffness in masticatory muscles by standardized continuous clenching. 89th Conference of the Stomatological Society, Japan 2024.12.06 Bunkyo-ku, Tokyo
3. M Matsumura, M Matsumura, H Kitazaki, S Baba, K Fueki. A case of improvement by dental approach in a patient with palmoplantar pustulosis and palmoplantar pustulosis osteoarthritis. 15th Annual Meeting of the Japanese Society of Metal-Free Dentistry 2024.12.01
4. Keisuke Miyazono, Hiroyuki Ishiyama, Akira Nishiyama. Influences of pressure pain threshold and muscle stiffness in masticatory muscles by standardized continuous clenching. The 29th Annual Conference of the Japanese Society for Orofacial Pain 2024.11.30 Chiyoda-ku, Tokyo
5. Gen Tanabe, Tetsuya Hasunuma, Kaito Togawa, Yoko Hotta, Kairi Hayashi, Hiroshi Churei, Kei Miyazawa, Noki Moriya, Toshiaki Ueno. Similarity of subjective condition assessment indices during athlete training camps. 35th congress of Japanese society of clinical sports medicine 2024.11.16
6. Hiroshi CHUREI. To Enjoy the Olympic and Paralympic Games More - A closer look at the relationship between dentistry and sports! . 35th congress of Japanese society of clinical sports medicine 2024.11.16 Niigata
7. Liu Shaoyuan, Hiroyuki Ishiyama, Suvichaya Angkulmahasuk, Akira Nishiyama, Kenji Fueki. Effects in mandibular advancement device therapy for obstructive sleep apnea on temporomandibular disorders: A systematic review and meta-analysis. The 23rd Annual Meeting of the Japanese Academy of Dental Sleep Medicine 2024.11.02
8. Thida Aung, Hiroshi Churei, Kairi Hayashi, Kaung Sithu, Chang Liu, YunChia Lian, Kazuyoshi Tsuchiya, Kazuma Sasaki, Gen Tanabe, Toshiaki Ueno. Simultaneous Measurement of Salivary pH Using Sensors at multiple sites in the oral cavity. 35th congress of Japan Academy of Sports Dentistry 2024.10.13
9. Jahan Esha Ishrat, K.Hayashi, H.Churei. A Case of Competition-Induced Injury to Spectator Leading to Severe Wound Myiasis. 35th congress of Japan Academy of Sports Dentistry 2024.10.13

10. Zequn Li, Kairi Hayashi, Qiushuang Zhu, Yunchia Lian, Shintaro Shimizu, GenTanabe, Hiroshi Churei, Toshiaki Ueno. Investigation of the Association between Salivary secretion and Spatial working memory in vivo. 35th congress of Japan Academy of Sports Dentistry 2024.10.13
11. Yoko Ohara, Kairi Hayashi, Gen Tanabe, Hiroshi.Churei, Toshiaki Ueno. Case of nutritional guidance with a sport's nutritionist's corporation for bodybuilder who was suspected "Relative Energy Deficiency in sport (REDs) " during weight loss. 35th congress of Japan Academy of Sports Dentistry 2024.10.13
12. Matsumura M, Matsumura M, Kitazaki H, Baba S, Komada w, Fueki K. A case of improvement by dental approach in a patient with palmoplantar pustulosis and palmoplantar pustulosis osteoarthritis. 2024.08.18
13. Hiroko Kimura. A case of atypical odontalgia and oral dysesthesia repeated tooth extraction and implant. The 39th Annual Meeting of the Japanese Society of Psychosomatic Dentistry 2024.07.19 Matsumoto City
14. Hiroyuki Ishiyama. Effect on temporomandibular disorders in oral appliance therapy for obstructive sleep apnea. The 37th Annual Meeting of the Japanese Society for Temporomandibular Joint 2024.07.15 Tokushima City, Tokushima Prefecture, Japan
15. Suvichaya Angkulmahasuk, Akira Nishiyama, Hiroyuki Ishiyama. Establishment of new test conditions for non-functional masseter muscle activity during wakefulness . The 37th Annual Meeting of the Japanese Society for Temporomandibular Joint 2024.07.15 Tokushima City, Tokushima Prefecture, Japan
16. Mitsuaki Matsumura, Mayuko Matsumura. Current status of dental metal allergies. 2024.07.08
17. Hiroyuki Ishiyama, Akira Nishiyama, Kenji Fueki. Factors influencing QoL in TMD patients - an exploratory study.. The 133rd Annual Meeting of the Japan Prosthodontic Society 2024.07.07 Chiba City, Chiba Prefecture, Japan
18. Li Yajie, Yuka Inamochi, Tatsuhiko Anzai, Kazuki Sakamoto, Eung-Yeol Kim, Hirokazu Sato, Taku Nemoto, Noriyuki Wakabayashi, Kunihiro Takahashi, Kenji Fueki. An Explainable Artificial Intelligence for Designing Removable Partial Denture Framework. The 14th Biennial Congress of the Asian Academy of Prosthodontics 2024.07.06 Makuhari Messe
19. Takita M, Nozaki K, Komada W, Otake S, Fueki K. Enhancement of Bond Strength of Composite Resin to PEEK by UV irradiation. The 133rd Annual Meeting of the Japan Prosthodontic Society 2024.07.06
20. Hiroshi CHUREI, Chenyuan, Takahiro Wada, Yumi Tsuchida, Kairi Hayashi, Gen Tanabe, Toshiaki Ueno. Study to optimize the shock absorption and durability of additive manufacturing 3D mouthguards.. The 133rd Annual Meeting of the Japan Prothodontic Society 2024.07.01
21. Yuka Inamochi, Tatsuhiko Anzai, Toshihiko Takahashi, Kenji Fueki. An Explainable Artificial Intelligence for Designing Removable Partial Denture Framework using Convolutional Neural Network. The 6th Annual Meeting of Japanese Association for Medical Artificial Intelligence 2024.06.21 Nagoya
22. Hiroyuki Ishiyama. The point about differential diseases. The 58th Academic Conference of Japanese Society for Temporomandibular Joint 2024.01.28 Online

[Awards & Honors]

1. Conference Chairman's Excellent Presentation Award, 2024.12

[Social Contribution]

1. Associate editor of Annals of Dentistry University of Malaya, 2019.04 - Now
2. Associate editor of Journal of Prosthodontic Research, the Japan Prosthodontic Society, 2019.07 - Now
3. Representative of Japan Assosiation of Sports Dentistry, 2024.06 - Now

Pulp Biology and Endodontics

Professor:

Takashi OKIJI

Associate Professor:

Nobuyuki KAWASHIMA

Junior Associate Professor:

Satoshi WATANABE, Arata EBIHARA

Assistant Professor:

Kento TAZAWA, Keiichiro MAKI, Shunsuke KIMURA

Specially Appointed Assistant Professor:

Yamato OKADA (April–)

Hospital Staff:

Yasuhiro HOSHIHARA (–March), Yamato OKADA (–March), Satoshi OOMORI (April–), Yuka KASUGA (April–May), Hiroaki MORI (June–), Harutaka KOMAKI, Yoko HOSHINO (–March), Takayuki SUEYOSHI (April–), Mari YOSHIDA (April–)

Graduate Student:

Hiroki OKUDA (–March), Han Peifeng (–March), Moe Sandar Kyaw (–September), Yuka KASUGA (–March), Souta MOCHIDUKI (–March), Nyein Chan Ko (–September), Ryota ITO, Keiko HIRANO, Kazuhisa SATAKE, Yu Ziniu, Wang Shihan, Risako YAMAMOTO, Khaing Nyein Pwint, Ren Chunmei, Kentaro NATORI (–March), Koki TOYODA, Risa OSHIMA, Bai Xiyuan, Phu Yadanar Aung Myint, Alghamdi Faisal Turki A, Masaharu ISHIDORI (April–), Ryuuma SAITO (April–), Kaoru IWAI (April–), Luo Yanshan (April–), Chen Yanyan (April–), Wang Xutong (April–), Junnosuke TAKAHASHI (April–), Le Ngoc Phuong Linh (October–)

Research Student:

Takayuki SUEYOSHI (–March), Kanami NAKANO, Hiroaki MORI (–May), Mari YOSHIDA (–March), Momoyo TAKEZAWA (April–), Reona TOMITA (May–), Zhang Chuhan

(1) Outline

The Department of Pulp Biology and Endodontics provides research, education and patient care on the prevention, diagnosis and treatment of dental pulp and periapical diseases. In order to preserve and well maintain the function of the teeth in the oral cavity, it is important to understand the structural and functional features of the dental pulp and protect this tissue carefully from noxious stimuli. However, pulp diseases, if left untreated, may progress to develop pulp necrosis and apical periodontitis, where meticulous treatment is required to eliminate infection from the complex root canal system. The goal of endodontics is to achieve long term maintenance of tooth function by the prevention and treatment of pulpal and periapical diseases.

(2) Research

1. Biology of dentin/pulp complex and dental pulp tissue regeneration
 - Anti-inflammatory roles of microRNA-146b-5p and microRNA-27a in dental pulp inflammation
2. Root canal cleaning efficacy and safety of Er:YAG laser-assisted root canal irrigation
3. Evaluation and development of bioactive endodontic materials
 - Evaluation of anti-inflammatory and pro-mineralization properties of hydraulic calcium silicate root canal sealers
 - Physical properties of distronium cerate and tristrontium aluminate as new components of hydraulic cements for endodontic use
 - Improvement of the setting properties of mineral trioxide aggregate cements using cellulose nanofibrils
4. Root canal instrumentation using nickel-titanium (NiTi) rotary instruments
 - Effect of preset torque setting on torque/force generation and shaping ability of NiTi rotary instruments in different root canal curvature locations
 - Effect of repetitive up-and-down movements on torque/force generation and shaping ability of NiTi rotary instruments
 - Impact of varying amplitudes of upward and downward motion on the torque/force generation, canal-centering ability, and cyclic fatigue resistance of nickel–titanium

reciprocating instruments

(3) Education

The educational aim of the Department of Pulp Biology and Endodontics is to cultivate students so that they can obtain knowledge and skills required for leading scientists, researchers or practitioners of endodontics. Since recent progress of pulp biology and endodontics is remarkable, the students are educated to acquire the newest knowledge on modern endodontology and its related subjects, such as neuroscience, microbiology, molecular biology, immunology and biomaterial sciences, and are trained to master the newest technology of endodontics. All the students are asked to add new findings to the field of endodontics based on their own original research.

(4) Clinical Services & Other Works

The Department of Pulp Biology and Endodontics is in charge of the Clinic of Operative Dentistry and Endodontics in our Dental Hospital, together with the Department of Cariology & Operative Dentistry, and offers the global standard of care in the treatment of pulpal and periapical diseases to our patients. We provide clinical care in the full spectrum of endodontics including;

- Vital pulp therapy,
- Nonsurgical root canal therapy,
- Root canal retreatment,
- Endodontic microsurgery,
- Internal tooth bleaching, and
- Post-endodontic restoration.

(5) Clinical Performances

The latest development of endodontics is remarkable as seen in root canal instrumentation with super-elastic Ni-Ti rotary files, diagnosis with cone beam computed tomography, and microendodontics by using a surgical operating microscope. In particular, microendodontics has dramatically changed conventional “blind” endodontics into more predictable endodontics since it allows us to obtain accurate diagnostic information and provide precise procedures under an illuminated and magnified view. Also, we seek to provide evidence-based endodontic treatment based on our laboratory and clinical research.

(6) Publications

[Original Articles]

1. Myint PYA, Watanabe S, Chen Y, Saito R, Okiji T. Cleaning efficacy and apical pressure in sonically-activated irrigation systems: impact of tip vertical stroke. *Journal of Dental Sciences*. 2024.12; in press.
2. Xu H, Nozaki K, Yu Z, Kawashima N, Ueno T, Wu H, Wakabayashi N, Surface functionalization of titanium implants with controlled-release glutathione conjugate for antioxidant and osteogenesis. *Journal of Materials Research and Technology*, 2024. 12; in press.
3. Watanabe S, Yabumoto S, Ikeda S, Okiji T. Evaluation of root and root canal morphology in maxillary first molar teeth: a cone-beam computed tomography study using two classification systems in a Japanese population. *Journal of Dental Sciences*. 2024.12; in press.
4. Hirano K, Kimura S, Maki K, Omori S, Ebihara A, Okiji T. Impact of varying amplitudes of upward and downward motion on the torque/force generation, canal-centering ability, and cyclic fatigue resistance of nickel-titanium reciprocating instrument. *Applied Sciences*. 2024.12; 15(1); 288.
5. Satake K, Shimogishi M, Watanabe T, Watanabe S, Okiji T. Homogeneity and heterogeneity of microbiota among intraradicular and extraradicular sites in terms of bacterial composition in teeth with post-treatment apical periodontitis. *The Journal of the Stomatological Society, Japan*. 2024.11; in press.
6. Ito R, Watanabe S, Satake K, Saito R, Okiji T. Accuracy and efficiency of the surgical-guide-assisted fiber post removal technique for anterior teeth: an ex vivo study. *Dentistry Journal*. 2024.10; 12(10); 333.
7. Watanabe S, Yabumoto S, Okiji T. Evaluation of root and root canal morphology in maxillary premolar teeth: a cone-beam computed tomography study using two classification systems in a Japanese population. *Journal of Dental Sciences*. 2024.09; in press.
8. Wang S, Kawashima N, Han P, Nara SK, Yu Z, Tazawa K, Fujii M, Kieu TQ, Okiji T. MicroRNA-27a-5p downregulates expression of proinflammatory cytokines in lipopolysaccharide-stimulated human dental pulp cells via the NF- κ B signaling pathway. *International Journal of Molecular Sciences*. 2024.09; 25; 9694.
9. Chen Y, Watanabe S, Myint PYA, Mochizuki S, Okiji T. Comparisons of the smear layer removal efficacy of dual-action irrigants and different activation techniques. *Journal of Dental Sciences*. 2024.09; in press.

10. Ko NC, Noda S, Okada Y, Tazawa K, Kawashima N, Okiji T. Biocompatibility and pro-mineralization effects of premixed calcium silicate-based materials on human dental pulp stem cells: An in vitro and in vivo study. *Dental Materials Journal*. 2024.09; 43(5); 729-737.
11. Kawashima N, Okiji T. Characteristics of inflammatory mediators in dental pulp inflammation and the potential for their control. *Frontiers in Dental Medicine*. 2024.08; 5; 1426887.
12. Mochizuki S, Watanabe S, Liu J, Okiji T. Smear layer removal efficacy of different irrigation techniques in conservatively instrumented root canals. *Journal of Dental Sciences*. 2024.07; 19(3); 1546-1553.
13. Myint PYA, Watanabe S, Okiji T. Comparative effectiveness of different Er:YAG laser-activated irrigation systems on removing calcium hydroxide from simulated internal root resorption cavities at different root levels. *Photobiomodulation, Photomedicine, and Laser Surgery*. 2024.07; 42(7); 480-487.
14. Kyaw MS, Ebihara A, Iino Y, Thu M, Maki K, Kimura S, Htun PH, Okiji T. Effect of repetitive up-and-down movements on torque/force generation, surface defects and shaping ability of nickel-titanium rotary instruments: An ex vivo study. *BMC Oral Health*. 2024.07; 24; 986.
15. Kimura S, Ebihara A, Maki K, Kyaw MS, Kasuga Y, Omori S, Okiji T. Phase transformation behavior and mechanical properties of HyFlex EDM nickel-titanium endodontic rotary instrument: Evaluation at body temperature. *Journal of Dental Sciences*. 2024. 04; 19(2); 929-936.
16. Ito R, Watanabe S, Kouno A, Yamauchi S, Okiji T. Heat-induced changes in the physical properties of a new premixed calcium silicate-containing root canal sealer: An in vitro study. *Dentistry Journal*. 2024.04; 12(4); 106.
17. Kyaw MS, Ebihara A, Thu M, Maki K, Kimura S, Htun PH, Okiji T. Effect of preset torque setting on torque/force generation, shaping ability and surface changes of nickel titanium rotary instrument in different root canal curvature locations: an ex vivo study. *Dental Materials Journal*. 2024.03; 43(3); 329-337.
18. Han P, Sunada-Nara K, Kawashima N, Fujii M, Wang S, Kieu TQ, Yu Z, Okiji T. Correction: Han et al. MicroRNA-146b-5p Suppresses Pro-Inflammatory Mediator Synthesis via Targeting TRAF6, IRAK1, and RELA in Lipopolysaccharide-Stimulated Human Dental Pulp Cells. *Int. J. Mol. Sci.* 2023, 24, 7433. *International Journal of Molecular Sciences*. 2024.02; 25(4); 2049.
19. Jin C, Adachi N, Yoshimoto Y, Sasabuchi A, Kawashima N, Masato-Ota S, Iseki S. Fibroblast growth factor signalling regulates the development of tooth root. *Journal of Anatomy*. 2024.01; 244(6); 1067-1077.

20. Okuda H, Inada M, Konishi T, Kawashima N, Wada T, Okiji T, Uo M. Improvement of the setting properties of mineral trioxide aggregate cements using cellulose nanofibrils. *Dental Materials Journal*. 2024.01; 43(1); 106-111.
21. Watanabe S, Okiji T. Management of iatrogenic events in endodontics. *The Journal of Japan Endodontic Association*. 2024.01; 45 (1); 22-33.

[Books etc]

1. Suzuki M, Okiji T, Tsujimoto K, Kitamura K. *Micro Dentistry YEARBOOK 2024*. 2024.04 (ISBN: 978-4-7812-1001-8)
2. Han L, Okiji T. *Hypersensitive Dentin*. Ishiyaku Publishers, 2024.02 (ISBN: 978-4-263-44697-3)
3. Okiji, T. *Oral Histology and Embryology*. Ishiyaku Publishing, 2024.01 (ISBN: 978-4-263-45676-7)

[Misc]

1. Yoshida M, Maki K, Okiji T. Predictors of periapical bone healing associated with teeth having large periapical lesions following nonsurgical root canal treatment or retreatment: A cone beam computed tomography-based retrospective study. *The Hippo Dental Review*. 2024.09; 84(9); 142-143.
2. Nakano K, Watanabe S, Okiji T. Outcome of selective root canal retreatment-A retrospective study. *The Quintessence*. 2024.08; 43(8); 211-213.
3. Okiji T. Updates on root canal obturation *The Journal of the Japan Dental Association*. 2024.04; 77(4 appendix); 16-20.
4. Saito R, Watanabe S, Okiji T. What ultimately matters in root canal treatment success and tooth preservation: A 25-year cohort study. *The Quintessence*. 2024.01; 43(1); 212-214

[Conference Activities & Talks]

1. Maki K, Kasuga Y, Omori S, Ebihara A, Okiji T. Evaluation of the effectiveness of Nickel-Titanium rotary instruments in root canal instrumentation by undergraduate students. *The 89th Meeting of the Stomatological Society, Japan*. 2024.12.07 Tokyo.
2. Bai X, Kawashima N, Okiji T. Anti-inflammatory effects of hypoxia-induced microRNA-210 in lipopolysaccharide-stimulated human dental pulp cells. *The 89th Meeting of the Stomatological Society, Japan*. 2024.12.07 Tokyo.
3. Myint PYA, Watanabe S, Chen Y, Saito R, Okiji T. Comparison of cleaning efficacy of sonically-activated irrigation systems and the effect of tip vertical strokes on cleaning efficacy and safety. *The 161st Meeting of the Japanese Society of Conservative Dentistry*. 2024.11.22

Himeji.

4. Chen Y, Watanabe S, Myint PYA, Mochizuki S, Okiji T. Comparisons of the smear layer removal efficacy of dual-action irrigants and different activation techniques. The 161st Meeting of the Japanese Society of Conservative Dentistry. 2024.11.21 Himeji, Kobe
5. Watanabe S. Current trends and advances in laser-activated irrigation (LAI) on root canal cleaning efficacy and safety. The 12th Annual Meeting of Taiwan Academy of Laser in Dentistry. 2024.11.10 Taipei, Taiwan
6. Kawashima N, Okiji T. Complicated microRNA world; microRNAs as essential regulators of pulpal inflammation and osteo-/odontoblastic differentiation. 14th IFEA World Endodontic Congress. 2024.09.14 Glasgow, Scotland
7. Ren C, Tazawa K, Kawashima N, Okiji T. Metformin down-regulates alveolar bone destruction in experimentally-induced mice periapical lesions. TMDU-SPRING Retreat 2024. 2024.09.11 Hamamatsu
8. Khaing N P, Kawashima N, Okiji T. Effect of LPS stimulation on osteogenic differentiation of dense cultured human dental pulp stem cell. The 45th Annual Scientific Meeting of Japan Endodontic Association. 2024.07.20 Osaka
9. Ren C, Tazawa K, Kawashima N, Okiji T. Metformin down-regulates alveolar bone destruction in experimentally-induced mice periapical lesions. The 45th Annual Scientific Meeting of Japan Endodontic Association. 2024.07.20 Osaka
10. Maki K, Ebihara A, Okiji T. Effect of downward loads on torque and force generation and shaping ability of differently heat-treated nickel-titanium rotary instruments. AAE annual meeting. 2024.04.17 Los Angels
11. Okiji, T. Vital pulp therapy: Biological basis and clinical evidence. Essential updates on operative dentistry and endodontics. 2024.01.29 Bangkok, Thailand
12. Okiji T. 40 years in endodontics. 89th Scientific Meeting of the Stomatological Society, Japan. 2024.12.06 Tokyo
13. Kimura F, Mikami R, Mizutani K, Watanabe S, Iwata T. Prognostic assessment of tooth survival for endo-periodontal lesion: A retrospective study. The 161st Meeting of the Japanese Society of Conservative Dentistry. 2024.11.21 Himeji
14. Ishidori M, Kawashima N, Uo M, Okiji T. Evaluation of physical properties of portland cement added with distrontium cerate. The 161st Meeting of the Japanese Society of Conservative Dentistry. 2024.11.21 Himeji
15. Okada Y, Kawashima N, Tazawa K, Noda S, Ko NC, Ohshima R, Ishidori M, Okiji T. Effect of concentrated growth factor extracts on the proliferation of rat dental pulp cells. The 161st Meeting of the Japanese Society of Conservative Dentistry. 2024.11.21 Himeji
16. Tazawa K, Okiji T. Minimally invasive root canal treatment and direct composite veneer

restoration in a case of dens invaginatus with crown malformation. The 161st Meeting of the Japanese Society of Conservative Dentistry. 2024.11.21 Himeji

17. Ohshima R, Quispe-Salcedo A, Ohshima H, Kawashima N, Okiji T. Osteopontin deficiency abrogates the reparative dentin formation after direct pulp capping with mineral trioxide aggregate. The 66th Annual Meeting of Japanese Association for Biology. 2024.11.03 Nagasaki

18. Saito R, Watanabe S, Okiji T. Generation of apical pressure during root canal irrigation activated by an Er:YAG laser -Effect of different laser devices and pulse widths-. The 36th Annual Meeting of Japanese Society for Laser Dentistry 2024.10.19 Nagoya

19. Noritake K, Tsuruta J, Mizutani K, Kondo K, Suzuki H, Adachi N, Seki N, Mikami R, Kabasawa Y, Ebihara A, Hideshima M, Nitta H. Overview and effectiveness of interprofessional education in clinical practicum at TMDU school of dentistry. The 56th Annual Meeting of the Japan Society for Medical Education. 2024.08.09 Tokyo

20. Okiji, T. Current trends in endodontics. Special Lecture, Fuji Dental Association 2024.07.27 Fuji

21. Ito R, Watanabe S, Satake K, Saito R, Okiji T. Accuracy and efficiency of fiber post removal using surgical guides: An ex vivo study. The 45th Annual Scientific Meeting of Japan Endodontic Association. 2024.07.21 Osaka

22. Ohshima R, Watanabe S, Okiji T. Endodontic treatment of a mandibular first molar with four root canals in a distal root: A case report. The 45th Annual Meeting of Japan Endodontic Association. 2024.07.21 Osaka

23. Toyoda K, Kimura S, Maki K, Omori S, Kasuga Y, Hirano K, Yamamoto R, Ebihara A, Okiji T. Evaluation of mechanical properties of a NiTi rotary retreatment instrument, HyFlex Retreatment. The 45th Annual Scientific Meeting of Japan Endodontic Association. 2024.07.20 Osaka

24. Toyoda K et.al. Evaluation of mechanical properties of a NiTi rotary retreatment instrument, HyFlex Retreatment. The 45th Annual Scientific Meeting of Japan Endodontic Association. 2024.07.20 Osaka

25. Okiji T. Endodontic management of luxated and avulsed teeth. Clinical Workshop, Japan Association of Dental Traumatology. 2024.07.07 Tokyo

26. Maki K, Okiji T. The significance of dental operating microscope in periapical surgery: Managing iatrogenic complications and complex root canal morphologies in a case of mandibular first molar. 20th Annual Meeting of Japanese Association of Microscopic Dentistry 2024.06.02 Tokyo

27. Okiji T. Endodontic management of traumatized immature teeth. Clinical Workshop, Japan Association of Dental Traumatology 2024.05.26 Matsudo

28. Yamamoto R, Maki K, Kimura S, Omori S, Kasuga Y, Hirano K, Ebihara A, Okiji T. Effect of pre-cooling of nickel-titanium rotary instruments on dynamic cyclic fatigue resistance. The 160th Meeting of the Japanese Society of Conservative Dentistry. 2024.05.17 Sendai
29. Nakano K, Maki K, Toyoda K, Yamamoto R, Hirano K, Kasuga Y, Omori S, Ebihara A, Okiji T. Influence of different shaping techniques on nickel-titanium rotary instrumentation performed by inexperienced operators. The 160th Meeting of the Japanese Society of Conservative Dentistry. 2024.05.17 Sendai
30. Toyoda K, Kimura S, Maki K, Omori S, Kasuga Y, Hirano K, Yamamoto R, Ebihara A, Okiji T. Effects of alternative rotation technique mode on cyclic fatigue resistance of nickel-titanium rotary instruments. The 160th Meeting of the Japanese Society of Conservative Dentistry. 2024.05.17 Sendai
31. Watanabe S. Evidence based Endodontics Update and First step of endodontic microsurgery. Atsugi city dental association. 2024.03.14 Kanagawa

[Awards & Honors]

1. Maki K. Kensaku Suzuki Award, Kanto Endodontic Meeting, 2024. 01
2. Ito R. The 45th Annual Scientific Meeting of Japan Endodontic Association Excellence Presentation Award, The 45th Annual Scientific Meeting of Japan Endodontic Association, 2024.07
3. Saito R. The 36th Annual Scientific Meeting of Japanese Society for Laser Dentistry Excellence Presentation Award, The 36th Annual Scientific Meeting of Japanese Society for Laser Dentistry, 2024.10

Department of Regenerative and Reconstructive Dental Medicine

Professor
Eriko MARUKAWA

Assistant Professor
Hidemi NAKATA, Masahiro SHIMOGISHI, Maiko YAMAMOTO, Masaki SHIBASAKI

Specially Appointed Assistant Professor
Mika TSUNO

Clinical Fellow
Kaori YOKOTA, Akihiro TAKAHASHI, Tomoya KUBOUCHI, Konosuke TOYAMA,
Rei WAKUTA, Masataka SATO, Taishun KOKUBUN, Wakana ADACHI, Shiori KATO,
Motohiro OGURA, Masahiko TERAUCHI

(1) Outline

Prosthetic treatment with dental implants (dental implant treatment) is very effective. We are conducting researches and educations of clinical procedures, materials and tissue regeneration related to dental implant treatment. In addition, we are treating patients with dental implants in the university dental hospital.

(2) Research

We conducted the following studies: Development of bone substitute stimulating bone formation, development of implant surface stimulating bone formation and preventing infection, analysis of pathological oral microbiota specific to peri-implant diseases, treatment of peri-implant diseases based on electrobacteriology.

(3) Education

We gave lectures about basic knowledge necessary for implant treatment to dental students. Dental students also practiced treatment planning using computer software and real patient data. In dental implant clinic, dental students also learned every step of dental implant treatment: Examinations, implant placement surgery and bone augmentation, prosthetic treatment and maintenance. We also gave lectures about advanced knowledge of dental implant treatment and regenerative medicine to post-graduate students.

(4) Lectures & Courses

Acquire basic knowledge and an attitude of thinking continuously.

(5) Clinical Services & Other Works

In dental implant clinic we treated patients who missed teeth, with dental implants recovering aesthetics and functions. We further observed and followed these patients after the treatments (Maintenance Procedure).

(6) Clinical Performances

In dental implant clinic in IST, the number of clinical cases of dental implant treatments is the most in 29 dental schools in Japan. Difficult cases of dental implant treatments in other hospitals and clinics and problem cases, which have been treated by other dentists, are increasing. We can handle most of these difficult and problem cases.

(7) Publications

[Original Articles]

1. Miyake, R; Shimabukuro, M; Terauchi, M; Marukawa, E; Kawashita, M. Amorphous Magnesium Coating for Achieving Functional Changes from Antibacterial to Osteogenic Activities ACS APPLIED BIO MATERIALS. 2024.12; 7(12); 8565-8572
2. Thoma, D; Gil, A; de Bruyckere, T; Jung, RE; Fukuba, S; Ickroth, A; Strauss, FJ; Cosyn, J. Early implant placement versus ridge preservation and delayed implant placement: Analysis of profilometric, clinician- and patient-reported outcomes from a two-centre RCT CLINICAL ORAL IMPLANTS RESEARCH. 2024.07; 35(11); 1382-1393
3. Wang, TY; Nakata, H; Shen, B; Jiao, ZY; Yokota, K; Kuroda, S; Kasugai, S; Marukawa, E. Involvement of miR-199a-5p-loaded mesoporous silica nanoparticlepolyethyleneimine-KALA in osteogenic differentiation JOURNAL OF DENTAL SCIENCES. 2024.07; 19(3); 1506-1514
4. Okada Munehiro, Fukuba Shunsuke, Yamaki Daichi, Iwata Takanori. Clinical outcomes of guided tissue regeneration with carbonate apatite granules and poly(lactic acid/caprolactone) membrane for the treatment of intrabony defects and mandibular Class II furcation involvements: A 12-month prospective pilot clinical study(タイトル和訳中) Regenerative Therapy. 2024.06; 26; 767-774
5. Reziwanguli Aili, Hidemi Nakata, Munemitsu Miyasaka, Shinji Kuroda, Yukihiro Tamura, Taishi Yokoi, Masakazu Kawashita, Yasushi Shimada, Shohei Kasugai, Eriko Marukawa. Evaluation of a hydroxyapatite-crosslinked fish gelatin membranes. J Dent Sci. 2024.04; 19(2); 900-908
6. Jingyang Kang, Masaki Shibasaki, Masahiko Terauchi, Narumi Oshibe, Katsuya Hyodo, Eriko Marukawa. . Comparative analysis of the in vivo kinetic properties of various bone substitutes filled into a peri-implant canine defect model Journal of Periodontal & Implant Science. 2024.04; 54(2); 96-107
7. Yamaki D, Fukuba S, Okada M, Takeuchi S, Hoshi S, Matsuura T, Iwata T. Octacalcium phosphate collagen composite for periodontal regeneration in a canine one-wall intrabony defect. Journal of periodontal research. 2024.02;
8. Tianyue Wang, Hidemi Nakata, Bing Shen, Ziyang Jiao, Kaori Yokota, Shinji Kuroda, Shohei Kasugai, Eriko Marukawa. Involvement of miR-199a-5p-loaded mesoporous silica nanoparticle-polyethyleneimine-KALA in osteogenic differentiation Journal of Dental Sciences. 2024.02;
9. Tomohiro Ishikawa, Shunsuke Fukuba. Esthetic management of anterior implants in advanced periodontal defects. Int J Esthet Dent. 2024.01; 19(1); 60-73
10. Shunsuke Fukuba, Yudai Ogawa, Franz J Strauss, Hiroyuki Saida, Daniel Thoma, Akira Aoki, Takanori Iwata. The Apical Tooth Replantation with Surgical Intrusion Technique (ATR-SIT) for Regenerative Treatment of Hopeless Teeth: A Report of Two Cases. Int J Periodontics Restorative Dent. 2024.01; 0(0); 1-27

[Conference Activities & Talks]

1. Mariko Mukai, Maiko Iwaki, Tamaki Hada, Chun Wei Chang, Masahiro Shimogishi, Eriko Marukawa, Yudai Asai, Masaomi Kanauchi, Yasuo Morinaga, Ayaka Kohama, Yuriko Komagamine, Manabu Kanazawa. Development of database for dental implant surgery using MR devices.. IADR Japanese Division 72nd Annual Meeting 2024.11.15 Kagoshima
2. Risa Miyake, Masaya Shimabukuro, Masahiko Terauchi, Masakazu Kawashita, Eriko Marukawa . Biodegradable Mg Coating for Dental Implant Facilitating Antibacterial Activity and Bone Formation. European Association for Osseointegration Annual Congress 2024 2024.10.24

3. Shunsuke Fukuba. Clinical performance of carbonate apatite and poly(lactic acid/caprolactone) bilayer membrane in periodontal regeneration. CED/NOF-IADR 2024.09.12 Geneva, Switzerland
4. Shunsuke Fukuba, Yudai Ogawa. Apical tooth replantation with surgical root intrusion technique for the treatment of hopeless teeth with severe endo-periodontal lesions, pathologic tooth migration, and gingival recession.. 第 22 回国際外傷歯学会 2024.07.12 東京、日本
5. R. Miyake, M. Shimabukuro, E. Marukawa, M. Kawashita. BIODEGRADABLE COATING CONSISTING OF Mg AND Ca FOR ENHANCING BOTH ANTIBACTERIAL ACTIVITY AND OSTEOGENESIS. Biomaterials International 2024 2024.07.02 Bangkok, Thailand
6. OGURA M, MARUKAWA E, TENGGER K, SHIBASAKI M, SHIMOGISHI M. Optimal design for implant treatment on mandibular posterior free end defects based on cases followed-up for more than 4 years.. FDCU International Symposium 2024 2024.05.20
7. Eriko Marukawa. Our Latest Bone Regeneration and Dental Implant Treatment. FDCU International Symposium 2024 2024.05.20
8. Shunsuke Fukuba, Jan Cosyn, Franz, Strauss, Qxelle Ickroth, Alfonso Gil, Thomas de Bruyckere, Ronald Jung, Daniel Thoma. Clinician- and patient-reported outcomes of a multi-center randomized controlled study comparing early implant placement and delayed implant placement following alveolar ridge preservation. ITI World Symposium Singapore 2024.05.09 Singapore

[Awards & Honors]

1. Best poster award, Biomaterials International 2024, 2024.07

Department of Oral Devices and Materials

Professor

Masanao INOKOSHI

Associate Professor

Kyohei OKUBO

Assistant Professor

Tamaki HADA (Department of Masticatory Function and Health Science)

Graduate Student

Kaiqi XU (Department of Gerodontology and Oral Rehabilitation)

Miho KIKUTA (Department of Gerodontology and Oral Rehabilitation)

Akiho SUNAMI (Department of Gerodontology and Oral Rehabilitation)

Okkar Kyaw (Department of Gerodontology and Oral Rehabilitation)

Risa IWASE (Department of Gerodontology and Oral Rehabilitation)

Bohua WANG (Department of Gerodontology and Oral Rehabilitation)

Thein Soe (Department of Gerodontology and Oral Rehabilitation)

Yibing LU (Department of Gerodontology and Oral Rehabilitation)

Graduate Research Student

Menghui YANG

Ziyang QIN (Department of Gerodontology and Oral Rehabilitation)

Adjunct Lecturer

Takafumi OTOMARU

(1) Outline

The Department of Oral Devices and Materials is a newly established department as of 2024. We are responsible for the Oral Devices and Materials Division at the Oral Science Center, focusing on the development, evaluation, and societal implementation of dental devices and new dental and biomaterials. Our aim is to advance oral science research in collaboration not only with dentistry and medicine but also with the fields of science and engineering, other research institutions, companies, and international research organizations.

(2) Research

In the Department of Oral Devices and Materials, we focus on two main themes:

The development of devices for evaluating the oral environment and oral functions, and the development of novel dental materials. For both themes, we aim for proactive social implementation.

(1) Development of Devices for Evaluating the Oral Environment and Oral Functions

1-1 Development of devices capable of evaluating oral functions, such as oral hypofunction

1-2 Development of devices capable of assessing occlusal force and masticatory ability

(2) Development of Novel Dental Materials

- 2-1 Pioneering research on dental ceramics and zirconia
- 2-2 Research on dental polymer materials
- 2-3 Research on bioactive materials
- 2-4 Clinical research on novel dental materials
- 2-5 Simulation analysis related to novel dental materials and dental treatment techniques

(3) Publications

[Original Articles]

1. Li X, Liang S, Inokoshi M, Zhao S, Hong G, Yao C, Huang C. Different surface treatments and adhesive monomers for zirconia-resin bonds: A systematic review and network meta-analysis. *Jpn Dent Sci Rev.* 2024.12; 60; 175-189
2. Okkar Kyaw, Inokoshi M, Kanazawa M. Tribological aspects of enamel wear caused by zirconia and lithium disilicate: A meta-narrative review. *Jpn Dent Sci Rev.* 2024.12; 60; 258-270
3. Adira Nofeadri Ryofi, Kyohei Okubo, Yoshitaka Kitamoto. Magnetically Hydrodynamic Behavior of Magnetoliposomes Designed for Liquid-Based Biomolecular Sensing Proceedings of 2024 Powder Metallurgy World Congress & Exhibition (WORLD PM2024). 2024.12; 707-714
4. Keyu Qi, Tamaki Hada, Xiangyu Ren, Maiko Iwaki, Shunsuke Minakuchi, Manabu Kanazawa. Effects of different 3Y-TZP nanoparticle concentrations on reinforcing mechanical properties of 3D-printed resin using stereolithography technology. *Journal of Prosthodontics.* 2024.11;
5. Otomaru T, Sumita YI. A digital duplicating obturator with 3D printing technology. *Int J Maxillofac Prosthetics.* 2024.11; 7(1); 16-19
6. Kitahara S, Shimizu S, Takagaki T, Inokoshi M, Abdou A, Burrow MF, Nikaido T. Dentin bonding durability of four different recently introduced self-etch adhesives. *Materials (Basel).* 2024.08; 17; 4296
7. Wibias Muliawan, Kyohei Okubo, Yoshitaka Kitamoto. Effect of interparticle and inter-cluster dipole–dipole interactions on dynamic behavior of superparamagnetic iron oxide nanoparticles modified with citric acid *Journal of Applied Physics.* 2024.08; 136(7); 073903
8. Tonprasong W, Inokoshi M, Tamura M, Yoshihara K, Takahashi R, Nozaki K, Wada T, Minakuchi S. Does dental material type influence bacterial adhesion under the same polishing conditions? Direct observation using a fluorescent staining technique: An in vitro study. *Dent Mater J.* 2024.07; 43(4); 485-494
9. Masakazu Umezawa, Hikaru Haraguchi, Gaku Sugawara, Konosuke Sato, Hiroyuki Kurahashi, Teiji Oda, Kyohei Okubo, Kohei Soga. Temperature imaging inside fluid devices using a ratiometric near infrared (NIR-II/III) fluorescent Y2O3: Nd3+, Yb3+, Er3+ nanothermometer *Analytical Sciences.* 2024.04; 40(7); 1323-1330
10. Onuma H, Inokoshi M, Xu K, Minakuchi S. Fracture strength of porcelain veneer on surface-treated zirconia. *Dent Mater J.* 2024.03; 43(2); 263-268
11. Katada H, Inokoshi M, Kamijo S, Liu H, Xu K, Kawashita M, Yokoi T, Shimabukuro M, Minakuchi S. Effects of multiple firings on the translucency, crystalline phase, and mechanical strength of highly translucent zirconia. *Dent Mater J.* 2024.03; 43(2); 294-302
12. Ryodai Fukushima, Toshihiro Takamatsu, Konosuke Sato, Kyohei Okubo, Masakazu Umezawa, Nobuhiro Takeshita, Hiro Hasegawa, Hideo Yokota, Kohei Soga, Hiroshi Takemura. Non-invasive imaging of exposed nerves in vivo with near-infrared hyperspectral laparoscopic devices Proceedings of SPIE Medical Imaging 2024: Image-Guided Procedures, Robotic Interventions, and Modeling. 2024.03; 12928; 129281X
13. Hiroyuki Kurahashi, Masakazu Umezawa, Kyohei Okubo, Kohei Soga. Pixel Screening in Lifetime-Based Temperature Mapping Using β -NaYF4:Nd3+,Yb3+ by Time-Gated Near-Infrared Fluorescence Imaging on Deep Tissue in Live Mice *ACS Applied Bio Materials.* 2024.03; 7(6); 3821-3827
14. Li M, Huang S, Willems E, Soete J, Inokoshi M, Van Meerbeek B, Vleugels J, Zhang F. UV-Curing Assisted Direct Ink Writing of Dense, Crack-Free, and High-Performance Zirconia-Based Composites With Aligned Alumina Platelets. *Adv Mater.* 2024.02; 36(5); e2306764

15. Hada T, Komagamine Y, Kanazawa M, Minakuchi S. Fabrication of sports mouthguards using a semi-digital workflow with 4D-printing technology. *J Prosthodont Res.* 2024.01; 68(1); 181-185
16. Iwaki M, Kanazawa M, Soeda Y, Hada T, Komagamine Y, Minakuchi S. Effect of digital complete dentures manufactured using the custom disk method on masticatory function *Heliyon.* 2024.01; 10(1); 1-11
17. Namano S, Kanazawa M, Katheng A, Trang BNH, Hada T, Komagamine Y, Iwaki M, Minakuchi S. . Effect of support structures on the trueness and precision of 3D printing dentures: An in vitro study. *J Prosthodont Res.* 2024.01; 68; 114-121
18. Ryodai Fukushima, Toshihiro Takamatsu, Kounosuke Sato, Abian Hernandez-Guedes, Gustavo M. Callico, Kyohei Okubo, Masakazu Umezawa, Hideo Yokota, Kohei Soga, Hiroshi Takemura. Detection of Exposed Nerves in Two Individuals In Vivo and Unexposed Nerves Ex Vivo with Near-Infrared Hyperspectral Laparoscope 2024 IEEE/SICE International Symposium on System Integration (SII). 2024.01; 19-24

[Misc]

1. Inokoshi M. Bonding strategy for dental zirconia ceramics: stories about ceramic material research. *Adhesive Dentistry.* 2024.12; 42(4); 131-134
2. Inokoshi M. Features and bonding strategies of dental zirconia. *The Journal of the Japanese Society for Dental Materials and Devices.* 2024.05; 43(2); 79-82

[Conference Activities & Talks]

1. Okkar Kyaw, Inokoshi M, Kanazawa M. Fracture toughness evaluation of zirconia ceramics through multiple in silico chevron-notch beam models. 89th Conference of the Stomatological Society 2024.12.06 Tokyo
2. Inokoshi M. Overview and future perspectives of dental zirconia research. RWTH - Science Tokyo Joint Workshop on "TransMedMat" 2024.12.03 Aachen
3. Mariko Mukai, Maiko Iwaki, Tamaki Hada, Chun Wei Chang, Masahiro Shimogishi, Eriko Marukawa, Yudai Asai, Masaomi Kanauchi, Yasuo Morinaga, Ayaka Kohama, Yuriko Komagamine, Manabu Kanazawa. Development of database for dental implant surgery using MR devices.. IADR Japanese Division 72nd Annual Meeting 2024.11.15 Kagoshima
4. Okkar Kyaw, Inokoshi M, Yamaguchi S, Kanazawa M. In silico analysis of cantilevered resin-bonded fixed dental prostheses. *Academy of Dental Materials* 2024 2024.10.05 Turin
5. Inokoshi M. Current status and future prospects of S-PRG filler-containing dental materials in geriatric dentistry. *Academy of Dental Materials* 2024 2024.10.04 Turin
6. Sunami A, Inokoshi M, Tamura M, Takahashi R, Kanazawa M. Shear bond strength of relining material containing nano S-PRG filler. *Academy of Dental Materials* 2024 2024.10.03 Turin
7. Iwase R, Inokoshi M, Nakai H, Yoshihara K, Kanazawa M. Grain size distribution of machinable fully-sintered dental zirconia. *Academy of Dental Materials* 2024 2024.10.03 Turin
8. Kikuta M, Inokoshi M, Yamamoto M, Kanazawa M. Curing time evaluation of 4-META/MMA-TBB resin as restorative materials. *Academy of Dental Materials* 2024 2024.10.03 Turin
9. Inokoshi M. Impact of S-PRG filler-containing dental materials. The 133rd Annual Meeting of the Japan Prosthodontic Society / The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.07 hybrid (web, Makuhari)
10. Okkar Kyaw, Inokoshi M, Yamaguchi S, Minakuchi S. In silico nonlinear dynamic finite element analysis for the evaluation of fracture toughness in zirconia ceramics. The 133rd Annual Meeting of the Japan Prosthodontic Society / The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.07 hybrid (web, Makuhari)
11. Sunami A, Inokoshi M, Tamura M, Takahashi R, Hatano K, Minakuchi S. Shear bond strength to denture base resin of novel hard relining material containing S-PRG filler. The 133rd Annual Meeting of the Japan Prosthodontic Society / The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.07 hybrid (web, Makuhari)

12. Iwase R, Inokoshi M, Okkar Kyaw, Wang B, Minakuchi S. Basic properties of machinable fully-sintered dental zirconia. The 133rd Annual Meeting of the Japan Prosthodontic Society / The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.07 hybrid (web, Makuhari)
13. Nakai H, Inokoshi M, Katada H, Iwase R, Okkar Kyaw, Minakuchi S. Evaluation of extra-high translucent zirconia: translucency, crystalline phase, mechanical properties. The 133rd Annual Meeting of the Japan Prosthodontic Society / The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.07 hybrid (web, Makuhari)
14. Nguyen Thi Khanh An, Tamaki Hada, Maiko Iwaki, Shunsuke Minakuchi, Manabu Kanazawa. Effect of different surface treatments on the bond strength between light-cure hard chairside relining material and CAD/CAM milled denture base material. The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.07 Chiba
15. Otomaru T, Sumita YI. A digital duplicating obturator with 3D printing technology. The 133rd Annual Meeting of the Japan Prosthodontic Society / The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.07 Makuhari Messe (Chiba, Japan)
16. Ren Xiangyu, Tamaki Hada, Keyu Qi, Maiko Iwaki, Motohiro Uo, Shunsuke Minakuchi, Manabu Kanazawa. Enhancing mechanical properties of photopolymer denture base resins by the incorporation of cellulose nanofibers (CNF). The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.06 Chiba
17. Wang B, Inokoshi M, Katagiri S, Ohsugi Y, Lin P, Nakai H, Iwata T, Minakuchi S, Kanazawa M. Determination of the optimal cell density for immunofluorescence observation of MC3T3-E1 cells on zirconia. The 89th annual meeting and scientific session of the Pacific Coast Society for Prosthodontics 2024.06.21 Monterey
18. Xu K, Inokoshi M, Yoshihara K, Kakehata M, Yashiro H, Takahashi R, Yamamoto M, Ikeda M, Minakuchi S. Bonding efficacy to femtosecond laser irradiated highly translucent zirconia ceramic. 102nd General Session & Exhibition of the IADR 2024.03.16 New Orleans
19. Roubing Ha, Tamaki Hada, Yumika Soeda, Motohiro Uo, Manabu Kanazawa. Effect of build orientation on the mechanical and surface properties of FDM fabricated PEEK RPD framework. International Association for Dental Research; IADR 2024.03.13 New Orleans
20. Qi K, Hada T, Ren X, Iwaki M, Minakuchi S, Kanazawa M. Evaluation of mechanical properties and degree of conversion modified 3Y-TZP nanoparticles reinforced stereolithography resin by using different post-polymerization conditions. The 8th Biennial Joint Congress of JPS-CPS-KAP 2024.03.05 China
21. Roubing Ha, Tamaki Hada, Chunwei Chang, Yumika Soeda, Motohiro Uo, Manabu Kanazawa. Effect of build orientation on the flexural properties and surface hardness of RPD PEEK framework fabricated by FDM. The 8th Biennial Joint Congress of JPS-CPS-KAP 2024.03.05
22. Inokoshi M. Potential of lithium disilicate and zirconia: A guide to modern all-ceramic restorations. The 8th biennial congress of CPS-JPS-KAP 2024.03.04 Guangzhou
23. Xu K, Inokoshi M, Yoshihara K, Minakuchi S. Surface roughness of lithium disilicate glass-ceramic after femtosecond laser irradiation. The 8th biennial congress of CPS-JPS-KAP 2024.03.04 Guangzhou
24. Sunami A, Inokoshi M, Tamura M, Hatano K, Minakuchi S. Effects of surface pre-reacted glass ionomer (S-PRG) filler elute on *Candida albicans* ATCC18804 proteinase production. The 8th biennial congress of CPS-JPS-KAP 2024.03.04 Guangzhou
25. Haoyu Li, Tamaki Hada, Anna Miyayasu, Yo Akiyama, Maiko Iwaki, Manabu Kanazawa. Evaluating the efficacy of flowable composite resin for the custom disk method. 8th Biennial Joint Congress of CPS-JPS-KAP 2024.03.04 Guangzhou, China
26. Ryodai Fukushima, Toshihiro Takamatsu, Konosuke Sato, Kyohei Okubo, Masakazu Umezawa, Nobuhiro Takeshita, Hiro Hasegawa, Hideo Yokota, Kohei Soga, Hiroshi Takemura. Non-invasive imaging of exposed nerves in vivo with near-infrared hyperspectral laparoscopic devices. Proceedings of SPIE Medical Imaging 2024: Image-Guided Procedures, Robotic Interventions, and Modeling 2024.03 San Diego, California

27. Inokoshi M. Current status and future perspectives of dental zirconia ceramics. Asian Network of Dental Materials Societies (ANDeMS) Kickoff Meeting 2024.01.31 Tokyo
28. Ryodai Fukushima, Toshihiro Takamatsu, Kounosuke Sato, Abian Hernandez-Guedes, Gustavo M. Callico, Kyohei Okubo, Masakazu Umezawa, Hideo Yokota, Kohei Soga, Hiroshi Takemura. Detection of Exposed Nerves in Two Individuals In Vivo and Unexposed Nerves Ex Vivo with Near-Infrared Hyperspectral Laparoscope. 2024 IEEE/SICE International Symposium on System Integration (SII) 2024.01 Ha Long, Vietnam
1. Evaluation of the bond strength between fused deposition modeling printed PEEK and milled PEEK with cold-curing denture base acrylic resin. The 43th Annual congress of Japan Society for Adhesive Dentistry 2024.11.30 Japan Kakoshima Amami
2. Otomaru T, Murase M, Sumita Y. The dental maintenance of a patient with the bone anchored device for wide edentulous area at a general dental practice; A case report. The 28th Annual Meeting of Japanese Academy of Maxillofacial Implants / The 41st Annual Meeting of Japanese Academy of Maxillofacial Prosthetics 2024.11.30 Fukuoka (Japan)
3. Iwase R, Inokoshi M, Uo M, Wada T, Kanazawa M. Effect of sandblasting pressure on surface roughness of machinable fully-sintered dental zirconia. 2024 Kanto Regional Meeting of the Japanese Society for Dental Materials and Devices 2024.11.09 Matsudo
4. Inokoshi M. Writing English academic papers: a guide for beginners to intermediate researchers. The 133rd Annual Meeting of the Japan Prosthodontic Society 2024.07.07 hybrid (web, Makuhari)
5. Chun Wei Chang, Tamaki Hada, Roubing Ha, Yumika Soeda, Motohiro Uo, Manabu Kanazawa, Shunsuke Minakuchi. Effect of different surface treatments and adhesion methods on the bond strength of FDM printed PEEK and PMMA. The 133rd Annual Meeting of the Japan Prosthodontic Society / The 14th Biennial Congress of the Asian Academy of Prosthodontics 2024.07.05 Chiba, Japan
6. Iwase R, Inokoshi M, Katada H, Minakuchi S. Translucency of machinable fully-sintered dental zirconia. The 82nd General Session of the Japanese Society for Dental Materials and Devices (JSDMD) 2024.04.21 Kagoshima
1. Adira N. Ryofi, Kyohei Okubo, Yoshitaka Kitamoto. Magnetically Hydrodynamic Behavior of Magnetoliposomes Designed for Liquid-Based Biomolecular Sensing. 2024 Powder Metallurgy World Congress & Exhibition (WORLD PM2024) 2024.10.14 Yokohama

[Awards & Honors]

1. Arthur R. Frechette Prosthodontic Research Award Finalist (Ha Roubing), International Association for Dental Research; IADR, 2024.03

[Others]

1. Inokoshi M. Bilateral Joint Research Projects (Joint research with Germany (DAAD)), 2024.12
Concept development for microstructuring oral implant-supported prostheses via femtosecond laser irradiation to improve soft tissue integration
2025-2026

Plastic and Reconstructive Surgery

Professor:Mori Hiroki

Junior Associate Professor:Uemura Noriko

Graduate Student:Yamamoto Mao, Haga Yoshitaka, Kato Sayuri, Kojimahara Tomohiro, Akazawa Satoshi, Yonekura Yuta

(1) Outline

Plastic surgery is a surgical science that treats congenital or acquired changes in shape and color of the body surface and adapts individuals to society. It is a "creating surgery" of appearance and function, utilizing tissue transplantation, regenerative medicine, and nonsurgical treatments.

(2) Research

Plastic and Reconstructive Surgery :
MORI Hiroki

1. Pre and post operative breast or facial contour evaluation using 3D camera
2. Sensory recovery in the nipple-sparing or skin-sparing mastectomy
3. Development of classification and algorithm in blepharoptosis and blepharospasm surgery
4. Adipogenesis in a external negative pressure lymphedema model - A new possibility of scaffold transplantation
5. Blood circulation study of the surgical flap using indocyanine green angiography and multi slice CT
6. Study to elucidate the mechanism of gynecomastia from the viewpoint of adipogenesis
7. Investigation of the effect of multi-platelet plasma on early functional recovery of neural anastomosis

(3) Education

Plastic surgery is a specialized branch of surgery concerned with the repair of deformities and the correction of functional deficits. The specialty of plastic surgery covers a wide range of procedures, and unlike other medical specialties which concentrate on one particular area of the body, plastic surgeons are involved in the reconstruction and remolding of nearly all external body structures.

(4) Clinical Performances

We cover the whole field of plastic surgery. In particular, we deal with the following field; congenital anomaly (cleft lip and palate, microtia blepharoptosis or polydactyly etc), LASERs, cutaneous malignant tumor, skin ulcer, breast reconstruction, head and neck reconstruction, facial palsy, axillary osmidrosis.

(5) Publications

[Original Articles]

1. Ishida N, Tanaka K, Murakami K, Ueno M, Mori H. Closure of Large Tracheocutaneous Fistula Using Modified Hinge Flap and Deltopectral Flap. Head Neck. 2024.12; 46(12); E104-E108

2. Seki Hirohito, Ogiya Akiko, Nagura Naomi, Shimo Ayaka, Narui Kazutaka, Sasada Shinsuke, Ishitobi Makoto, Nogi Hiroko, Kondo Naoto, Sakurai Teruhisa, Yamauchi Chikako, Mori Hiroki, Saiga Miho, Niikura Naoki, Shien Tadahiko. Prognosis of isolated locoregional recurrence after early breast cancer with immediate breast reconstruction surgery: a retrospective multi-institutional study(タイトル和訳中) *Breast Cancer*. 2024.09; 31(5); 935-944
3. Takada A, Mori H, Nishimura Y, Tanaka K, Okazaki M. The largest perforator of DIEP flap has a higher rate of continuity with the superficial inferior epigastric artery. *Asian J Surg*. 2024.08;
4. Kato S, Mori H, Saiga M, Watanabe S, Sasada S, Sasaki A, Ogiya A, Yamamoto M, Narui K, Takano J, Seki H, Nagura N, Ishitobi M, Shien T, Collaborative Study Group of Scientific Research of the Japanese Breast Cancer Society. Nipple-areolar complex malposition in breast reconstruction after nipple-sparing mastectomy: a multi-institutional retrospective observational study in Japan. *Breast cancer (Tokyo, Japan)*. 2024.07; 31(4); 649-658
5. Yamamoto M, Mori H, Akiyama M, Okazaki M. Fading and Color Reproducibility of Nipple-Areola Tattoos in Asian Patients. *Archives of plastic surgery*. 2024.07; 51(4); 356-362
6. Sasada S, Nagura N, Shimo A, Ogiya A, Saiga M, Seki H, Mori H, Kondo N, Ishitobi M, Narui K, Nogi H, Yamauchi C, Sakurai T, Shien T, Collaborative Study Group of Scientific Research of the Japanese Breast Cancer Society. Impact of radiation therapy for breast cancer with involved surgical margin after immediate breast reconstruction: A multi-institutional observational study. *European journal of surgical oncology : the journal of the European Society of Surgical Oncology and the British Association of Surgical Oncology*. 2024.06; 50(6); 108360
7. Shutaro Nagano, Kana Unuma, Yohsuke Makino, Hiroki Mori, Koichi Uemura. Acute upper airway obstruction due to cervical hematoma after cervicofacial liposuction. *J Forensic Leg Med*. 2024.05; 104; 102697
8. Nogi H, Ogiya A, Ishitobi M, Yamauchi C, Mori H, Shimo A, Narui K, Nagura N, Seki H, Sasada S, Sakurai T, Shien T, Collaborative Study Group of Scientific Research of The Japanese Breast Cancer Society. Impact of neoadjuvant chemotherapy on the safety and long-term outcomes of patients undergoing immediate breast reconstruction after mastectomy. *Breast cancer (Tokyo, Japan)*. 2024.05; 31(3); 507-518
9. Usami S, Sonoki K, Inami K, Murakami K. Application of extended ulnar parametacarpal perforator free flap for the reconstruction of total pulp defect of the thumb: A case report. *Microsurgery*. 2024.05; 44(4); e31180
10. Shimada M, Yokoyama K, Fujioka T, Mori H, Tateishi U. Epithelioid hemangioma, a benign vascular lesion mimicking malignancy in [(18)F] FDG PET/CT. *European journal of nuclear medicine and molecular imaging*. 2024.02;
11. Ueno M, Mori H, Uemura N, Kato S, Tanaka K. Anatomical features of a crossing vein connecting left and right internal mammary veins: A preliminary study with computerized tomography or magnetic resonance imaging. *Microsurgery*. 2024.02; 44(2); e31148
12. Usami S, Kawahara S, Inami K, Sonoki K, Takemitsu M. Efficacy of Minimally Invasive Ulnar Superficialis Slip Resection for Unfavourable Results after Trigger Finger Release. *J Hand Surg Asian Pac Vol*. 2024.02; 29(1); 24-28
13. Homma T, Uemura N, Tanaka K, Mori H, Okazaki M. Objective Assessment of the Repeated Botox Treatment to the Synkinesis of Facial Paralysis by the Integrated Electromyography. *The Journal of craniofacial surgery*. 2024.01; 35(2); 577-581
14. Nojima K, Hayashi M, Tanemura A, Al-Busani H, Saito T, Suzuki T, Ishikawa M, Mori T, Wada S, Yamazaki N, Katayama I, Mori H, Yokozeki H, Okiyama N, Sasaki Y, Namiki T. Activated Akt expression is associated with the recurrence of primary melanomas and further refines the prognostic and predictive values for relapse in acral melanomas. *Pigment Cell Melanoma Res*. 2024.01; 37(1); 36-44

[Conference Activities & Talks]

1. Usami S, Minamikawa Y, Hamada Y, Kinoshita Y, Inami K.. Difference of two types of silicone implant for symptomatic distal interphalangeal joint arthroplasty.. FESSH 2024 2024.06.26 Rotterdam.
2. Mori H, Uemura N, Oda G, Ishiba T. Autologous breast reconstruction - Japanese trend and our strategy-. Global Breast Cancer Conference 2024 2024.04.25 Seoul, South Korea

Department of Head and Neck Surgery

Professor: Takahiro Asakage

Junior Associate Professor: Yosuke Ariizumi, Kazuchika Ohno

Assistant Professor: Akihisa Tasaki(2024.2), Ryuhei Okada

Specially Appointed Assistant Professor: Yumiko Tateishi(2024.3), Hiroaki Kawabe(2024.3), Koh Miwa, Tomoaki Asamori

Senior Resident: Takafumi Ohno, Takaaki Sato

Graduate Student: Sadahiro Kishishita, Ryosuke Takahashi, Masaru Yokomura, Yuta Hoshi, Ai Watanabe, Taisei Nagahisa, Ryo Kuboki, Shigeru Kondo

(1) Outline

Our department is responsible for clinical management, education and research in the field of head and neck surgery. Clinically, the Department of Head and Neck Surgery manages the tumor of extensive area of head and neck, except brain, eye and vertebra. Surgical and medical treatment of the head and neck tumors are mainly employed in our department.

(2) Research

Surgical approaches to the skull base and deep area of the face.

Surgical anatomy of the skull base.

Establishment of the standard neck dissection.

Treatment of pediatric head and neck tumors.

Chemoradiotherapy for head and neck cancers.

Clinical application of navigation system and 3D entity model surgery for skull base surgery.

Diagnosis and treatment for superficial squamous cell carcinoma of head and neck region.

Human papilloma virus infection and head and neck cancer.

Polymorphisms in alcohol metabolism genes and Head and Neck Cancers.

(3) Education

Education: Undergraduate Course

In the classes at the 3th grade of medical school, head and neck oncology are systematically lectured. Clinical practice is experienced at the 4th to 6th grade in the out-patient clinic, the ward, and operating theater.

Education :Graduate Course

Education and researches at the graduate school are focused on (1)surgery of the head and neck tumor, (2)clinical management of the patients with head and neck tumor, and (3)clinical anatomy of head and neck region.

Maxillofacial and Neck Reconstruction.

(4) Publications

[Original Articles]

1. Hiroshi Fukushima, Aki Furusawa, Ryuhei Okada, Yasuhisa Fujii, Peter L Choyke, Hisataka Kobayashi. Antitumor host immunity enhanced by near-infrared photoimmunotherapy. *Cancer Sci.* 2024.12;
2. Hidetoshi Shimizu, Takeshi Kodaira, Naomi Kiyota, Ryuichi Hayashi, Hiroshi Nishino, Yukinori Asada, Hiroki Mitani, Yuuji Hirayama, Yusuke Onozawa, Naoki Nishio, Nobuhiro Hanai, Akira Ohkoshi, Hiroki Hara, Nobuya Monden, Masato Nagaoka, Shujiro Minami, Takashi Fujii, Kaoru Tanaka, Akihiro Homma, Seiichi Yoshimoto, Nobuhiko Oridate, Koichi Omori, Tsutomu Ueda, Kenji Okami, Hirokazu Uemura, Kiyoto Shiga, Mitsuhiko Nakahira, Takahiro Asakage, Yuki Saito, Keita Sasaki, Ryo Kitabayashi, Satoshi Ishikura, Yasumasa Nishimura, Makoto Tahara. Incidence and risk factors associated with the development of hypothyroidism after postoperative chemoradiotherapy for head and neck cancer patients with high-risk features: Supplementary analysis of JCOG1008. *Oral Oncol.* 2024.10; 157; 106976
3. Ryo Kuboki, Fuminori Nomura, Satoshi Yagihashi, Takahiro Asakage. A case of selpercatinib treatment for anaplastic thyroid carcinoma resulting in abscess formation. *Int Cancer Conf J.* 2024.10; 13(4); 387-390
4. Ryuhei Okada, Taku Ito, Hiroaki Kawabe, Takeshi Tsutsumi, Takahiro Asakage. Mixed reality-supported near-infrared photoimmunotherapy for oropharyngeal cancer: a case report. *Ann Med Surg (Lond).* 2024.09; 86(9); 5551-5556
5. Fuyuki F Inagaki, Makoto Kano, Aki Furusawa, Takuya Kato, Ryuhei Okada, Hiroshi Fukushima, Seiichiro Takao, Shuhei Okuyama, Peter L Choyke, Hisataka Kobayashi. Near-infrared photoimmunotherapy targeting PD-L1: Improved efficacy by preconditioning the tumor microenvironment. *Cancer Science.* 2024.07; 115(7); 2396-2409
6. Tsujikawa T, Ohno K, Morita KI, Saburi S, Mitsuda J, Yoshimura K, Kimura A, Morimoto H, Ogi H, Shibata S, Akashi T, Kurata M, Imoto I, Shimizu Y, Kano S, Watanabe A, Yamazaki T, Asada Y, Hayashi R, Saito Y, Ozawa H, Tsukahara K, Oridate N, Sano D, Horii A, Ueki Y, Maruo T, Mukoyama N, Hanai N, Fukusumi T, Iwai H, Fujisawa T, Fujii T, Nibu KI, Iwae S, Ueda T, Chikuie N, Yasumatsu R, Matsuo M, Umeno H, Ono T, Masuda M, Toh S, Itoh K, Hirano S, Asakage T. Clinical, genomic and immune microenvironmental determinants of nivolumab response in head and neck squamous cell carcinoma. *Frontiers in immunology.* 2024.07; 15; 1390873
7. Ryutaro Onaga, Tomohiro Enokida, Susumu Okano, Takao Fujisawa, Nobukazu Tanaka, Yuta Hoshi, Takuma Kishida, Hideki Tanaka, Masanobu Sato, Naohiro Takeshita, Ryo Kuboki, Hiroshi Nishino, Makoto Ito, Makoto Tahara. Clinical impact of a dose-escalation strategy for lenvatinib in differentiated thyroid cancer. *Int J Clin Oncol.* 2024.07;
8. Yusuke Mizuno, Ryuhei Okada, Susumu Kirimura, Ryoichi Yoshimura, Takahiro Asakage. A Case of Malignant Transformation of Recurrent Respiratory Papillomatosis That Was Effectively Treated with Pembrolizumab *Case Rep Oncol.* 2024.07; 17(1); 734-740
9. Ariizumi Y, Asakage T. Development of an evaluation and treatment strategy for olfactory neuroblastoma: a review of evidence from large-scale studies, including population-based and multicenter studies, and meta-analyses. *Japanese journal of clinical oncology.* 2024.05; 54(8); 847-862
10. Yuta Hoshi, Tomohiro Enokida, Shingo Tamura, Torahiko Nakashima, Susumu Okano, Takao Fujisawa, Masanobu Sato, Akihisa Wada, Hideki Tanaka, Naohiro Takeshita, Nobukazu Tanaka, Ryutaro Onaga, Takuma Kishida, Hideoki Uryu, Shingo Sakashita, Takahiro Asakage, Makoto Tahara. Efficacy of anti-PD-1 monotherapy for recurrent or metastatic olfactory neuroblastoma. *Front Oncol.* 2024.05; 14; 1379013
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12. Fumiya Kojima, Kazuchika Ohno, Naoki Fushimi, Ryosuke Takahashi, Akihisa Tasaki, Takahiro Asakage. Functional vagal paraganglioma developing 15 years after resection of a retroperitoneal paraganglioma. *Auris Nasus Larynx.* 2024.03; 51(3); 425-428

13. Yosuke Ariizumi, Nobuhiro Hanai, Takahiro Asakage, Akira Seto, Toshifumi Tomioka, Junji Miyabe, Hisashi Kessoku, Takashi Mukaigawa, Go Omura, Masanori Teshima, Daisuke Nishikawa, Yuki Saito, Yukinori Asada, Takuo Fujisawa, Takuma Makino, Hiroshi Nishino, Daisuke Sano, Mitsuhiko Nakahira, Kunihiro Tokashiki, Hirokazu Uemura, Tsutomu Ueda, Akihiro Sakai, Muneyuki Masuda, Takahiro Tsujikawa, Yusuke Hiei, Naoki Nishio, Hidetoshi Matsui, Naomi Kiyota, Akihiro Homma. Extent of thyroidectomy and paratracheal lymph node dissection in total pharyngolaryngectomy for pyriform sinus cancer, and recurrence, survival, and postoperative hypoparathyroidism: A multicenter retrospective study. *Head Neck*. 2024.02; 46(2); 269-281
14. Takashi Hirai, Yujiro Naito, Shohei Koyama, Yoshimitsu Nakanishi, Kentaro Masuhiro, Mayuko Izumi, Tomoki Kuge, Maiko Naito, Yumiko Mizuno, Yuta Yamaguchi, Sujin Kang, Moto Yaga, Yu Futami, Satoshi Nojima, Masayuki Nishide, Takayoshi Morita, Yasuhiro Kato, Takeshi Tsuda, Norihiko Takemoto, Yumi Kinugasa-Katayama, Taiki Aoshi, Jordan Kelly Villa, Kazuo Yamashita, Tomohiro Enokida, Yuta Hoshi, Kazuto Matsuura, Makoto Tahara, Hyota Takamatsu, Yoshito Takeda, Hidenori Inohara, Atsushi Kumanogoh. Sema6D forward signaling impairs T cell activation and proliferation in head and neck cancer. *JCI Insight*. 2024.02; 9(3);

[Misc]

1. Ryuhei Okada. Alluminox treatment for head and neck cancer: mechanism and clinical application *Journal of Immunology, Allergy and Infection in Otorhinolaryngology*. 2024.12; 4(4); 201-206

[Conference Activities & Talks]

1. 加藤洋人, 朝守智明, 高田幹也, 垣内美和子, 河村大輔, 太田康, 石川俊平. シングルセル免疫レパトア解析によって明らかになった難治性慢性副鼻腔炎の病態. 第 70 回日本病理学会秋季特別総会 2024.11 東京
2. Yosuke Ariizumi, Takashi Sugawara, Kazuchika Ohno, Kawano Yoshihisa, Kentaro Tanaka, Takahiro Asakage. Anterior skull-base surgery for locally advanced sinonasal malignancy with combined craniotomy and endoscopic endonasal approach. . 日本癌治療学会学術集会抄録集 2024.10.24
3. Ryuhei Okada. Orbye 4K 3D exoscope for thyroid and parathyroid surgery. The 5th Congress of Asia-Pacific Society of Thyroid Surgery 2024.10.04 Bangkok, Thailand
4. 有泉 陽介, 菅原 貴志, 大野 十央, 河野 能久, 田中 顕太郎, 朝蔭 孝宏. 頭頸部癌に対する頭蓋底手術 局所進行した鼻副鼻腔悪性腫瘍に対する combined approach による前頭蓋底手術. 日本癌治療学会学術集会抄録集 2024.10.01
5. Takahiro Asakage. International session Cutting-Edge of Head and Neck Oncology Near-infrared photoimmunotherapy Real world data in Japan. AAO-HNSF 2024 Annual Meeting & OTO EXPO 2024.09.28 マイアミ (米国)
6. Takahiro Asakage. Moderator : Symposium 2 Innovative surgery. 2nd Joint Meeting of Tri-Head and Neck Society 2024 2024.09.19 大阪
7. Yosuke Ariizumi, Takahiro Asakage. Anterior Skull-base Surgery for Olfactory Neuroblastoma. 2nd Joint meeting of Tri-Head and Neck Society 2024.09.19 Osaka
8. Ryuhei Okada. Near-infrared photoimmunotherapy: Preclinical research and clinical treatment. 2nd joint meeting of Tri-Head and Neck Society 2024 2024.09.19 Osaka, Japan
9. Ryuhei Okada. Preclinical research of photoimmunotherapy. 2nd joint meeting of Tri-Head and Neck Society 2024 2024.09.19
10. 横村 優, 永野 誠司, 河本 宏, 朝蔭 孝宏, 片山 量平, 片山 量平. 細胞障害性 T 細胞に対するアフアチニブの免疫抑制効果の検証 (Afatinib exerts an inhibitory effect on T cell-mediated cytotoxicity). 日本癌学会総会記事 2024.09.01

Department of Cognitive Neurobiology

Professor:
Naofumi Uesaka
Lecturer:
Daisuke Tanaka
Assistant Professor
Ayaka Nakai

Graduate Students
Moe Tanigawa
Nozomi Utsumi
Yixuan Sun
Yang Sun
Ibin Han
Shizuki Inaba
Benson Paul
XianZhi Shao
Weida Wu
Yongjia Cheng
Kyosuke Goda
Mengke Liu
Nene Yamaguchi

(1) Outline

In this department, we thoroughly explore how all the cells and cell populations that make up the brain work together to create extraordinary functions. We also aim to elucidate why, when some of these cells are disrupted, they lead to serious brain diseases.

To address this core question, we will use a variety of methods, including neurophysiology, developmental engineering, molecular biology, and genetics, to unravel the roots of brain development, brain function, and brain diseases.

Our mission is to break new ground in brain science by proposing novel concepts that overturn conventional wisdom and lead to advanced treatments and preventive measures.

(2) Research

1. Functional development of the brain

We are studying the mechanism of selective strengthening and elimination of synapses (synapse elimination) during postnatal development.

2. Glial function

We aim to discover novel functions of glial cells.

3. Crosstalk between oral function and brain function in the health and disease.

We aim to elucidate the information processing of oral sensation in the brain and brain disease caused by oral dysfunction.

4. Brain diseases

We aim to elucidate the mechanisms by which brain diseases develop and become malignant.

(3) Education

1. Lectures of unit "Functions of Nervous Systems I (Introduction to Neurophysiology, Motor Functions)"

Basic knowledge of neurophysiology will be lectured as an introduction together with the motor functions.

2. Lectures of unit "Functions of Nervous Systems II (Perception, Emotion, Instinct, Sleep, Higher functions)"

A series of lectures will be taught on functions of the sensation, perception, and motion as well as the neural mechanisms of higher brain functions.

3. Lectures of unit "Homeostatic Functions for Life Support".

Lectures will be taught on the structure of the autonomic nervous system and its regulatory mechanisms in the circulation, respiration, digestion/absorption, humor/body temperature, metabolism, excretion, and internal secretion/reproduction.

4. Unit of "Practice of Physiology"

The purpose of the practice is to learn about the physiological mechanisms underlying the normal functions of human body through experiments. The goal is to master the basic experimental procedures, and to experience how to capture and analyze the data in order to draw conclusions.

5. Exercises in Pathological Science

Study the molecular, cellular, tissue, and physiological background of diseases in the maxillofacial region.

(4) Lectures & Courses

We plan to actively accept a diverse range of students and staff from various backgrounds, including biology, engineering, dentistry, and medicine, regardless of academic field. We will educate them to be able to either develop innovative methods, hit innovative hypotheses, or make innovative discoveries. For this reason, we place importance on creating an environment and atmosphere where staff and students can actively share their opinions in daily discussions and study sessions. By reading our papers and papers on the latest research findings and conducting research with staff and senior students, students can learn how to acquire and analyze data, conduct research, and write papers. Let's work together to make innovative discoveries by cooperating with each other and doing research every day toward the major goal of elucidating brain development, brain function, and brain diseases.

(5) Publications

[Original Articles]

1. Shigeaki Kanatani, Judith C Kreutzmann, Yue Li, Zoe West, Lea Lydolph Larsen, Danai Vougesi Nikou, Ilse Eidhof, Abigail Walton, Songbai Zhang, Leslie Rubio Rodríguez-Kirby, Jacob Lercke Skytte, Casper Gravesen Salinas, Kimiharu Takamatsu, Xiaofei Li, Daisuke H Tanaka, Dagmara Kaczynska, Keishiro Fukumoto, Razieh Karamzadeh, Yujiao Xiang, Naofumi Uesaka, Tsutomu Tanabe, Mikael Adner, Johan Hartman, Ayako Miyakawa, Erik Sundström, Gonçalo Castelo-Branco, Urmas Roostalu, Jacob Hecksher-Sørensen, Per Uhlén. Whole-brain spatial transcriptional analysis at cellular resolution. *Science*. 2024.11; 386(6724); 907-915
2. Aritoshi Uchida, Kazuharu Nakagawa, Kanako Yoshimi, Yuki Nagasawa, Kohei Yamaguchi, Naofumi Uesaka, Haruka Tohara. Intermittent breaking of isolation may ameliorate decrease in physical activity caused by isolation *PLoS ONE*. 2024.11;

3. Tanigawa, M; Liu, MK; Sekiguchi, M; Goda, K; Kato, C; Ono, T; Uesaka, N. Nasal obstruction during development leads to defective synapse elimination, hypersynchrony, and impaired cerebellar function COMMUNICATIONS BIOLOGY. 2024.10; 7(1);
4. Nakayama, H; Miyazaki, T; Abe, M; Yamazaki, M; Kawamura, Y; Choo, M; Konno, K; Kawata, S; Uesaka, N; Hashimoto, K; Miyata, M; Sakimura, K; Watanabe, M; Kano, M. Direct and indirect pathways for heterosynaptic interaction underlying developmental synapse elimination in the mouse cerebellum COMMUNICATIONS BIOLOGY. 2024.07; 7(1); 806
5. Ayaka Nakai, Mitsuaki Kashiwagi, Tomoyuki Fujiyama, Kanako Iwasaki, Arisa Hirano, Hiromasa Funato, Masashi Yanagisawa, Takeshi Sakurai & Yu Hayashi. Crucial role of TFAP2B in the nervous system for regulating NREM sleep Molecular Brain. 2024.02; 17(1); 13

[Conference Activities & Talks]

1. Tanaka DH, Mochizuki T, Inaba S, Sugaya Y, Nonaka S, Kano M, Tanabe T, Uesaka N. Visceral cortical neurons encode and induce disgust reactions in mice. 2024 年度シナプス研究会 2024.11.15 愛知
2. 稲場 志築, 田中 大介, 上阪 直史. マウス内臓皮質の化学遺伝学的抑制が口腔内不快刺激に対する味覚反応へ与える影響. 第 15 回三叉神経領域の感覚—運動統合機構研究会 2024.10.20 千葉
3. 上阪 直史. 脳多元自発活動の創発と遷移による脳のデザインビルド. Neuro2024 2024.07.27 日本、博多
4. Tanaka DH, Mochizuki T, Inaba S, Sugaya Y, Nonaka S, Kano M, Tanabe T, Uesaka N.. Visceral cortical neurons induce disgust reactions in mice. ASSC27 2024.07.03 東京
5. Uesaka Naofumi, Tanigawa Moe, Wada Midori, Kato Chiho, Ono Takashi. 口腔生理機能の生涯発達と変容 口腔システム不全による神経回路形成と脳機能の障害 (Lifelong development, adaptation and deterioration in oral physiology Defective neural circuit formation and brain function due to oral system failure). The Journal of Physiological Sciences 2024.05.01
6. 上阪 直史. 口腔システム不全による脳発達と脳機能の障害. 第 101 回日本生理学会大会 2024.03.30 日本、小倉
7. Nakai Ayaka, Kashiwagi Mitsuaki, Fujiyama Tomoyuki, Iwasaki Kanako, Hirano Arisa, Funato Hiromasa, Yanagisawa Masashi, Sakurai Takeshi, Hayashi Yu. The transcription factor AP-2 β regulates the amount of non-REM sleep. The Journal of Physiological Sciences 2024.03

Department of Molecular Craniofacial Embryology and Oral Histology

Staffs and Students

Professor Sachiko ISEKI

Associate Professor Jun TAKEUCHI

Junior Associate Professor Yuki YOSHIMOTO

Assistant Professor Noritaka ADACHI

Assistant Secretary Mami SASAKI

Part-time lecturers Shigeru KURATANI, Hideyo OUCHI, Makoto TABATA, Masaki TAKECHI,

Youichirou NINOMIYA, Daisuke KOYABU,

Keigo ARAKI, Masato OTA, Yukiko HOSHINO, ChengXue JIN

Graduate Students Yuyan WANG, Hanyang WANG, Aino SASABUCHI, Xueying GAO, Li DANYA,
Marie KOBAYASHI, Hotaka KOBAYASHI

Graduate Students (Others) Yawsuan YU (Maxillofacial Surgery)

(1) Outline

(1) Outline

The research in this field is focused on elucidating the developmental mechanisms of cell proliferation, differentiation, and morphogenesis of the oral and maxillofacial region, and on applying the results of this research to regenerative medicine.

Within this area, graduate students will find their own research topics and formulate their own problems as much as possible independently with the advice of their academic advisors. In addition, to solve this problem, students will acquire knowledge and methods of molecular biology and molecular embryology, and mammalian embryo manipulation techniques including cell-tissue-organ culture methods, whole embryo culture methods, etc., as necessary, while developing sensitivity, cultivating logical construction skills, and developing the ability to write papers in English.

(2) Research

(2) Research

1. Elucidation of the Molecular Mechanisms Underlying Mammalian Orofacial Development

The mammalian orofacial region is highly complex among vertebrates. This study describes the molecular mechanisms involved in organogenesis from its primordial structures and compares them with those of other vertebrates.

2. Application of Developmental Mechanisms to Hard Tissue Regeneration

Hard tissue regeneration is central to the regeneration of the orofacial region. By integrating the developmental mechanisms of teeth and bones elucidated in the above study with nanotechnology, we will explore the potential applications of these findings in hard tissue regenerative medicine.

3. Identification of Tissue Stem Cells in the Oral Region and Analysis of Molecular Mechanisms Regulating Their Stemness

The tissues in the oral region are known to have relatively high repair capacity and rapid cellular turnover. However, little information is available regarding the localization, maintenance mechanisms, and differentiation pathways of tissue stem cells in this region. This study aims to identify candidate genes involved in the maintenance of tissue stem cells using taste buds and dental pulp as materials. By analyzing knockout mice for these candidate genes, we will clarify the localization and maintenance mechanisms of tissue stem cells. Furthermore, we aim to develop a cell-based therapy based on these findings.

(3) Publications

[Original Articles]

1. Kurosawa, T; Ikemoto-Uezumi, M; Yoshimoto, Y; Minato, K; Kaji, N; Chaen, T; Hase, E; Minamikawa, T; Yasui, T; Horiguchi, K; Iino, S; Hori, M; Uezumi, A. Tissue-specific functions of MSCs are linked to homeostatic muscle maintenance and alter with aging *Aging Cell*. 2024.11; 23(11); e14299
2. Hoshino Y, Liu S, Furutera T, Yamada T, Koyabu D, Nukada Y, Miyazawa M, Yoda T, Ichimura K, Iseki S, Tasaki J, Takechi M.. Pharmacological Inhibition of the Spliceosome SF3b Complex by Pladienolide-B Elicits Craniofacial Developmental Defects in Mouse and Zebrafish. *Birth Defects Research*. 2024.11; 116(11); e2404
3. Miyaki T, Homma N, Kawasaki Y, Kishi M, Yamaguchi J, Kakuta S, Shindo T, Sugiura M, Oliva Trejo JA, Kaneda H, Omotehara T, Takechi M, Negishi-Koga T, Ishijima M, Aoto K, Iseki S, Kitamura K, Muto S, Amagasa M, Hotchi S, Ogura K, Shibata S, Sakai T, Suzuki Y, Ichimura K. Ultrastructural analysis of whole glomeruli using array tomography *Journal of Cell Science*. 2024.10; 137(20); jcs262154
4. Camille E Dumas, Célia Rousset, Christopher De Bono, Claudio Cortés, Estelle Jullian, Fabienne Lescroart, Stéphane Zaffran, Noritaka Adachi, Robert G Kelly. Retinoic acid signalling regulates branchiomic neck muscle development at the head trunk interface *Development*. 2024.07; 151(16); 1-15
5. Yambe, S; Yoshimoto, Y; Ikeda, K; Maki, K; Takimoto, A; Tokuyama, A; Higuchi, S; Yu, XY; Uchibe, K; Miura, S; Watanabe, H; Sakuma, T; Yamamoto, T; Tanimoto, K; Kondoh, G; Kasahara, M; Mizoguchi, T; Docheva, D; Adachi, T; Shukunami, C. Sclerostin modulates mineralization degree and stiffness profile in the fibrocartilaginous enthesis for mechanical tissue integrity *Frontiers in Cell and Developmental Biology*. 2024.06; 12; 1360041
6. Chengxue Jin, Noritaka Adachi, Yuki Yoshimoto, Aino Sasabuchi, Nobuyuki Kawashima, Masato S. Ota, Sachiko Iseki. Fibroblast growth factor signalling regulates the development of tooth root *Journal of Anatomy*. 2024.01; 244(6); 1067-1077

[Conference Activities & Talks]

1. Yuki Yoshimoto, Chengxue Jin, Hanyang Wang, Xueying Gao, Kenichi Nakahama, Sachiko Iseki. Cellular diversity in the calvarium. Gordon research conference, 2024, Developmental Biology at the Forefront of Congenital Anomaly Prevention and Regenerative Approaches 2024.05.26
2. Aino Sasabuchi, Yuki Yoshimoto, Thanit Prasitsak, Jun K. Takeuchi, Noritaka Adachi, Sachiko Iseki. Neural crest derived pericytes involves abnormal vascular formation in the embryonic telencephalic hydrocephalus in *Foxc1* deficient mouse. Gordon research conference, 2024, Developmental Biology at the Forefront of Congenital Anomaly Prevention and Regenerative Approaches 2024.05.26
1. Noritaka Adachi. Craniofacial muscular development beyond the Hox code. The 6th year of Reiwa, the Zoological Society of Japan, Chubu Branch meeting 2024.12.07 Fukui
2. Nozomu Yoshioka, Yuki Yoshimoto, Sachiko Iseki, Hirohide Takebayashi, Ikuo Kageyama. Developmental origin of fibroblasts which form the scar tissue in the damaged central nervous system. The 66th Annual Meeting of The Japanese Association for Oral Biology 2024.11.02
3. Xinyi Yu, Shinsei Yambe, Yuki Yoshimoto, Shigenori Miura, and Chisa Shukunami. Spatiotemporal visualization of dynamic interactions between cartilaginous and tendinous/ligamentous primordia during musculoskeletal integration. The 66th Annual Meeting of The Japanese Association for Oral Biology 2024.11.02

4. Yuyan Wang, Yuki Yoshimoto, Noritaka Adachi, Sachiko Iseki, Masaki Takechi,. The homeobox transcription factor Goosecoid is essential for the proper connection between the mandible and the tongue muscles. The 66th Annual Meeting of The Japanese Association for Oral Biology 2024.11.02
5. Ibuki Kadowaki, Wataru Katano, Rituko Kaneko (Ohtani), Sachiko Iseki, Jun K. Takeuchi, Kazuko Koshihara . Functional role of Crmp4 in the cardiac development of male and female mice. The 95th Annual Meeting of the Zoological Society of Japan 2024.09.14
6. Shinsei Yambe, Yuki Yoshimoto, Koichiro Maki, Xinyi Yu, Shigenori Miura, Toshihide Mizoguchi, Taiji Adachi, Chisa Shukunami. Sclerostin is a modulator of mineralization degree and stiffness profile in the fibrocartilaginous enthesis for mechanical tissue integrity.. Joint Conference of The 22nd Annual Meeting of Asian and Oceanian MyologyCenter and The 10th Annual Meeting of Japan Muscle Society 2024.09.12
7. Xinyi Yu, Ryosuke Kawakami, Shinsei Yambe, Yuki Yoshimoto, Takako Sasaki, Haruhiko Akiyama, Taiji Adachi, Takeshi Imamura, and Chisa Shukunami. Visualization of dynamic interactions between cartilaginous and tendinous/ligamentous primordia during musculoskeletal development. Joint Conference of The 22nd Annual Meeting of Asian and Oceanian MyologyCenter and The 10th Annual Meeting of Japan Muscle Society 2024.09.12
8. Yuki Yoshimoto, Sachiko Iseki, Chisa Shukunami. Molecular and cellular mechanisms involving the integration of musculoskeletal systems . The 167th Annual Meeting of The Japanese Society of Veterinary Science 2024.09.10
9. Yu Ya Hsuan, Noritaka Adachi, Masaki Takechi, Tetsuya Yoda, Sachiko Iseki. Abnormal development of infrahyoid muscles in Goosecoid mutant mice. The 64th Annual Meeting of The Japanese Teratology Society 2024.07.26 Funabori, Tokyo
10. Hanyang Wang, Yuki Yoshimoto, Atsuko Harada, Nuri Takashi, Shinji Kobayashi, Jun K Takeuchi, Koichi Ueda, Sachiko Iseki. Elucidating The Pathogenesis of Craniosynostosis Using Patient-Specific hiPSCs. The 64th Annual Meeting of The Japanese Teratology Society 2024.07.26
11. Masaki Takechi, Yukiko Hoshimo, Hanyang Wang, Yuki Yoshimoto, Sachiko Iseki. Basic medical research on craniosynostosis through a multifaceted approach. The 64th Annual Meeting of The Japanese Teratology Society 2024.07.26
12. Jun K. Takeuchi. Congenital heart disease and epigenetic regulation. The 64th Annual Meeting of The Japanese Teratology Society 2024.07.26
13. Aino Sasabuchi, Yuki Yoshimoto, Thanit Prasitsak, Jun K. Takeuchi, Noritaka Adachi, Tsutomu Kume, Noriko Osumi, Sachiko Iseki. Foxc1 deficient in neural crest derived pericytes are involved in abnormal cerebral vascular formation. The 64th Annual Meeting of The Japanese Teratology Society 2024.07.26
14. Yuyan Wang, Yuki Yoshimoto, Noritaka Adachi, Masaki Takechi, Sachiko Iseki. Goosecoid is involved in proper patterning of connection between the tongue and mandible in mice. The 64th Annual Meeting of The Japanese Teratology Society 2024.07.26
15. Shun Ogata, Shinsei Yambe, Xinyi Yu, Yuki Yoshimoto, Shigenori Miura, and Chisa Shukunami. Functional Role of Scleraxis in the Growth of the Mandible and Masticatory Muscles. The 42nd Annual Meeting of The Japanese Society for Bone and Mineral Research 2024.06.30

Department of Maxillofacial Surgery

Professor: Tetsuya YODA

Associate Professor: Yoshiyuki SASAKI, Kei-ichi MORITA(Sep.)

Junior Associate Professor: Hiroyuki YOSHITAKE, Namiaki TAKAHARA

Assistant Professor: Nobuyoshi TOMOMATSU, Yousuke HARAZONO, Yasuhiro KURASAWA,
Yusoon KIM, Erina TONOUCHI

Special Assistant Professor: Hirokazu KACHI , Tomomi SAKUMA, Katsuya Hyodo, Hiroki MASUDA

Hospital Staff: Chika MIURA, Yu-uta Atarashi, Shougo KANN

Graduate Student: Koutaro YAMAZAKI, Migyuan HSIAO, YaXuan YU, Vu Viet Duc,

Yuka KAKU, Shin MATSUMOTO, Kai ISHIHARA,

THAI THANH HUY

Social Graduate Student: Takuya IWASAKI, Taishi NAKAMURA

Student: Souichi ROKUSHIMA, Yuuko KATSUKI, (Apr.)

Clinical Professor: Fumiaki SATO, Takashi MISHIMAGI

Part-time Lecturer: Masashi YAMASHIRO, Jin SATO, Akiko KOBAYASHI, Kazuhiro YAGIHARA,
Yutaka SATO, Kazuto KUROHARA, Katsuya AIKOU, Yoshio OHYAMA, Junya KUMAGAI,

Ryousuke NAGAOKA, Youhei TSUTAKI, Chieko MICHIKAWA, Mari SHIBATA, Takasuke INADA,
Narumi Oshibe, Daishuke YAMAMOTO

(1) Research

Research Subjects

- 1) Head and Neck Surgery: Innovation of management patients with benign and malignant tumors and cysts in oral and facial region.
- 2) Reconstructive Surgery: Developing method of correcting jaw, facical bone and facial soft tissue trouble left as the result of removal of disease or previous trauma.
- 3) Correction of Birth Defects: Improving surgically correction of birth defects of the face and skull, including cleft lip and palate.
- 4) Dentofacial Deformities and Orthognathic Surgery: Development of new surgical techniques to improving reconstruct and realign the upper and lower jaws.
- 5) Temporomandibular Joint Disorders: Renewing skills in the diagnosis and treatment due to temporomandibular joint problem.
- 6) Oral Mucosa Disease: Creation new method with light and color for diagnosis of oral mucosa disease, including leukoplakia and cancer.

(2) Lectures & Courses

Oral and maxillofacial surgery is a surgical specialty involving the diagnosis, surgical treatment and management of defects and injures related to the function and aesthetics of the face and jaws. In order to practice the full scope of the specialty, oral and maxillofacial surgeons are required education in dentistry, medicine and surgery for regional requirement.

(3) Clinical Performances

Clinical Services

- 1) Diagnosis, removing and reconstruction of jaw, oral or facial tumor or cyst.

- 2) Diagnosis and treatment of cleft lip and palate.
- 3) Treatment of jaw aligned with orthognathic surgery.
- 4) Therapy of temporomandibular disorder with or without temporomandibular joint surgery.
- 5) Diagnosis and treatment of oral mucosa disease.
- 6) Treatment of inflammation in the region jaw and facial trauma.
- 7) Extraction tooth including wisdom tooth.

(4) Publications

[Original Articles]

1. Takuya Iwasaki, Namiaki Takahara, Vu Viet Duc, Nobuyoshi Tomomatsu, Makoto J Tabata, Tetsuya Yoda. Effect of Anterior Disc Displacement and Estrogen Deficiency on Rabbit Mandibular Condyle. *J Oral Biosci.* 2024.12; 100599
2. Keiichiro Nakazato, Yasufumi Niinaka, Eiji Fujii, Reiko Hoshi, Nobuyoshi Tomomatsu, Tetsuya Yoda. A clinical study of anterior maxillary impacted supernumerary teeth based on the classification of horizontal and vertical positions. *Journal of Oral and Maxillofacial Surgery Medicine and Pathology.* 2024.12;
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4. Yukiko Hoshino, Shujie Liu, Toshiko Furutera, Takahiko Yamada, Daisuke Koyabu, Yuko Nukada, Masaaki Miyazawa, Tetsuya Yoda, Koichiro Ichimura, Sachiko Iseki, Junichi Tasaki, Masaki Takechi. Pharmacological Inhibition of the Spliceosome SF3b Complex by Pladienolide-B Elicits Craniofacial Developmental Defects in Mouse and Zebrafish. *Birth Defects Res.* 2024.11; 116(11); e2404
5. Yosuke Harazono, Huy Thanh Thai, Duc Viet Vu, Namiaki Takahara, Tetsuya Yoda. A case report of a huge unicystic ameloblastoma in the mandible with significant reduction through marsupialization. *Int J Surg Case Rep.* 2024.10; 123; 110156
6. Daisuke Yamamoto, Nobuyoshi Tomomatsu, Taishi Nakamura, Namiaki Takahara, Yasuhiro Kurasawa, Tetsuya Yoda. Influence of the Inferior Turbinate on the Accuracy of Superior Maxillary Repositioning. *J Craniofac Surg.* 2024.10;
7. Oikawa Y, Fukawa Y, Suzuki K, Goto A, KI m Y, Yoshitake H, Yoda T, Ikeda T. Localized median tongue AL amyloidosis accompanied with chondroid metaplasia: the possible etiology and relationship to median rhomboid glossitis *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology.* 2024.09;
8. Kachi H, Harazono Y, Takahara N, Tetsuya Y. A case report of oral syphilis with suspected concomitant neurosyphilis *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology.* 2024.08; 37(2); 361-364
9. Nakamura T, Tomomatsu N, Takahara N, Kurasawa Y, Sasaki Y, Yoda T. Morphological changes in the inferior nasal passage associated with superior repositioning of the maxilla with/without horseshoe osteotomy or turbinectomy. *International journal of oral and maxillofacial surgery.* 2024.08;
10. Takahara N, Shibata E, Tonouchi E, Kachi H, Tomomatsu N, Yoda T. Nasolabial soft tissue changes associated with posterior maxillary movement following anterior segmental osteotomy in skeletal Class II patients: A case series *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology.* 2024.07; 36(4); 459-463
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12. Takahara N, Tomomatsu N, Kachi H, Iwasaki T, Maruta N, Yoda T. Does Condylar Morphology Affect Maxillary Repositioning in Bimaxillary Orthognathic Surgery? *The Journal of craniofacial surgery.* 2024.05;
13. Tonouchi Erina, Morita Kei-ichi, Harazono Yosuke, Anzai Eri, Takahara Namiaki, Yoda Tetsuya. Double Level Fixation of Premaxilla during Alveolar Bone Grafting with Premaxillary Osteotomy in Patients with Bilateral Cleft Lip and Palate(タイトル和訳中) *口腔病学会雑誌.* 2024.03; 91(1); 1-7

14. Iwasaki T, Harazono Y, Fukawa Y, Kaida A, Kayamori K, Sasaki Y, Harada H, Yoda T. Retrospective analysis of odontogenic myxoma and odontogenic myxofibroma in the oral and maxillofacial region: a fibrous tissue-related differentiation. *The British journal of oral & maxillofacial surgery*. 2024.02; 62; 464-470
15. Yosuke Harazono, Hiroyuki Yoshitake, Yuki Fukawa, Tohru Ikeda, Tetsuya Yoda. Osteoblastoma in the mandible of an older adult patient without FOS gene rearrangement: A case report and literature review *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology*. 2024.01;
16. M Shibata, H Yoshitake, K Kayamori, T Ikeda, M Seki, T Yoda. Challenges in Diagnosis and Management of Palatal Hemangioma in an Infant: A Case Report *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology*. 2024.01; 36(1); 67-70
17. Michikawa C, Izumo T, Yoda T, Uzawa N. Small tumor invasion of metastatic lymph node can develop extranodal extension in oral cancer *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology*. 2024.01; 36(1); 21-27

[Conference Activities & Talks]

1. Vu Viet Duc, 高原楠旻, 岩崎拓也, 倉沢泰浩, 加地博一, 友松伸允, 依田哲也. 顔面非対称症例に対する近位骨片オーバーラップ法の有効性と術後安定性. 第 69 回日本口腔外科学会総会・学術大会 2024.11.22 横浜

Department of Maxillofacial Orthognathics

Professor and Chair

Keiji MORIYAMA

Associate Professor

Takuya OGAWA

Junior Associate Professor

Norihisa HIGASHIHORI

Senior Assistant Professor

Michiko TSUJI, Yukiho KOBAYASHI

Assistant Professor

Chiho KADOTA, Masayoshi UEZONO,
Takeshi OGASAWARA, Yuki NIKI

Specially Appointed Assistant Professor

Hidekazu MATSUMOTO, Atsuhiko INOUE

Dental Resident

Ryoto MACHIDA, Mayu Oiwa, Yuichiro OMORI, Ami TSUNASHIMA,
Nanase IGARASHI, Kanako HORI

Doctoral Program : Medical and Dental Sciences Track

Yoshiya KAISAKA, Misato SHIMIZU, Hanae ARAI, Ayako SUZUKI,
Yuri TAKAGIWA, Satoka TAKEUCHI, Nao UKITA, Suzu CHIDA,
Mikiko TERASHIMA, Yunaho YONEMITSU, Liu Yinan, Lu Yeming
Aung Thet Khine, Ye Thiha, Aoi BEPPU, Pyae Phyo Htun,
Wang Junyan, Liu Lu, Ayaka KATO, Honoka SAITO, Yusuke SASAKI,
Marina TAKADA, Takayuki SUDA, Yuuki TAGUCHI,
Satoshi NAKAMURA

Doctoral Program : Joint Degree Program (Chulalongkorn University)

Warat Hatsadaloi

Graduate International Research Student Program

Shintaro ARIKATA, Shiori OKUBO, Konosuke YOSHITANI,
Yuzuki ISHIZEKI, Yoshiki HAYASHI, Yumeno SANO,
Aoi NOMURA, Hung Chia Yu, Misato MORISHIGE, Daiki MORITA,
Risa WATANABE, Kenjiro MATSUMURA

Part-time Lecturer

Shoichi SUZUKI, Tatsuo KAWAMOTO, Naoto SUDA,
Yoshiyuki KATO, Yasuo ISHIWATA, Yoshiyuki BABA,
Toshimoto TENGAN, Masahiko YOKOZEKI, Shigetoshi HIYAMA,
Shigeki TAKAHASHI, Takumi TAKAHASHI, Yuji OGIHARA,
Maristela Sayuri ARAI, Jun MIYAMOTO, Junichi TAKADA,
Rina HIKITA, Yuko YASUDA, Hiroyuki KAMIMOTO,
Hideyuki YOSHIZAWA, Takayuki MIYAZAKI,
Yumi INAGAKI, Sakurako KANO, Yuki SAGAWA, Aina OKAWARA

(1) Research

- 1) Basic and clinical studies of cleft lip and/or palate and other congenital craniofacial conditions
- 2) Morphological and physiological studies of facial deformity

- 3) Physiological study about control mechanism of stomatognathic function
- 4) Functional MRI study in the craniofacial region
- 5) Clarify the factors of malocclusion with epidemiological technique

(2) Education

The goal of the program of Maxillofacial Orthognathics is to provide information related to craniofacial growth and development, and stomatognathic function in order to develop basic knowledge and skills for the treatment of the patients with a wide variety of malocclusion. It also provides valuable information of diagnosis and treatment planning for orthodontic and orthognathic therapies of the patients with jaw deformities and congenital craniofacial anomalies.

Comprehensive care by a team of specialists including maxillofacial surgeons, orthodontists, speech therapists etc. is needed for the treatment of the patients with cleft lip and palate and other craniofacial anomalies. The Graduate Program provides the clinical education of orthodontics as a part of the multi-disciplinary approach for such patients.

(3) Clinical Performances

In the Clinic, we treat a large number of patients presenting a variety of malocclusions to be assigned to group practice in order to gain valuable experience in diagnosis, treatment planning, orthodontic therapy, and patient management. Especially for patients born with cleft lip and/or palate and who need craniofacial and orthognathic surgery, we have clinical meetings and conferences for the comprehensive care through a team approach with maxillofacial surgeons, maxillofacial prosthodontists and speech therapists. We also provide supportive counseling to families who have members with congenital anomalies before the treatment.

(4) Publications

[Original Articles]

1. Kaisaka Y, Uezono M, Inoue M, Takakuda K, Moriyama K. Novel Subperiosteal Device Geometry and Investigation of Efficacy on Surrounding Bone Formation and Bone-Bonding Strength. *Bioengineering (Basel)*. 2024.11; 11(11);
2. Ogawa T, Xue J, Guo L, Inoue-Arai MS, Vendramini-Pittoli S, Zechi-Ceide RM, Candido-Souza RM, Tonello C, Brandão MM, Okada Ozawa T, Porto Peixoto A, Ruiz DMCF, Nakashima T, Ikegawa S, Moriyama K, Kokitsu-Nakata NM. Identification of a de novo PUF60 variant associated with craniofacial microsomia. *American Journal of Medical Genetics Part A*. 2024.09; 194(9); e63631
3. Takagiwa Y, Higashihori N, Kano S, Moriyama K. Roles of the histone methyltransferase SET domain bifurcated 1 in epithelial cells during tooth development. *Archives of Oral Biology*. 2024.09; 165; 106026
4. Iwata D, Kometani-Gunjigake K, Nakao-Kuroishi K, Mizuhara M, Nakatomi M, Moriyama K, Ono K, Kawamoto T. Ser252Trp mutation in fibroblast growth factor receptor 2 promotes branching morphogenesis in mouse salivary glands. *Journal of Oral Biosciences*. 2024.03; 66(1); 90-97
5. Machida R, Ogawa T, Min Soe K, Moriyama K. Nonsense-mediated mRNA decay affects hyperactive root formation in oculo-facio-cardio-dental syndrome via up-frameshift protein 1. *Journal of Oral Biosciences*. 2024.03; 66(1); 225-231
6. Suzuki A, Tani Y, Anzai T, Isumi A, Doi S, Ogawa T, Moriyama K, Fujiwara T. Association between Short Stature at Grade 1 and Permanent Teeth Caries at Grade 6 in Elementary School Children in Japan: A Population-Based Cohort Study. *International Journal of Environmental Research and Public Health*. 2024.01; 21(1); 105

[Conference Activities & Talks]

1. Shimizu M, Uezono M, Ogasawara T, Yonemitsu Y, Sasaki Y, Nakajima Y, Moriyama K. Assessment of mandibular landmark specification: correspondence between two-dimensional radiography and three-dimensional computed tomography. The 9th International Symposium on Biomedical Engineering 2024 2024.12.03 Shizuoka
2. Takagiwa Y, Higashihori N, Moriyama K. Roles of SETDB1 in epithelial cells during tooth development. The 13th Residents' Forum of Taiwan Association of Orthodontists The 5th Residents' Forum of Asian Pacific Orthodontic Society 2024.12.02 Taiwan
3. Hung C, Tsuji M, Matsumoto H, Moriyama K. Craniofacial morphology in patients with cleidocranial dysplasia. 37th Annual Meeting of TAO and 14th Asian Pacific Orthodontic Congress 2024.12.02 Taiwan
4. Moriyama K. Key Considerations in the Treatment of Patients with Mandibular Prognathism and Facial Asymmetry. 37th Annual Meeting of TAO and 14th Asian Pacific Orthodontic Congress 2024.12.02 Taiwan
5. Inoue-Arai MS, Tsuji M, Honda E, Moriyama K. Movement of Articulator Using Three-Dimensional MRI Movie in Subjects with CLP. 37th Annual Meeting of TAO and 14th Asian Pacific Orthodontic Congress 2024.12.02 Taiwan
6. Lu Y, Kobayashi Y, Moriyama K. Effects of Hypoxia on the Murine Embryonic Cranial Base Development. The 72nd Annual Meeting of Japanese Association for Dental Research 2024.11.16 Kagoshima
7. Liu Y, Kobayashi Y, Niki Y, Kamimoto H, Sodsook W, Moriyama K. Effects of TEAD1 during orthodontic tooth movement in osteoblast differentiation. The 72nd Annual Meeting of Japanese Association for Dental Research 2024.11.16 Kagoshima
8. Kobayashi Y, Tsuji M, Moriyama K. Oral and craniofacial morphology in Japanese patients with achondroplasia. The 72nd Annual Meeting of Japanese Association for Dental Research 2024.11.16 Kagoshima
9. Khine AT, Yoshizawa H, Miyamoto JJ, Inoue A, Moriyama K. Association of temporomandibular joint morphology and condylar movement in skeletal Class II and III patients. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
10. Liu Y, Kobayashi Y, Niki Y, Kamimoto H, Sodsook W, Moriyama K. The expression pattern of TEAD 1 during orthodontic tooth movement and its role in osteoblast differentiation. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
11. Ploysongsang K, Kobayashi Y, Niki Y, Chavanavesh J, Moriyama K. The effects of systemic and sustained hypoxia on orthodontic tooth movement in rats. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
12. Moreno Galvez E, Kadota-Watanabe C, Zhao B, Kim J, Wu J, Lindsey K, Hong C. Discovering the role of P75NTR in temporomandibular joint cartilage formation using conditional knockout mice.. UCSF Research and Clinical Excellence Day 2024 2024.10.16 San Francisco, USA
13. Hui P, Kadota-Watanabe C, Zhao B, Lao-Ngo I, Wu J, Hong C. Evaluating the utility of two distinct animal models: A comparative study of anterior vs. posterior mid-palatal expansions.. UCSF Research and Clinical Excellence Day 2024 2024.10.16 San Francisco, USA
14. Ogawa T, Xue J, Guo L, Arai MS, Vendramini-Pittoli S, Zechi-Ceide RM, Candido-Souza RM, Tonello C, Brandão MM, Okada Ozawa T, Peixoto AP, Ruiz DMCF, Tomoki Nakashima T, Ikegawa S, Moriyama K, Kokitsu-Nakata NM. A case of craniofacial microsomia with a de novo PUF60 variant. The 69th Annual Meeting of the Japan Society of Human Genetics 2024.10.09 Hokkaido
15. Ukita N, Ogawa T, Yamada M, Takeuchi C, Kosaki K, Moriyama K. Functional analysis of SATB2 variants associated with SATB2-associated syndrome. The 69th Annual Meeting of the Japan Society of Human Genetics 2024.10.09 Hokkaido
16. Moriyama K. Real-Time Continuous Monitoring of Oral Soft Tissue Pressure with a Wireless Mouthguard Device for Assessing Tongue Thrusting Habits. The 10th Biennial COAST conference 2024.10.06 California, USA

17. Chida S, Kurimoto R, Chiba T, Nakamura S, Takagi J, Moriyama K, Asahara H. Functional analysis of Mohawk homeobox during orthodontic tooth movement with adeno-associated virus vector. TMDU-SPRING Retreat 2024 2024.09.11 Shizuoka
18. Liu L, Kobayashi Y, Moriyama K. SASP senescent cells induces FGF/FGFR2 binding in coronal suture of Apert syndrome mice. TMDU-SPRING Retreat 2024 2024.09.11 Shizuoka
19. Ukita N, Ogawa T, Moriyama K. Functional analyses of SATB2 variants reveal mechanisms of pathogenicity linked to SATB2-associated syndrome. TMDU-SPRING Retreat 2024 2024.09.11 Shizuoka
20. Kato A, Higashihori N, Moriyama K. Considering hair regeneration from the perspective of the cell fate determination of dental epithelial stem cells by epigenetic regulation. TMDU-SPRING Retreat 2024 2024.09.11 Shizuoka
21. Moriyama K. Lessons Learned from Craniofacial Anomalies at Chairside and Bench. The 43rd Annual Meeting, IADR-Korean Division 2024.09.06 Seoul, KOREA
22. Moriyama K, YKobayashi Y, Tsuji M. An Orthodontic Perspective on Oral and Craniofacial Morphology of Patients with Apert and Crouzon Syndromes in Japan. CLEFT TOKYO 2024 The 16th world congress of the International Cleft Lip and Palate Foundation 2024.07.17 Tokyo
23. Machida R, Ogawa T, Soe KM, Moriyama K. Molecular mechanism of radiculomegaly in oculo-facio-cardio-dental syndrome. CLEFT TOKYO 2024 The 16th world congress of the International Cleft Lip and Palate Foundation 2024.07.17 Tokyo
24. Omori Y, Ogawa T, Kang J, Uezono M, Moriyama K. Sex differences in congenital defects of permanent teeth in patients with nonsyndromic cleft palate. CLEFT TOKYO 2024 The 16th world congress of the International Cleft Lip and Palate Foundation 2024.07.17 Tokyo
25. Yonemitsu Y, Uezono M, Ogasawara T, Shimizu M, Sugino T, Nakajima Y, Moriyama K. Development of automatic landmark identification for mandibles using curvature-based registration. TMDU Graduate Program Retreat 2024.06.07 Tokyo
26. Moriyama K. Orthodontic and orthognathic treatment for cleft lip and/or palate patients. Congreso Nacional e Internacional de la Facultad de Odontología UNAM – AMIC– LOS ANGELES DENTAL MEETING 2024 2024.05.01 Mexico City, United Mexican States
27. Sodsook W, Kobayashi Y, Kamimoto H, Niki Y, Chantarawatit P, Moriyama K. Roles of B-Cell Lymphoma 6 in Orthodontic Tooth Movement. 2024 IADR/AADOCR/CADR General Session & Exhibition 2024.03.13 New Orleans, LA, USA
28. Zhao B, Kadota-Watanabe C, Wu C, Hong C. P75NTR Agonists Induce Osteogenic and Chondrogenic Differentiation. 2024 IADR/AADOCR/CADR General Session & Exhibition 2024.03.13 New Orleans, LA, USA
29. Yin E, Kadota-Watanabe C, Zhao B, Hui P, Hong C. Characterizing the Role of p75NTR in TMJ Using CRISPR-Cas9 Systems. 2024 IADR/AADOCR/CADR General Session & Exhibition 2024.03.13 New Orleans, LA, USA
1. Matsumoto H, Moriyama K. Development of wireless mouthguard device with sensor for real-time monitoring of oral soft tissue pressure. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
2. Unnai(Yasuda) Y, Fujiwara T, Suzuki A, Anan(Ookawara) A, Tani Y, Ogawa T, Moriyama K. Study of association between malocclusion and brain volume in high school students. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
3. Uezono M, Wijarn S, Takakuda K, Ogasawara T, Techalertpaisarn P, Moriyama K. Effect of Orthodontic Miniscrew's Cutting Length on Cortical Bone. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
4. Takeuchi S, Ogasawara T, Uezono M, Moriyama K. Investigation of the effects of orthodontic tooth movement on root dentin matrix calcification. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa

5. Chida S, Kurimoto R, Asahara H, Moriyama K. Functional analysis of Mohawk homeobox during orthodontic tooth movement with adeno-associated virus vector. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
6. Nakakno H, Tshuji M, Nihara J, Tamaoki S, Sakamoto T, Okuhashi S, Koshio Y, Ogawa K, Sato T, Miyazawa K. A Large-Scale Study on malocclusion in Japanese Children. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29
7. Nomura A, Tsuji M, Saito H, Sano Y, Takakda M, Oomori Y, Matsumoto H, Niki Y, Moriyama K. Characteristics of intraoral morphology of Japanese cleidocranial dysplasia patients. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29
8. Hung C, Tsuji M, Kato A, Sasaki Y, Oomori Y, Matsumoto H, Niki Y, Moriyama K. Characteristics of craniofacial morphology of Japanese cleidocranial dysplasia patients. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29
9. Oiwa M, Higashihori N, Nomura A, Ishizeki Y, Yoshitani K, Inoue A, Niki Y, Moriyama K. A longitudinal study on subjective evaluation of maxillofacial morphology/function in patients with skeletal mandibular prognathism. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
10. Sagawa Y, ogawa T, Shimizu M, Nagata Y, Tanaka T, Moriyama K. A Japanese family with short root anomaly carrying a pathogenic variant in PTH1R. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
11. Niki Y, Kobayashi Y, Yoshitani K, Takeuchi S, Moriyama K. Orthodontic treatment of two cases with systemic lupus erythematosus. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
12. Ogasawara T, Uezono M, Moriyama K. Orthodontic treatment with temporary anchorage devices for maxillary protrusion with root-fractured molars and open bite. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
13. Tsunashima A, Uezono M, Ogasawara T, Ishizeki Y, Moriyama K. An Angle Class II div.2 patient treated by extraction of conical maxillary lateral incisors. The 83rd Annual Meeting of the Japanese Orthodontic Society 2024.10.29 Kanagawa
14. Ishizeki Y, Ogasawara T, Miyazaki T, Hayashi Y, Beppu A, Tsuji M, Moriyama K. Clinical characteristics of orthodontic patients with syndromic oligodontia in our hospital. The 64th Annual Meeting of The Japanese Teratology Society 2024.07.26
15. Higashihori N. Considering the relationship between the epigenetic regulation and the craniofacial congenital anomalies. The 64th Annual Meeting of The Japanese Teratology Society 2024.07.26 Tokyo
16. Inoue A, Higashihori N, Moriyama K. A case report of Parry-Romberg syndrome treated by surgical orthodontic treatment. The 64th Annual Meeting of The Japanese Teratology Society 2024.07.26
17. Arai H, Uezono M, Kikuchi M, Moriyama K. Investigation of the factors inducing rapid subperiosteal new bone formation by hydroxyapatite/collagen nanocomposite. The 78th Annual Meeting of Japanese Stomatological Society 2024.07.19
18. Lu Y, Kobayashi Y, Moriyama K. Analysis of expression pattern and function of extracellular superoxide dismutase 3 (Sod3) during mouse tooth development. The 78th Annual Meeting of Japanese Stomatological Society 2024.07.19
19. Takagiwa Y, Higashihori N, Moriyama K. The effects of targeted deletion of histone methyltransferase Setdb1 in epithelial cells on enamel development. The 78th Annual Meeting of Japanese Stomatological Society 2024.07.19
20. Chida S, Kurimoto R, Asahara H, Moriyama K. Analyze the function of Mohawk homeobox during Orthodontic Tooth Movement via local control of gene expression with Adeno-associated virus vector. The 42nd Annual Meeting of the Japanese Society for Bone and Mineral Research 2024.06.29 Okinawa
21. Hayahi Y, Higashihori N, Niki Y, Inoue A, Takahara N, Yoda T, Moriyama K. A mandibular prognathism patient with maxillary transverse deficiency treated by MARPE and two-jaw surgery. The 34th Annual Meeting of the Japanese Society for Jaw Deformities 2024.06.27 Tokyo

22. Niki Y, Higashihori N, Ishizeki Y, oiwa M, Inoue A, Matsuhimoto H, Moriyama K. Relationship between respiratory function and airway in skeletal class II patients. The 34th Annual Meeting of the Japanese Society for Jaw Deformatie 2024.06.27 Tokyo
23. Ogawa T, Yoshitani K, Arai H, Moriyama K. Orthodontic treatment of a patient with congenital fiber-type disproportion in our department. The 48th Annual Meeting of Japanese Cleft Palate Association 2024.05.30 Aichi
24. Machida R, Ogawa T, Moriyama K. Nonsense-mediated mRNA decay affects hyperactive root formation in OFCD syndrome. The 48th Annual Meeting of Japanese Cleft Palate Association 2024.05.30 Aichi

Department of Reconstructive Plastic Surgery

Professor: Kentaro Tanaka

Assistant Professor (Hospital): Naoya Ishida

Graduate students: Naoya Ishida, Kyoichi Murakami, Mayu Ueno

(1) Outline

This department is reconstructive plastic surgery as a hospital clinical department. Mainly in charge of various reconstructive surgeries using microsurgery, especially head and neck reconstruction. It is natural to perform standard reconstructive surgery for typical resection cases, but we also provide safe and high-quality reconstructive surgery for difficult cases in which the number of cases is small and standard treatment has not been established. In addition to primary reconstruction performed at the same time as tumor resection, we are actively working on secondary reconstruction surgery for residual deformities and paralysis after surgery.

In collaboration with other departments related to the head and neck region, we will promote research centered on the development of new surgical techniques that balance aesthetic and function and emphasize postoperative QOL of patients.

(2) Research

1. Development of head and neck reconstruction technique with emphasis on function and aesthetic
2. Research on nerve regeneration mechanism after nerve transplantation
3. Measurement of volume changes after tissue transplantation using a new animal model
4. Does improvement of peripheral capillary patency contribute to maintenance of transplanted adipose tissue volume?
5. First step to approach the "quality" of autograft tissue - Focusing on functional recovery of sweat glands after surgery
6. Development of new reconstructive techniques and functional evaluation methods for facial paralysis
7. Development of a limb-preserving surgical method emphasizing walking function for patients with diabetic foot gangrene

(3) Education

Pre- and post-graduate education in plastic surgery is provided in cooperation with the Department of Plastic and Reconstructive Surgery.

As a clinical department, plastic surgery is mainly in charge of reconstructing the shape and function of the body surface, and its area includes the whole body. Therapeutics (mostly surgery) have a higher weight than diagnostics, and because they often deal with conspicuous parts such as the face, neck, and hands and feet, it is characterized by the need for treatment results that take into account appearance. For medical students, plastic surgery is the most basic clinical department in the surgical department. , believes that mastering primary care for injuries and burns is essential for physicians. In addition, we would like them to understand the positioning of plastic surgery within the hospital and the importance of team medical care in cooperation with each department. First of all, we aim to provide an education that will make students interested in plastic surgery and that lectures and practical training will be a place of excitement.

(4) Lectures & Courses

Pre- and post-graduate education in plastic surgery is provided in cooperation with the Department of Plastic and Reconstructive Surgery.

[learning goal]

- 1: Know the meaning of plastic surgery and understand its position in surgery. In particular, recognize the relevance, competition, and congruence with other surgical departments.
- 2: Know the historical background of plastic surgery and understand the social necessity.
- 3: Understand the instruments and procedures in basic plastic surgery procedures (cutting and suturing, skin grafting, skin flaps, and other tissue transplantation), and as a result, know how much functional and cosmetic restoration can be achieved.
- 4: Recognize and understand plastic surgery diseases (skin plastic surgery, cranial plastic surgery, face, trunk, limb plastic surgery, cosmetic surgery).
- 5: Understand possible plastic surgical organ and tissue transplantation in the future.
- 6: Recognize artificial substances that can be substituted for living tissue, and cultivate insight into the future development of tissue substitutes.

[Knowledge and skills to be acquired]

- 1: Explain what plastic surgery is and why it is necessary.
- 2: Can advise patients or doctors of each department about what diseases are included in plastic surgery and take appropriate measures.
- 3: Can judge what kind of treatment method should be taken for each patient.
- 4: Be able to handle instruments used in basic plastic surgery procedures, select sutures, and be able to discuss scientifically what kind of procedures should be used.

In post-graduate education, after initial clinical training and training in plastic surgery for four years, a training program will be organized so that students can acquire qualifications as certified physicians of the Japan Society of Plastic and Reconstructive Surgeons. My goal is to be a clinician who is working on activities and pioneering the front line of plastic surgery, and at the same time, to be a researcher.

(5) Clinical Services & Other Works

Practice a high level of reconstructive surgery using microsurgical techniques. In particular, the number of cases of head and neck reconstruction is large, and in the 15 years since 2007, we have a clinical record of over 1000 cases. Above all, it is one of the leading facilities in Japan for skull base reconstruction surgery. Based on these experiences, we are able to provide safe and high-quality reconstructive surgery for difficult-to-treat cases that cannot be treated at other hospitals.

We have actively presented our medical research results at academic conferences in Japan and overseas, and have published many papers in English and Japanese. We have extensive exchanges with other universities and center hospitals, and actively participate in multi-institutional joint research.

(6) Clinical Performances

Our university is located in the center of Tokyo and consists of a medical school and a dental school, and society expects us to be specialists in the treatment of the head and neck region. Our department routinely performs reconstructive surgery using microsurgery. In particular, reconstructive surgery centered on head and neck reconstruction and skull base reconstruction is performed.

We not only perform various standard reconstructive surgeries for typical resection cases. We continue to provide safe and high-quality reconstructive surgery for difficult cases for which no standard treatment has been established and for surgical cases that are only performed at our hospital nationwide. In addition to primary reconstruction performed at the same time as tumor resection, we are actively working on secondary reconstruction surgery for residual deformities and paralysis after surgery.

Taking advantage of our advanced reconstructive surgery techniques, we are willing to perform reconstructive surgery for difficult-to-treat cases not only in the head and neck region but also in other parts of the body. The clinical departments that have treated us jointly are as follows. Head and Neck Surgery, Otolaryngology, Neurosurgery, Respiratory Surgery, Esophagogastric Surgery, Colorectal Surgery, Hepatobiliary and Pancreatic

Surgery, Cardiovascular Surgery, Peripheral Vascular Surgery, Orthopedic Surgery, Urology, Ophthalmology, Dermatology, Perinatal and Gynecology , Oral and Maxillofacial Surgery, Maxillofacial Prosthodontics, Implantology, etc. very diverse.

(7) Publications

[Original Articles]

1. Ishida N, Tanaka K, Murakami K, Ueno M, Mori H. Closure of Large Tracheocutaneous Fistula Using Modified Hinge Flap and Deltopectral Flap. *Head Neck*. 2024.12; 46(12); E104-E108
2. Higashino T, Wakabayashi M, Zenda S, Yasunaga Y, Araki J, Mukaigawa T, Onitsuka T, Nakagawa M, Hamahata A, Narita K, Arikawa M, Takanari K, Kadota H, Yanagisawa D, Tanaka K, Matsumoto H, Kimata Y, Miyamoto S, Sakuraba M, Kawai K, Terao, Y Hyodo I, Ishida K, Yoshimura K. Impact of radiotherapy-related late toxicities of skin and soft tissue in the neck on quality of life in head and neck cancer patients: a multi-institutional observational study in Japan. *Support Care Cancer*. 2024.12; 33(1); 64
3. Takada A, Mori H, Nishimura Y, Tanaka K, Okazaki M. The largest perforator of DIEP flap has a higher rate of continuity with the superficial inferior epigastric artery. *Asian J Surg*. 2024.08;
4. Ueno M, Mori H, Uemura N, Kato S, Tanaka K. Anatomical features of a crossing vein connecting left and right internal mammary veins: A preliminary study with computerized tomography or magnetic resonance imaging. *Microsurgery*. 2024.02; 44(2); e31148
5. Homma T, Uemura N, Tanaka K, Mori H, Okazaki M. Objective Assessment of the Repeated Botox Treatment to the Synkinesis of Facial Paralysis by the Integrated Electromyography. *The Journal of craniofacial surgery*. 2024.01; 35(2); 577-581

[Conference Activities & Talks]

1. Murakami K, Tanaka K. The Sweat Secretion in the Pedicled Volar Skin Flaps in Rats. *IPSRC 2024* 2024.10.19 港区

Department of Cell Biology

Professor : Takao Nakata
 Assistant Professor : Arima Yoshimi
 Assistant Professor : Cheng Lihong
 Assistant Professor : Shogo Yoshihara
 Technical Staff : Satoko Nakamura
 Technical Staff : Izumi Takemura
 Technical Staff : Kazumi Kimura

(1) Outline

We started a new laboratory from April 2009. We are interested in the cellular responses to spatio-temporal activation of signaling molecules. For this purpose, we took synthetic approaches combined with optogenetics. We introduce the photo switches into cells, and analyze signaling systems quantitatively. Research will be conducted by using molecular biology, molecular genetics, cell biology, theoretical biology, and live-imaging techniques.

(2) Research

We are studying cell signaling using optogenetics. We made photo-switch of various signaling proteins and introduced them into cells. Parts of the cells were stimulated by blue lasers. The photo-switches are activated locally within the cells and we observe the cell phenotypes by time-lapse microscope using these techniques. We can understand molecular mechanisms of cell signaling in spatio-temporal fashion and also can manipulate cellular conditions using these switches.

(3) Education

We teach histology and cell biology to 2nd year medical students. Our goal in undergraduate course is to provide students with fundamental knowledge and skill to analyze microscopic samples of normal human body. In cell biology course we start a little bit advanced lectures such as cell death and cell cycle because we avoid to teach the same contents that they have learned in the past year biology course. We also provide more stimulative lectures in later half of the course such as autophagy, zebrafish genetics and mathematical model.

(4) Publications

[Original Articles]

1. Hironori Inaba, Tsuyoshi Imasaki, Kazuhiro Aoyama, Shogo Yoshihara, Hiroko Takazaki, Takayuki Kato, Hidemasa Goto, Kaoru Mitsuoka, Ryo Nitta, Takao Nakata. Cryo-electron tomography of the actin cytoskeleton and membrane organization during lamellipodia formation using optogenetics 2024.08;
2. Cheng L, Shi C, Nakamura S, Esaki N, Ichiba Y, Tanaka M, Sakai K, Matsui T. Adiponectin-Receptor Agonistic Dipeptide Tyr-Pro Stimulates the Acetylcholine Nervous System in NE-4C Cells. Journal of agricultural and food chemistry. 2024.04; 72(13); 7121-7129

3. Toshifumi Asano, Philipp Sasse, Takao Nakata. Development of a Cre-recombination-based color-switching reporter system for cell fusion detection. *Biochem Biophys Res Commun.* 2024.01; 690; 149231
4. Aiko Takada, Toshifumi Asano, Ken-Ichi Nakahama, Takashi Ono, Takao Nakata, Tomohiro Ishii. Development of an optogenetics tool, Opto-RANK, for control of osteoclast differentiation using blue light. *Sci Rep.* 2024.01; 14(1); 1749

[Misc]

1. Lihong Cheng, Caiyue Shi, Xixi Li, Toshiro Matsui. Impact of Peptide Transport and Memory Function in the Brain Nutrients. 2024.09;

[Conference Activities & Talks]

1. Lihong Cheng. Bioavailability and mechanism of action of blood brain barrier transportable dipeptide Tyr-Pro for its therapeutic potential on cognitive impairment. The 71st Annual Meeting of the Japanese Society for Food Science and Technology 2024.08.30 Nagoya

Department of Joint Surgery and Sports Medicine

Hideyuki Koga
Tomomasa Nakamura, Kazumasa Miyatake, Mai Katakura

Department of Cartilage Regeneration
Yusuke Nakagawa, Ryohei Takada

Riko Yamashita, Ryu Yoshida
Chisa Ishihata, Ryota Seki, Wataru Shirahata, Toyohiro Katsumata
Yasumasa Tokumoto, Rena Hagiwara, Saya Watanabe
Yijie Gao, Taizo Hatano

Miyoko Ojima, Miho Okada

(1) Research

1. Development and establishment of isolation and expansion of mesenchymal stem cells
2. Research of biological characteristics of mesenchymal stem cells
3. Development and improvement of treatment method of articular cartilage defect with mesenchymal stem cells
4. Development of treatment strategy to joint structure injuries with mesenchymal stem cells
5. Development of artificial cartilage and bone
6. Development of novel agents related to bone and cartilage metabolism
7. Genetical approach to bone and cartilage metabolism
8. Clarifying mechanism and control of post-injury and postoperative inflammation with tissue fibrosis
9. Clarifying mechanism of joint pain with novel treatment strategy
10. Genetic approach to secondary hip osteoarthritis

(2) Lectures & Courses

We are working with the Orthopaedic and Spinal Surgery as a Department of Orthopaedic Surgery of University Hospital. The doctors start to have education of orthopedic surgery as a member of the department from the staffs of the department of Orthopaedic Surgery according to the orthopaedic education and training program after completing the two-year fundamental education and training program as a junior resident. They experience a lot of traumatic patients and deepen their basic orthopaedic skills for two-year junior orthopaedic training in one of the branch hospitals every year. They expand their skills and obtain orthopaedic specialty educations in the advanced two-year education and training program. After completing a six-year educational program of the orthopaedic surgery, they are recommended to apply to the orthopedic specialist form the Japanese Orthopaedic Association. They usually apply to enter the graduate school program after 4 or 5 years of clinical experience. We encourage not only orthopedic doctors but doctors of other specialty, veterinarian doctors and physical therapists, etc to work with us.

(3) Clinical Services & Other Works

Treatment for sports injuries

Prevention, conservative treatment and rehabilitation for sports injuries

Anatomic double-bundle anterior cruciate ligament (ACL) reconstruction for ACL injuries

Surgical treatment for knee multiple ligament injuries

Surgical treatment for meniscal injuries to restore meniscal function

Regenerative medicine for unrepairable meniscus and cartilage injuries

Treatment for osteoarthritis (OA)

Conservative approaches to early OA

Joint-sparing surgeries such as osteotomies for moderate OA

Total arthroplasties for severe OA

Clinical researches and clinical results for above-mentioned approaches have been presented at both domestic and international congresses, as well as reported in Japanese and English articles.

(4) Clinical Performances

Sports injuries

We have been performing double-bundle ACL reconstruction since 1994 as a pioneer, and reported good clinical outcomes regarding knee stability, ratio of return to sports and patients' satisfaction. As for meniscal surgeries, we have been trying to repair as much as possible to restore meniscal function. In addition, we have developed a novel surgical procedure to restore meniscal function for patients with post-menisectomy and discoid meniscus. We have also analyzed mechanisms and preventive methods for ACL injuries, and first in the world clarified a detailed ACL injury mechanism. Based on the findings, various approaches to ACL injury prevention and rehabilitation after ACL reconstruction is being conducted.

Arthroplasties

We have developed a new total knee system called Actiyas, named after the combination of active and healed ("iyas" in Japanese), which is specifically designed for Japanese. In order to develop this, we analyzed Japanese bone morphology, and this system is designed for more functional and "active" motion without knee pain, and eventually patients to be "healed". Ceramic is used for the femoral implant, by which we can expect lesser implant wear, resulting in better long-term results. We perform simultaneous bilateral arthroplasties for Bilateral OA patients, helping them earlier return to daily life.

Regenerative medicine for cartilage and meniscus injuries using synovial stem cells

Based on numerous basic researches performed in our laboratory, we started stem cell therapy for cartilage injuries using synovial stem cells since April 2008. In this therapy, we take synovium from patients at day surgery, culture synovial stem cells at the cell processing center in our university, and transplant them arthroscopically. The safety and effectiveness had been already confirmed. In addition, we also started a clinical trial of synovial stem cell transplantation for unrepairable meniscal tear since August 2014.

(5) Publications

[Original Articles]

1. Mitsuru Mizuno, Yoshitaka Maeda, Sho Sanami, Takahisa Matsuzaki, Hiroshi Y Yoshikawa, Nobutake Ozeki, Hideyuki Koga, Ichiro Sekiya. Noninvasive total counting of cultured cells using a home-use scanner with a pattern sheet. *iScience*. 2024.03; 27(3); 109170
2. Yusuke Fuchioka, Kentaro Endo, Yuriko Sakamaki, Takahiro Tanimoto, Nobutake Ozeki, Yusuke Nakagawa, Hideyuki Koga, Makoto Tomita, Ichiro Sekiya. Scanning electron microscopy analysis of synovial and adipose mesenchymal stem cells adhering to cartilage. *Regen Ther*. 2024.12; 27; 488-495

3. Miguel A Fernandez, Justin Lee, James Calder, Mai Katakura, Mary Jones, Miki Dalmau-Pastor. The deltoid ligament complex is reliably visualised as four fascicles in two layers with 3D volumetric MRI in the ankles of 20 asymptomatic volunteers. *Knee Surg Sports Traumatol Arthrosc.* 2024.12; 32(12); 3076-3081
4. Hisako Katano, Nobutake Ozeki, Mitsuru Mizuno, Kentaro Endo, Hideyuki Koga, Jun Masumoto, Ichiro Sekiya. Femoral cartilage defects initiate from medial meniscus extrusion or tibial cartilage lesions and expand in knee osteoarthritis as revealed by 3D MRI analysis. *Sci Rep.* 2024.10; 14(1); 25937
5. Mai Katakura, Mercedes Aramayo Gomes Rezende, James D F Calder, Angela E Kedgley. A comparison of abductor hallucis muscle activation and medial longitudinal arch angle during nine different foot exercises. *Gait Posture.* 2024.09; 113; 167-172
6. Katakura M, Clark R, Lee JC, Mitchell AWM, Shaw JW, Tsuchida AI, Jones M, Kelly S, Calder JDF. Foot and Ankle MRI Findings in Asymptomatic Professional Ballet Dancers. *Orthopaedic journal of sports medicine.* 2024.08; 12(8); 23259671241263593
7. Hiroki Katagiri, Yusuke Nakagawa, Toshiyuki Ohara, Tomomasa Nakamura, Aritoshi Yoshihara, Masaya Hayashi, Hideya Yoshimura, Tsuyoshi Nagase, Ichiro Sekiya, Hideyuki Koga. Serial Assessment of Factors Associated With Patient-Reported Outcomes up to 2 Years After ACL Reconstruction Using Autologous Hamstring Tendon: Results From the TMDU MAKs Study. *Orthop J Sports Med.* 2024.08; 12(8); 23259671241254105
8. Naoko Araya, Hideyuki Koga, Yusuke Nakagawa, Mikio Shioda, Nobutake Ozeki, Yuji Kohno, Tomomasa Nakamura, Ichiro Sekiya, Hiroki Katagiri. Risk factors for delayed bone union in opening wedge high tibial osteotomy. *Jt Dis Relat Surg.* 2024.08; 35(3); 546-553
9. Seiya Matsuta, Kentaro Endo, Nobutake Ozeki, Yusuke Nakagawa, Hideyuki Koga, Ichiro Sekiya. Synovial mesenchymal stem cells secrete more lubricin than adipose mesenchymal stem cells after injection into rat osteoarthritis knees. *Biochem Biophys Res Commun.* 2024.07; 729; 150354
10. Nobutake Ozeki, Hideyuki Koga, Tomomasa Nakamura, Hiroki Katagiri, Yusuke Nakagawa, Takashi Hoshino, Mai Katakura, Masaki Amemiya, Aritoshi Yoshihara, Hisako Katano, Mitsuru Mizuno, Kentaro Endo, Jun Masumoto, Ichiro Sekiya. Cartilage thickness in the medial compartment of the knee joint evaluated by MRI three-dimensional analysis correlates with weight-bearing line ratio and joint line convergence angle. *J Orthop Sci.* 2024.07;
11. Ryu Yoshida, Hideyuki Koga, Tomomasa Nakamura, Yusuke Nakagawa, Mai Katakura, Masaki Amemiya, Takashi Hoshino, Aritoshi Yoshihara, Shoichi Hasegawa, Yasumasa Tokumoto, Ichiro Sekiya, Nobutake Ozeki. Steep medial posterior tibial slope angle and ramp lesion are independent risk factors for an increase in quantitatively measured pivot shift in patients with ACL-deficient knees. *J Exp Orthop.* 2024.07; 11(3); e70011
12. Ozeki N, Koga H, Nakamura T, Katagiri H, Nakagawa Y, Hoshino T, Katakura M, Amemiya M, Yoshihara A, Katano H, Mizuno M, Endo K, Masumoto J, Sekiya I. The association of the medial meniscus covering ratio with knee cartilage thickness at 15 medial compartment subregions as found by three-dimensional analysis using MRI. *Journal of experimental orthopaedics.* 2024.07; 11(3); e70005
13. Shoichi Hasegawa, Riko Yamashita, Yusuke Nakagawa, Kazumasa Miyatake, Hiroki Katagiri, Tomomasa Nakamura, Hideyuki Koga, Ichiro Sekiya, Toshitaka Yoshii, Vicki Rosen, Kunikazu Tsuji. A novel methodology utilizing microchip implants to monitor individual activity and body temperature for assessing knee pain in group-housed rats. *Sci Rep.* 2024.07; 14(1); 16909
14. Ryu Yoshida, Hideyuki Koga, Junpei Matsuda, Tomomasa Nakamura, Kazumasa Miyatake, Hiroki Katagiri, Mai Katakura, Aritoshi Yoshihara, Ryota Seki, Toyohiro Katsumata, Mitsuru Mizuno, Ken Watanabe, Ichiro Sekiya, Kunikazu Tsuji, Yusuke Nakagawa. Presoaking Grafts in Vancomycin Does Not Impair Graft-Bone Healing in a Rat Anterior Cruciate Ligament Reconstruction Model. *Am J Sports Med.* 2024.06; 52(7); 1784-1793
15. Masato Takao, Satoru Ozeki, Maya Kubo, Xavier M Oliva, Takayuki Yamazaki, Dani Lowe, Kentaro Matsui, Mai Katakura, Yoshitaka Takeuchi, Mark Glazebrook. Directly measured strain patterns of the anterior talofibular and calcaneofibular ligaments after isolated ATFL repair in a combined ATFL and CFL injury: A cadaver study. *J Orthop Sci.* 2024.06;

16. Naoto Watanabe, Takahisa Ogawa, Kazumasa Miyatake, Ryohei Takada, Tetsuya Jinno, Hideyuki Koga, Toshitaka Yoshii. Increased bone resorption that outpaces increased bone formation: An important pathology of rapidly destructive coxarthrosis. *J Orthop Res.* 2024.05; 42(5); 1066-1073
17. Takehiro Ohmi, Hiroki Katagiri, Masaki Amemiya, Koji Ikematsu, Midori Miyazaki, Hideyuki Koga, Kazuyoshi Yagishita. Gait analysis of patients with knee osteoarthritis who can run versus cannot run. *Gait Posture.* 2024.05; 112; 67-72
18. Tagawa Y, Saito T, Iwai H, Sato M, Noda S, Yamamoto A, Ota M, Endo K, Koga H, Takahara Y, Sugimoto K, Sekiya I, Fujio K, Kawakami E, Mizoguchi F, Yasuda S. ARID5B is a negative modulator of IL-6 production in rheumatoid arthritis synovial fibroblasts. *Immunological medicine.* 2024.05; 47(3); 1-10
19. Jae-Sung An, Christophe Jacquet, Glauco Loddo, Ahmed Mabrouk, Hideyuki Koga, Jean-Noël Argenson, Matthieu Ollivier. Deformity in valgus knee malalignment is not only in the femur but also in tibia or both, based on demographic and morphological analysis before and after knee osteotomies. *Knee Surg Sports Traumatol Arthrosc.* 2024.05; 32(5); 1087-1095
20. Nobutake Ozeki, Hideyuki Koga, Tomomasa Nakamura, Yusuke Nakagawa, Takashi Hoshino, Masaki Amemiya, Ichiro Sekiya. Real-time virtual sonography-guided ossicle removal in unresolved Osgood-Schlatter disease. *Arthrosc Tech.* 2024.04; 13(4); 102897
21. Yang Yang, Hideyuki Koga, Yusuke Nakagawa, Tomomasa Nakamura, Hiroki Katagiri, Ryohei Takada, Mai Katakura, Kunikazu Tsuji, Ichiro Sekiya, Kazumasa Miyatake. Characteristics of the synovial microenvironment and synovial mesenchymal stem cells with hip osteoarthritis of different bone morphologies. *Arthritis Res Ther.* 2024.01; 26(1); 17

[Misc]

1. Tomomasa Nakamura, Hideyuki Koga. Review of the Development of Meniscus Centralization. *Curr Rev Musculoskelet Med.* 2024.08; 17(8); 303-312

[Conference Activities & Talks]

1. Yusuke Nakagawa, Tomomasa Nakamura, Nobutake Ozeki, Takashi Hoshino, Masaki Amemiya, Jae-Sung An, Shoichi Hasegawa, TMDU MAKs group, Hideyuki Koga. The combination of ALS augmentation or LET improves clinical outcomes in revision ACLR patients. 2nd Japanese Knee Society Annual Meeting 2024.12.06 Okinawa, Japan
2. Hideyuki Koga. Solutions on meniscus tear repair. APKASS 2024.10.24 Hainan, China
3. Hideyuki Koga. Meniscus centralization. APKASS 2024.10.24 Hainan, China
4. Hideyuki Koga. How to manage lateral meniscus posterior root tear with ACL injury. APKASS ACL consensus meeting 2024.10.24 HongKong
5. Mai Katakura, Kenji Hirohata, Rie Oshimoto, Hideyuki Koga. Bone marrow edema of the ballet dancer's talus on MRI – a case report and discussion of its management. 34th International Association for Dance Medicine & Science 2024.10.17 Rimini, Italy
6. Hideyuki Koga. Meniscal centralization -Solution to reduce extrusion-. Advance in Knee Arthroscopy and Sports Medicine 2024.10.11 Hanoi, Vietnam
7. Hideyuki Koga. Role of lateral meniscus for ACL reconstruction. 44th Annual International Congress of the Korean Arthroscopy Society 2024.10.05 Seoul, Korea
8. Hideyuki Koga. ISAKOS JSOA Combined program: case-based discussion. 2nd JSOA 2024.09.12 Tokyo, Japan
9. Hideyuki Koga. Meniscal centralization. SIAGASCOT fellow seminar 2024.09.09 Tokyo, Japan
10. Hideyuki Koga. Root or Extrusion: What came First?. Orthopaedic Technology & Innovation Forum 2024.09.06 Sydney, Australia

11. Hideyuki Koga. Meniscal Centralization: Tips for Success. Orthopaedic Technology & Innovation Forum 2024.09.06 Sydney, Australia
12. Hideyuki Koga. Root and extrusion. Orthopaedic Technology & Innovation Forum 2024.09.06 Sydney, Australia
13. Hideyuki Koga. Complex meniscus repair. Orthopaedic Technology & Innovation Forum 2024.09.06 Sydney, Australia
14. Hideyuki Koga. Pardon the innovation: Optimal strategies for ACL surgery. Orthopaedic Technology & Innovation Forum 2024.09.06 Sydney, Australia
15. Hideyuki Koga. Gruelling knee cases. Orthopaedic Technology & Innovation Forum 2024.09.06 Sydney, Australia
16. Hideyuki Koga. ACL injury mechanisms - lessons learned from video analyses. Croucher Advances in Sports Biomechanics Summer Course 2024.07.22 HongKong
17. Hideyuki Koga. Meniscus centralization: tips and tricks. TOSSM-JSOA combined meeting 2024.07.04 Pattaya, Thailand
18. Hideyuki Koga. ACL mechanisms based on video analysis. TOSSM-JSOA combined meeting 2024.07.04 Pattaya, Thailand
19. Hideyuki Koga. How to treat meniscus injuries in athletes. TOSSM-JSOA combined meeting 2024.07.04 Pattaya, Thailand
20. Mai Katakura, Tomohiko Tateishi, Daiya Kitamura, Kaori Nakamura, Hideyuki Koga. The effect of extracorporeal shock-wave therapy on bone union in intramedullary screw fixation of proximal fifth metatarsal stress fractures. ESSKA 2024.05.08 Milan, Italy
21. Ryota Seki. Effect of lateral meniscus centralization on anterior cruciate ligament reconstructed knee rotational stability; A clinical study using a triaxial accelerometer. ESSKA 2024.05.08 Milan, Italy
22. Yasumasa Tokumoto. Short-term outcomes after meniscus centralization combined with pull-out repair and open wedge high tibial osteotomy for medial meniscus posterior root tear with varus alignment. ESSKA 2024.05.08 Milan, Italy
23. Masaki Amemiya. Lateral retinacular release prevents progression of cartilage damage in the patellofemoral joint after medial open wedge high tibial osteotomy. ESSKA 2024.05.08 Milan, Italy
24. Hideyuki Koga. Combination of AKO aimed at neutral alignment and preservation of meniscus function. 3rd JKOPS 2024.04.19 Takamatsu, Japan
25. Hideyuki Koga. Repair of root tears. GOTS webinar serie 2024.04.11
26. Ryu Yoshida. The presoaking grafts in vancomycin does not exacerbate graft-bone healing in the rat ACLR model. 70th ORS 2024.02.02 Long Beach, USA
27. Hideyuki Koga. Surgical Centralization of the Lateral Meniscus to Prevent the Articular Cartilage from Early OA Changes. 70th ORS 2024.02.01 Long Beach, U.S.A
28. Yusuke Nakagawa. Older age, poor preoperative quadriceps muscle strength, and residual pain are risk factors for poorer quadriceps muscle strength recovery at one year after anterior cruciate ligament reconstruction: the TMDU MAKS study. ACL Study Group Meeting 2024.01.28 Niseko, Japan
29. Hideyuki Koga, Ryota Seki, Tomomasa Nakamura. Additional Centralization Procedure Further Controls Pivot Shift After ACL Reconstruction and Lateral Meniscus Repair. ACL Study Group Meeting 2024.01.28 Niseko, Japan

Department of Cell Signaling

Associate Professor	Mikihito Hayashi
Collaborative Researcher	Ryosuke Denda, Yu Yamashita
Graduate Student	Qing Yifan, Xu Jiayi, Wang Cheng, Chen Zeyu, Shu Kato, Li Beichen

(1) Outline

Bone abnormalities not only affect the bone itself, but also lead to abnormalities in various other organs, and it is thought that the maintenance of bone homeostasis is related to the regulatory mechanisms of organs throughout the body. We aim to elucidate the regulatory mechanisms of bone remodeling by bone-forming osteoblasts and bone-resorbing osteoclasts, as well as the molecular mechanisms involved in the crosstalk between bone and other organs. In particular, we use comprehensive screening methods and new genetically modified mice to conduct basic research in molecular biology and research with a view to clinical applications.

(2) Research

Research Subjects

- 1) Regulation of bone remodeling by bone cells
- 2) Identification of bone-derived systemic regulatory factors (osteokines)
- 3) Mechanisms of bone regulation by mechanical stress-sensitive and responsive molecules
- 4) Development of clinical applications using disease model mice

(3) Education

For the first-year undergraduate students, we are in charge "Molecular basis of hard tissue biochemistry", "Laboratory course" and "Biology of bone metabolism". The contents of "Molecular basis of hard tissue biochemistry" and "Biology of bone metabolism" include the topics related to the differentiation mechanisms of bone cells (osteoclasts, osteoblasts, osteocytes) and chondrocytes, as well as the regulatory mechanisms of intercellular cross-talk.

For the graduate students, we discussed the intracellular and intercellular signal transduction mechanisms that govern complex biological functions and cellular organization based on molecular and cellular biology.

(4) Lectures & Courses

Our aim is to provide instruction that enables students to think for themselves and come up with answers based on fundamental knowledge of molecular and cellular biology, while also helping them to understand the latest research in this field.

(5) Publications

[Original Articles]

1. Yifan Qing, Takehito Ono, Yukihiro Kohara, Atsushi Watanabe, Noboru Ogiso, Masako Ito, Tomoki Nakashima, Sunao Takeshita. Emilin2 marks the target region for mesenchymal cell accumulation in bone regeneration. *Inflamm Regen.* 2024.06; 44(1); 27
2. Anhao Liu, Mikihiro Hayashi, Yujin Ohsugi, Sayaka Katagiri, Shizuo Akira, Takanori Iwata, Tomoki Nakashima. The IL-33/ST2 axis is protective against acute inflammation during the course of periodontitis. *Nat Commun.* 2024.03; 15(1); 2707

[Conference Activities & Talks]

1. 林幹人. オステオネットワーク：骨による多臓器制御の現在. 第 42 回日本骨代謝学会学術集会 2024.06.30
沖縄県那覇市

Department of Periodontology

From January 2024

【Professor】 Takanori Iwata

【Professor】 Akira Aoki

【Associate Professor】 Sayaka Katagiri (～Jun)

【Junior Associate Professor】 Koji Mizutani

【Specially appointed Junior Associate Professor】 Daisuke Shimura

【Assistant Professor】 Takahiko Shiba, Shogo Maekawa, Yujin Ohsugi(～Jun), Mizuki Nagata(Jul～),
Risako Mikami(～Mar)

【Specially appointed Assistant Professor】 Risako Mikami(Apr～Sep), Shunsuke Fukuba(Apr～Aug),
Yosuke Tsuchiya, Natsumi Saito

【Clinical Fellow】 Tsuyoshi Shimohira, Masahiro Hakariya, Yumine Kiuchi(～Mar), Yuya Hamada(～Mar),
Sakurako Kawamoto(～Mar), Hiroe Nakashima(～Mar), Yugo Ito(～Mar), Saki Goto(～Mar), Takahiko Nagai,
Keita Nakagawa, Risa Yagasaki(Apr～Jul), Shu Takemura, Syunyou Kou(Aug～), Ai Watanabe(Aug～)

【JSPS Research Fellowship for Young Scientist】 Sumiko Yoshida(～Jul)

【Project Researcher】 Anhao Liu(Sep～)

【Graduate Students】 Shu Takemura(～Mar), Keita Nakagawa(～Mar), Takahiko Nagai(～Mar),

Jiacheng Wang(～Sep), Peiya Lin(～Sep), Ryota Kobayashi, Eri Sakaniwa, Tatsuro Seike,

Keita Toyoshima, Daichi Yamaki, Shiwei Sun, Chihiro Imai, Junya Watanabe, Lu Chen,

Akinaga Bruna Moreira, Jingyi Gao, Ye Yint Kaung Myint, Mingran Zhang, Wenrui Hua, Azusa Shimizu,

Shunsuke Matsumura, Wenli Wang, Hui Jiang, Mari Sugimoto(Apr～), Nasa Amaoka(Apr～), Ayu Sugiyama(Apr～),

Koki Takada(Apr～), Yuta Tsukahara(Apr～), Masaki Nanbu(Apr～), Chen-Yi Lee(Apr～), Jui-Chun Lin(Apr～)

【Graduate Research Student】 Akane Ochiai(～Mar), Takahiro Naito, Yugo Ito(Apr～), Saki Goto(Apr～),

Mari Sugimoto(～Mar), Emi Asada(Apr～), Yuto Suzuki(Apr～), Chao Geng(Apr～), Kyaw Ye Yint(Apr～),

Zhu Tongxin(Sep～), Cao Niuben(Oct～), Wang Dongze(Oct～), Chen Peng-Ning(Oct～), Gao Shengtao(Oct～),

Sun Yifan(Oct～), Dilinaer Kurexi(Nov～)

【Adult graduate student】 Ito Hirasawa(～Mar), Fumihiko Kimura

【Foreign Project Researcher】 Taichen Lin

【Clinical Professor】 Hiroaki Kobayashi, Hiroaki Tsuchioka

【Adjunct Lecturer】 49

【Registered dentist】 : 81

【Assistant Administrative Staff】 Jun Suga

【Technical Assistant】 Lisa Takeshita (～Sep)

(1) Outline

Periodontology is a branch of dental sciences which deals with the research, prevention and treatment of periodontal diseases. Periodontal disease is a general disease name which occurred in the periodontal tissue: gingiva, periodontium, cementum and alveolar bone. At present, it is indicated mainly an acute or chronic inflammatory diseases. The mission of our department was to educate etiology of periodontal diseases, host response, oral bacteria, periodontal medicine, regenerative therapy and so on profoundly, and to find a solution through discussion research outcomes as to periodontal destructive process and to develop a novel periodontal treatment modalities.

(2) Research

- 1) Inflammatory and immunological factors in periodontal diseases
- 2) Periodontopathic bacteria and their pathogenicity
- 3) Influence of periodontal disease on general health
- 4) Analyses of growth factors and bio materials in periodontal regeneration
- 5) Clinical application of lasers/LEDs in periodontal therapy

(3) Lectures & Courses

Periodontology is a branch of dental science which deals with supporting structures of teeth, diseases and conditions affect them. Main objectives of periodontology in the graduate course is to provide students basic knowledge of etiology of periodontal diseases, its treatment modality and prognosis, and also to study advanced regenerative therapy.

(4) Clinical Performances

Periodontal clinic provides diagnosis, treatment and prevention of periodontal disease. Periodontal surgery and regenerative therapy are also performed in the clinic.

(5) Publications

[Original Articles]

1. Seike T, Terasawa K, Iwata T, Guan JL, Watabe T, Yokoyama S, Hara-Yokoyama M. Site-specific photo-crosslinking of Hsc70 with the KFERQ pentapeptide motif in a chaperone-mediated autophagy and microautophagy substrate in mammalian cells. *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*. 2024.12; 736; 150515
2. Sakaniwa E, Mikami R, Mizutani K, Mima A, Kido D, Kominato H, Saito N, Hakariya M, Takemura S, Nakagawa K, Sugimoto M, Sugiyama A, Iwata T. Porphyromonas gingivalis-derived lipopolysaccharide promotes mesangial cell fibrosis via transforming growth factor-beta1/Smad signaling pathway in high glucose *Journal of Dental Sciences*. 2024.11;
3. Yamaki D, Fukuba S, Okada M, Takeuchi S, Hoshi S, Schmidlin PR, Iwata T. Preclinical Evaluation of a Poly (Lactic Acid/Caprolactone) Bilayer Membrane and a Carbonate Apatite for Periodontal Regeneration: A Canine One-Wall Intrabony Defect Model. *Journal of Periodontal Research*. 2024.10;
4. Noritake K, Tsuruta J, Mizutani K, Kondo K, Suzuki H, Adachi N, Seki N, Cao R, Mikami R, Katagiri S, Kabasawa Y, Nitta H. Educational effects of dental hygiene student intervention in dental student clinical practicum *Journal of Dental Sciences*. 2024.10;
5. Tsuji S, Hoshi S, Maekawa S. Papillary Coronal Anchorage Technique for Periodontal Reconstruction of Infrabony Defect and Interdental Papilla: A Case Report. *Int J Periodontics Restorative Dent*. 2024.10; 0(0); 1-17
6. Takemura S, Mizutani K, Mikami R, Nakagawa K, Hakariya M, Sakaniwa E, Saito N, Kominato H, Kido D, Takeda K, Aoki A, Iwata T. Enhanced periodontal tissue healing via vascular endothelial growth factor expression following low-level erbium-doped: yttrium, aluminum, and garnet laser irradiation: In vitro and in vivo studies. *J Periodontol*. 2024.09; 95(9); 853-866
7. Tabata T, Nakagawa H, Matin K, Otsuki M, Aoki A, Sumi Y, Shimada Y. Analysis of cariogenic biofilms by using a swept-source optical coherence tomography in vitro. *ARCHIVES OF ORAL BIOLOGY*. 2024.09; 165; 106009
8. Latimer JM, Maekawa S, Shiba T, Fretwurst T, Chen M, Larsson L, Sugai JV, Kostenuik P, Mitlak B, Lanske B, Giannobile WV. Healing sequelae following tooth extraction and dental implant placement in an aged, ovariectomy model. *JBMR Plus*. 2024.08;

9. Terasawa K, Seike T, Sakamoto K, Ohtake K, Watabe T, Yokoyama S, Hara-Yokoyama M. Protein-Protein Interface Identification by Site-Specific Photo-Cross-linking/Cleavage in Mammalian Cells. *Current protocols*. 2024.08; 4(8); e1103
10. Nakagawa K, Watanabe K, Mizutani K, Takeda K, Takemura S, Sakaniwa E, Mikami R, Kido D, Saito N, Kominato H, Hattori A, Iwata T. Genetic analysis of impaired healing responses after periodontal therapy in type 2 diabetes: Clinical and in vivo studies. *J Periodontal Res*. 2024.08; 59(4); 712-727
11. Sun S, Iwata T. Role of AOX1 on RXR signaling regulates osteoblastogenesis in hPDLMSCs. *Scientific Reports*. 2024.07; 14(1); 16767
12. Okada M, Fukuba S, Yamaki D, Iwata T. Clinical outcomes of guided tissue regeneration with carbonate apatite granules and poly(lactic acid/caprolactone) membrane for the treatment of intrabony defects and mandibular Class II furcation involvements: A 12-month prospective pilot clinical study. *Regenerative Therapy*. 2024.06; 26; 767-774
13. Wang J, Morita K, Iwata T. Induction of periodontal ligament-derived mesenchymal stromal cell-like cells from human induced pluripotent stem cells. *Regenerative Therapy*. 2024.06; 6(26); 432-441
14. Mikami R, Mizutani K, Ishimaru M, Gohda T, Iwata T, Aida J. Preventive dental care reduces risk of cardiovascular disease and pneumonia in hemodialysis population: a nationwide claims database analysis. *Scientific Reports*. 2024.05; 14(1); 12372
15. Mikami R, Komagamine Y, Aoyama N, Mizutani K, Sasaki Y, Iwata T, Minakuchi S, Kanazawa M. Association between occlusal supports and nutritional status in older adults: A systematic review. *Journal of Dental Sciences*. 2024.04; 19(2); 813-827
16. Mizutani K, Minami I, Mikami R, Kido D, Takeda K, Nakagawa K, Takemura S, Saito N, Kominato H, Sakaniwa E, Konuma K, Izumi Y, Ogawa Y, Iwata T. Improvement of periodontal parameters following intensive diabetes care and supragingival dental prophylaxis in patients with type 2 diabetes: A prospective cohort study. *Journal of clinical periodontology*. 2024.03; 51(6); 733-741
17. Nagai T, Shiba T, Komatsu K, Matsumura S, Koyanagi T, Nemoto T, Kobayashi R, Takeuchi Y, Iwata T. Characterizing Bacterial Communities among Healthy, Peri-implant Mucositis, and Peri-implantitis Statuses by 16S rRNA gene amplicon sequencing. *The Journal of the Stomatological Society*. 2024.03; 91(1); 8-18
18. Yagasaki L, Chiba T, Kurimoto R, Nakajima M, Iwata T, Asahara H. The essential role of Mx in periodontal ligament on the metabolism of alveolar bone and cementum. *Regenerative Therapy*. 2024.03; 25; 186-193
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20. Taniguchi Y, Koyanagi T, Takagi T, Kitanaka Y, Aoki A, Iwata T. Ridge Preservation and Augmentation Using a Carbonated Apatite Bone Graft Substitute: A Case Series. *DENTISTRY JOURNAL*. 2024.03; 12(3);
21. Liu A, Hayashi M, Ohsugi Y, Katagiri S, Akira S, Iwata T, Nakashima T. The IL-33/ST2 axis is protective against acute inflammation during the course of periodontitis. *Nature communications*. 2024.03; 15(1); 2707
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23. Lin P, Niimi H, Hirota T, Ohsugi Y, Shimohira T, Toyoshima K, Katagiri S, Iwata T, Aoki A. Effects of low-level Er:YAG laser irradiation on proliferation and gene expression in primary gingival fibroblasts isolated from mouse maxilla. *J Biophotonics*. 2024.02; 17(2); e202300166
24. Yamaki D, Fukuba S, Okada M, Takeuchi S, Hoshi S, Matsuura T, Iwata T. Octacalcium phosphate collagen composite for periodontal regeneration in a canine one-wall intrabony defect. *Journal of periodontal research*. 2024.02;

25. Ishikawa H, Valdes L, Xie J, Ohshima H, Tate I, Maeno M, Shiba T, Nagai S. Learning from Mistakes—Dental Students’ Learning Experiences from Adverse Clinical Events. *Educ. Sci.*. 2024.02;
26. Lin T, Ng MY, Mizutani K, Aoki A. Er:YAG laser-assisted periodontal regeneration with modified minimally invasive surgical technique (M-MIST) under microscope in an advanced periodontitis case with severe attachment loss beyond the root apex. *Journal of dental sciences*. 2024.01; 19(1); 707-709
27. Song YW, Maekawa S, Sasaki K, Yoshida D, Nagai M, Ishikawa-Nagai S, Da Silva J, Kim DM, Chen CY. Microscopic in-situ analysis of the mucosal healing around implants treated by protease activated receptor 4-agonist peptide or perpendicularly protruded type I collagen in rats. *Journal of biomedical materials research. Part B, Applied biomaterials*. 2024.01; 112(1); e35330
28. Fukuba S, Ogawa Y, Strauss FJ, Saida H, Thoma D, Aoki A, Iwata T. The Apical Tooth Replantation with Surgical Intrusion Technique (ATR-SIT) for Regenerative Treatment of Hopeless Teeth: A Report of Two Cases. *Int J Periodontics Restorative Dent*. 2024.01; 0(0); 1-27

[Books etc]

1. Estrin NE, Aoki A, Sculean A, Miron RJ, Romanos GE. Lasers in surgical therapy of peri - implantitis: In Romanos GE (ed), *Saving Dental Implants*. Wiley-Blackwell, 2024.05 (ISBN : 978-1119807018)
2. Coluzzi DJ, Aoki A, Chiniforush N. Laser Treatment of Periodontal and Peri-implant Disease. In: Coluzzi DJ, Parker SPA (Eds), *Lasers in Dentistry—Current Concepts* 2nd ed. Springer, 2024.01 (ISBN : 978-3-031-43337-5)

[Misc]

1. Aoki A, Mizutani K, Taniguchi Y, Lin T, Ohsugi Y, Mikami R, Katagiri S, Meinzer W, Iwata T. Current status of Er:YAG laser in periodontal surgery. *Jpn Dent Sci Rev*. 2024.12; 60; 1-14
2. Amaral AL, Aoki A, Andrade SA. Could light be a broad-spectrum antimicrobial? *Evidence-Based Dentistry*. 2024.08; 1-2
3. Li XX, Wang MT, Wu ZF, Sun Q, Ono N, Nagata M, Zang XL, Ono W. Etiological Mechanisms and Genetic/Biological Modulation Related to PTH1R in Primary Failure of Tooth Eruption. *Calcif Tissue Int*. 2024.08; 115(2); 101-116
4. Shiba T, Komatsu K, Takeuchi Y, Koyanagi T, Taniguchi Y, Takagi T, Maekawa S, Nagai T, Kobayashi R, Matsumura S, Katagiri S, Izumi Y, Aoki A, Iwata T. Novel flowchart guiding the non-surgical and surgical management of peri-implant complications: a narrative review *Bioengineering*. 2024.01; 11(2); 118
5. Takeuchi Y, Shiba T. Analysis of microbiome associated with periodontitis and peri-implantitis. *Colloid & Interface Communication* 2024.12; 49(4); 26-29
6. Nagata M, Iwata T. Exploring the in vivo identity of mesenchymal stem cells in periodontal development and regeneration. *Journal of the Japanese Society of Periodontology* 2024.10; 66(3); 95-104
7. Roncati M, Urano S, Aoki A, Sakota K, Suda T. Merits using lasers for non-surgical periodontal therapy, Dd periodontal therapy seminar. *DENTAL DIAMOND*. 2024.03; 49(4); 57-67

[Conference Activities & Talks]

1. Liu A. The character of periodontal ligament tissue in the pathogenetic process of periodontitis and the protective role of IL-33/ST2 axis. *Japan Bone Academy* 2024.12.07 Tokyo
2. Takada K, Shiba T, Nagai T, Kobayashi R, Matsumura S, Komatsu K, Katagiri S, Iwata T. Exploring the Relationship between Oral Bacteria and Infective Endocarditis through Next-Generation Sequencing. *The Stomatological Society* 2024.12.06 Tokyo
3. Shimura D. Fission as a new pathway for mitochondrial protection. *International Satellite Workshop by Early Career Investigators for Mitochondrial Research and Medicine* 2024.11.20 Tokyo

4. Aoki A. Periodontal Flapless Surgery: Er:YAG Laser-Assisted Comprehensive Periodontal Pocket Therapy (Er-LCPT), Advanced certification course. The 18th Congress of World Federation for Laser Dentistry (WFLD) 2024.11.13 Sao Paulo, Brazil
5. Toyoshima K, Lin P, Ohsugi Y, Niimi H, Katagiri S, Iwata T, Aoki A. Effects of Er:YAG laser irradiation on cell proliferation and gene expression in osteocyte-like cells. The 18th Congress of World Federation for Laser Dentistry 2024.11.12 The Rebouças Convention Center
6. Lin P, Shimohira T, Ohsugi Y, Shiba T, Hirota T, Katagiri S, Aoki A. Effect of near-infrared phototherapy on medication-related osteonecrosis of the jaw in mice. The 18th Congress of World Federation for Laser Dentistry 2024.11.11 The Rebouças Convention Center
7. Aoki A. Current Status of Er:YAG Laser in Periodontal Surgery. The 18th Congress of World Federation for Laser Dentistry (WFLD) 2024.11.11 Sao Paulo, Brazil
8. Moreira BA, Mizutani K, Saito N, Takemura S, Chen L, Ohsugi Y, Iwata T, Aoki A. Effects of Low-Level Er: YAG Laser Irradiation on Human Umbilical Vein Endothelial Cells in Hyperglycemia. The 18th Congress of World Federation for Laser Dentistry (WFLD) 2024.11.11 The Rebouças Convention Center, Sao Paulo, Brazil
9. Kobayashi R, Shiba T, Nagai T, Komatsu K, Matsumura S, Nemoto T, Takada K, Takeuchi Y, Iwata T. Shifting the Microbiome Following Non-Surgical Treatment for Each Periodontal Status. The 110th Annual Meeting of the American Academy of Periodontology 2024.11.06 San Diego, USA
10. Aoki A. Minimal Flap Approaches for Regeneration: Flapless Periodontal Surgery. The American Academy of Periodontology's 110th Annual Meeting 2024.11.02 San Diego, USA
11. Yamaki D, Okada M, Takeuchi S, Hoshi S, Fukuba S, Schmidlin PR, Iwata T. Carbonate apatite and poly (lactic acid/caprolactone) bilayer membrane in periodontal regeneration. The 110th Annual Meeting of the American Academy of Periodontology in collaboration with the Japanese Society of Periodontology, and the Japanese Academy of Clinical Periodontology 2024.11.02 San Diego, USA
12. Tsuchiya Y, Ohsugi Y, Katagiri S, Hirota T, Iwata T. Transcriptome analysis for the mechanisms of occlusal Trauma in mice. American Academy of Periodontology, 110th Annual Meeting 2024.11.02 San Diego Convention Center
13. Kido D, Mizutani K, Nitta H. A Case Study Management and Regeneration of Vertical Bone Resorption. American Academy of Periodontology, 110th Annual Meeting 2024.11.01 San Diego, USA
14. Takemura S, Mizutani K, Mikami R, Nakagawa K, Hakariya M, Sakaniwa E, Saito N, Kominato H, Kido D, Takeda K, Aoki A, Iwata T. Enhanced periodontal tissue healing following low-level Er:YAG laser irradiation. The American Academy of Periodontology's 110th Annual Meeting 2024.11 San Diego Convention Center, San Diego, USA
15. Nagai T, Shiba T, Komatsu K, Matsumura S, Koyanagi T, Nemoto T, Kobayashi R, Takeuchi Y, Iwata T. Characterizing Bacterial Communities among Healthy, Peri-implant Mucositis, and Peri-implantitis Statuses by 16S rRNA gene amplicon sequencing.. American Academy of Periodontology, 110th ANNUAL MEETING 2024.10.31 San Diego, USA
16. Aoki A. Current status of Er:YAG laser in periodontal surgery. Asia Pacific Association for Laser Medicine and Surgery (APALMS) 2024.10.27 Taipei, Taiwan
17. Aoki A. Er:YAG Laser-Assisted Comprehensive Periodontal Pocket Therapy (Er-LCPT). The 15TH Asian Pacific Society of Periodontology meeting (APSP 2024) 2024.10.17 Hanoi, Vietnam
18. Aoki A. Er:YAG laser applications in periodontal and peri-implant therapy. Lecture and demonstration for Er:YAG laser application 2024.09.01 Taipei, Taiwan
19. Tsuchiya Y. Elucidation of Mechanisms Regulating Occlusal Trauma in Mice Through Transcriptome analysis. National Taiwan University - Tokyo Medical and Dental University Periodontology Joint Symposium 2024.09.01 Taipei, Taiwan

20. Wang B, Inokoshi M, Katagiri S, Ohsugi Y, Lin P, Nakai H, Iwata T, Minakuchi S, Kanazawa M. Determination of the optimal cell density for immunofluorescence observation of MC3T3-E1 cells on zirconia. The 89th annual meeting and scientific session of the Pacific Coast Society for Prosthodontics 2024.06.21 Monterey
21. Liu A, Hayashi M, Ohsugi Y, Katagiri S, Akira S, Nakashima T, Iwata T. The role of periodontal ligament tissue in the pathogenesis of periodontitis and the unique role of IL-33/ST2 axis in its acute phase. Joint Academic Endeavor of NTU and TMDU 2024.04.20 Taipei
22. Nagata M. Wnt-directed CXCL12-expressing apical papilla mesenchymal progenitor cells drive tooth root formation. The 2024 Rolanette and Berdon Lawrence Bone Disease Program of Texas, Bone Research Conference 2024.04.19 Houston, USA
23. Shiba T, Pereira da Silva HD, Figueiredo LC, Duarte P, de Souza Oliveira EH, Feres M. Analyzing Bacterial Network Dynamics in Periodontitis, Before and After Treatment. International Association for Dental Research General Session & Exhibition 2024.03.14 New Orleans, USA
24. Shiba T, Ho K, Cho YWS, Chen CY, Kim DM. Effect of Er,Cr:YSGG laser irradiation on the surface modification and cell adhesion on titanium discs: an in vitro study. Academy of Osseointegration 2024.03.07 Charlotte, USA
25. Ho K, Chen CY, Shiba T, Kim DM. Plasma Treatment Removes Implant Surface Contaminants and Improves Biocompatibility. Academy of Osseointegration 2024.03.07 Charlotte, USA
26. Piao Y, Komagamine Y, Wu S, Nakayama M, Mizutani K, Iwaki M, Minakuchi S, Kanazawa M. A case report of mastication training using chewing gum for oral hypofunction. 8th Biennial Joint Congress of CPS-JPS-KAP 2024.03.04 Guangzhou, China
27. Nagata M. Wnt-directed CXCL12-expressing apical papilla mesenchymal progenitor cells drive tooth root formation. Gordon Research Conference, Bone and Teeth 2024.01.30 Galveston, USA
28. Aoki A. Periodontal Er:YAG Laser Operation- Less pain, Clean healing, Early healing. CDE practical course of TMDU alumni association 2024.12.08 Tokyo
29. Tsuchiya Y. A Case of Chronic Periodontitis with Open Bite Managed by Controlling Traumatic Occlusion. 14th Kanto 10 University Periodontology Seminar / 98th Kanto Branch Joint Training Workshop of the Japanese Society of Clinical Periodontology 2024.11.24
30. Kobayashi R, Satake K, Nagai T, Matsumura S, Takada K, Takeuchi Y, Shiba T, Iwata T. Comparison of the bacterial communities in supra- and subgingival calculus using 16S rRNA gene amplicon sequencing analysis. The 161st Meeting of the Japanese Society of Conservative Dentistry 2024.11.21 Himeji
31. Nagata M. Identification of mechanism for periodontium formation using single-cell analysis and lineage-tracing.. The 66th annual meetings of Japanese Association for Oral Biology 2024.11.02 Nagasaki
32. Aoki A. Application of Er:YAG laser in periodontal and peri-implant therapy. JIADS Perio & Implant Advanced Course 2024.10.26 Tokyo
33. Toyoshima K, Ohsugi Y, Lin P, Komatsu K, Shiba T, Takeuchi Y, Shimohira T, Tsuchiya Y, Katagiri S, Iwata T, Aoki A. Effects of blue LED irradiation on oral microbiome of ligature-induced periodontitis in mice. The 36th Annual meeting of Japanese Society for Laser Dentistry 2024.10.19 Aichi Gakuin University
34. Aoki A, Mizutani K. Er:YAG laser application in periodontal therapy. Tokyo Dental Association 2024 CDE 2024.09.19 Tokyo
35. Noritake K, Tsuruta J, Mizutani K, Kondo K, Suzuki H, Adachi N, Seki N, Mikami R, Kabasawa Y, Ebihara A, Hideshima M, Nitta N. Overview and Effects of Interprofessional Collaborative Education (D6-OH4 Collaborative Training) in Clinical Participation Training at the Tokyo Medical and Dental University School of Dentistry. The 56th Annual Meeting of the Japan Society for Medical Education 2024.08.09 Tokyo
36. Mizutani K. Association Between Severe Periodontitis and Alzheimer's Dementia in the Perspective of Pathology and Epidemiology. The 39th Annual meeting of the Japanese Psychogeriatric Society 2024.07.12 Sapporo

37. Aoki A. Advances in the treatment of periodontitis and pperi-implantitis. Japan Implant Clinical Research Association, 2023 certification workshop. Implant 100 Hour Course 2024.06.16 B.BRAUN AESCULAP, 6th floor, training room
38. Maalouf M, Nguyen V, Hunter J, Shaw R, Shimura D. Diverse into CardioCytoZoom, A highly talented but different fragment of a larger communication protein. The 101st Annual Meeting of The Physiological Society of Japan 2024.05.01 Fukuoka
39. Aoki A. Changes and Current Status of My Periodontal Pocket Treatment Method Development of Er:YAG Laser Combination Method-Development of Er:YAG Laser Combination Method . WHITE CROSS webinar 2024.03.13 Virtual
40. Aoki A. Changes and Current Status of My Periodontal Pocket Treatment Method . 2024.01.25
41. Aoki A. Changes and Current Status of My Periodontal Pocket Treatment Method - Development of Er:YAG Laser Combination Method. 2024.01.21

[Awards & Honors]

1. Travel award for selected abstracts (Nagata M), Gordon Research Conference, Bone and Teeth, 2024.01
2. IADR – Lasers & Biophotonics Group, Excellence in Education Award (Aoki A), IADR – Lasers & Biophotonics Group, 2024.03
3. Best Poster Award for the Postdoc Category (Nagata M), The 2024 Rolanette and Berdon Lawrence Bone Disease Program of Texas, Bone Research Conference, 2024.04
4. Poster Competition Awards, 1st Prize (Wang B, Inokoshi M, Katagiri S, Ohsugi Y, Lin P, Nakai H, Iwata T, Minakuchi S, Kanazawa M), the Pacific Coast Society for Prosthodontics, 2024.06
5. Best Presentation Award, second place, poster presentation, scientific research (Moreira BA), World Federation for Laser Dentistry (WFLD), 2024.11

[Social Contribution]

1. eLife early-career reviewer (Shimura D), eLife Sciences Publications Ltd., 2021 - Now
2. Review Editor, Frontiers in Cell and Developmental Biology (Shimura D), Frontiers in Cell and Developmental Biology, 2023 - Now

Biosignals and Inheritance

Joji Kusuyama Associate Professor (PI)

(1) Publications

[Original Articles]

1. Tomiga Y, Tanaka K, Kusuyama J, Takano A, Higaki Y, Anzai K, Takahashi H. Exercise training ameliorates carbon tetrachloride-induced liver fibrosis and anxiety-like behaviors. *American journal of physiology. Gastrointestinal and liver physiology.* 2024.12; 327(6); G850-G860-G860
2. Xu Y, Alves-Wagner AB, Inada H, Firouzzah SD, Osana S, Amir MS, Conlin RH, Hirshman MF, Nozik ES, Goodyear LJ, Nagatomi R, Kusuyama J. Placenta-derived SOD3 deletion impairs maternal behavior via alterations in FGF/FGFR-prolactin signaling axis. *Cell reports.* 2024.09; 43(10); 114789
3. Zhang, JH; Tam, WWS; Hounsri, K; Kusuyama, J; Wu, VX. Effectiveness of Combined Aerobic and Resistance Exercise on Cognition, Metabolic Health, Physical Function, and Health-related Quality of Life in Middle-aged and Older Adults With Type 2 Diabetes Mellitus: A Systematic Review and Meta-analysis *ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION.* 2024.08; 105(8); 1585-1599
4. Choisez A, Ishihara S, Ishii T, Xu Y, Firouzzah SD, Haga H, Nagatomi R, Kusuyama J. Matrix stiffness regulates the triad communication of adipocytes/macrophages/endothelial cells through CXCL13. *Journal of lipid research.* 2024.08; 65(9); 100620
5. Zhang J, Tam WWS, Hounsri K, Kusuyama J, Wu VX. Response to Letter to the Editor on "Effectiveness of Combined Aerobic and Resistance Exercise on Cognition, Metabolic Health, Physical Function, and Health-Related Quality of Life in Middle-Aged and Older Adults With Type 2 Diabetes Mellitus: A Systematic Review and Meta-analysis". *Archives of physical medicine and rehabilitation.* 2024.05; 105(5); 1023-1024

Inorganic Biomaterials

Professor Masakazu Kawashita
 Associate Prof. Taishi Yokoi
 Assistant Prof. Masaya Shimabukuro
 Associate Prof. (Non-Full-time) Yoshihide Hashimoto

(1) Outline

In this department, we are conducting research on biomaterials (especially ceramic biomaterials) that contribute to the treatment of cancer and bone diseases. Specifically, various material synthesis methods such as the sol-gel method are used to synthesize cancer therapeutic materials (particularly fine particles) and bone filling materials, and evaluate their chemical, physical, and biological properties. By doing so, we aim to obtain knowledge that will lead to clinical application.

(2) Research

1. Development of Biomaterials for Intra-arterial Treatment of Cancer

Radioactive microspheres 20-30 μ m in diameter are useful for the radiotherapy of cancers, especially for tumors located deep inside the body. Also, ferromagnetic microspheres 20-30 μ m in diameter are useful as thermoseeds for inducing hyperthermia in deep-seated cancers under alternating magnetic field. In this department, we try to develop novel biomaterials for minimally invasive treatment of cancer by using various synthetic techniques.

2. Development of Bioactive Materials for Bone Repair

It has been found from 1970 that some ceramics can bond to living bone without fibrous tissues. They are called "bioactive" ceramics and clinically used as important bone substitutes. However, in a clinical field, novel bioactive materials showing excellent bone-bonding ability are required. In this laboratory, we try to develop novel bioactive materials by using various synthetic techniques.

3. Study on Osteoconductive Mechanism of Hydroxyapatite

Hydroxyapatite (HAp) is widely used as an artificial bone or a coating material for metallic biomaterials because it bonds to living bone (shows osteoconductivity). However, the details of the expression mechanism of its osteoconductivity have not been clarified yet. In this department, we are focusing on the initial adsorption of serum proteins such as albumin, fibronectin (Fn) and laminin (Ln) on HAp and hypothesize that some serum protein which specifically adsorbs on HAp causes the osteoconductivity of HAp.

4. Study on Organically Modified Octacalcium Phosphates

Octacalcium phosphate (OCP) is a precursor phase of hydroxyapatite (HAp) in bones and teeth, and has a high affinity for the hard tissues. OCP has been studied as bioabsorbable artificial bones. OCP has a layered structure, and various organic molecules can be incorporated into the OCP interlayers. We develop functional bone-repairing materials and ceramic materials that achieve both diagnosis and therapy utilizing the unique property of OCP.

(3) Lectures & Courses

Students aim to be able to comprehensively and comprehensively understand the structure, physical properties, chemical properties, reactions with biomolecules and cells, etc. of ceramic biomaterials. Their final goal is to learn cutting-edge science and technology related to ceramic biomaterials and to acquire the ability to propose and design ceramic biomaterials that are useful for medical treatment.

(4) Publications

[Original Articles]

1. Miyake, R; Shimabukuro, M; Terauchi, M; Marukawa, E; Kawashita, M. Amorphous Magnesium Coating for Achieving Functional Changes from Antibacterial to Osteogenic Activities ACS APPLIED BIO MATERIALS. 2024.12; 7(12); 8565-8572
2. Kobayashi, M; Shimabukuro, M; Aoki, S; Kishida, R; Kawashita, M. Micro-arc oxidation for balancing antibacterial activity and bone formation on titanium surface MATERIALS LETTERS. 2024.12; 377; 137531
3. Rosciszewska, M; Shimabukuro, M; Ronowska, A; Mielewczyk-Gryn, A; Hanawa, T. Enhanced bioactivity and mechanical properties of silicon-infused titanium oxide coatings formed by micro-arc oxidation on selective laser melted Ti13Nb13Zr alloy CERAMICS INTERNATIONAL. 2024.11; 50(21); 43979-43993
4. Li Chang, Peng Chen, Takayuki Mokudai, Masakazu Kawashita, Itaru Mizoguchi, Hiroyasu Kanetaka. Enhancing Titanium Osteoconductivity by Alkali-Hot Water Treatment ACS Omega. 2024.11; 9(44); 44568-44576
5. Yokoi, T; Watanabe, M; Kawashita, M. Octacalcium phosphate with incorporated meso-2,3-dimercaptosuccinate ions exhibiting continuous interplanar spacing expansion JOURNAL OF THE CERAMIC SOCIETY OF JAPAN. 2024.11; 132(11);
6. Taishi Yokoi, Tomoyo Goto, Tohru Sekino, Tomoka Hasegawa, Peng Chen, Hiroyasu Kanetaka, Kaname Yoshida, Masaya Shimabukuro, Masakazu Kawashita. LaMer-model-based synthesis method for fine particles of octacalcium phosphate and related functional compounds CrystEngComm. 2024.11; 26; 6008-6016
7. Yoshihide Hashimoto, Jun Negishi, Seiichi Funamoto, Tsuyoshi Kimura, Hisatoshi Kobayashi, Tetsuro Oshika, Akio Kishida. Preparation, physico-biochemical characterization, and proteomic analysis of highly transparent corneal extracellular matrices for lamellar keratoplasty and tissue-engineered cornea construction Materials Today Bio. 2024.09; 28;
8. Koichiro Hayashi, Masaya Shimabukuro, Cheng Zhang, Ahmad Nazir Taleb Alashkar, Ryo Kishida, Akira Tsuchiya, Kunio Ishikawa. Silver phosphate-modified carbonate apatite honeycomb scaffolds for anti-infective and pigmentation-free bone tissue engineering Materials today. Bio. 2024.08; 27; 101161
9. Yokoi, T; Tomita, S; Nakamura, J; Sugawara-Narutaki, A; Matsukawa, Y; Kawashita, M; Ohtsuki, C. Apatite Formation on α -Tricalcium Phosphate Modified with Bioresponsive Ceramics in Simulated Body Fluid Containing Alkaline Phosphatase BIOMIMETICS. 2024.08; 9(8);
10. Wang, YJ; Yokoi, T; Shimabukuro, M; Kawashita, M. Calcium Citrate Amount and Gelatine Source Impact on Hydroxyapatite Formation in Bone Regeneration Material in Simulated Body Fluid MOLECULES. 2024.08; 29(16);
11. Jun Negishi, Dan Tanaka, Yoshihide Hashimoto. Induction of osteogenic differentiation by the extracellular matrix of fetal bone tissues and adult cartilage Tissue Cell. 2024.07; 90; 102475
12. Ayana Yamaguchi, Yoshihide Hashimoto, Jun Negishi. Fabrication of a cell culture scaffold that mimic the composition and structure of bone marrow extracellular matrix J Biosci Bioeng. 2024.07; 138(1); 83-88
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19. Sreypich Say,Mika Suzuki,Yoshihide Hashimoto,Tsuyoshi Kimura,Akio Kishida . Investigation of anti-adhesion ability of 8-arm PEGNHS-modified porcine pericardium *Biomed Mater*. 2024.03; 12(19(3));
20. Katada Haruko, Inokoshi Masanao, Kamijo Singo, Liu Hengyi, Xu Kaiqi, Kawashita Masakazu, Yokoi Taishi, Shimabukuro Masaya, Minakuchi Shunsuke. Effects of multiple firings on the translucency, crystalline phase, and mechanical strength of highly translucent zirconia *Dental Materials Journal*. 2024.03; 43(2); 294-302
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[Books etc]

1. M. Shimabukuro,T. Yokoi, M. Kawashita. *Biomedical Engineering: Imaging Systems, Electric Devices, and Medical Materials*. 2024.04 (ISBN : 978-9815129168)
1. Masaya Shimabukuro. *The Forefront of Biomedical Engineering Research : Future Sciences in Biodevices, Biomaterials, and Drug Discovery*. 2024.11
2. *Biomedical Engineering Imaging Systems, Electric Devices, and Medical Materials*. Jenny Stanford Publishing, 2024.04

[Conference Activities & Talks]

1. M. Shimabukuro, M. Kawashita. Balancing antibacterial and osteogenic activities in biomaterials for anti-infective bone reconstruction. International Symposium on Exponential Biomedical DX 2024(eMEDX-24) 2024.12.20
2. R. Miyake, M. Shimabukuro, E. Marukawa, M. Kawashita. Enhancing Osteogenesis on Titanium Surface via Biodegradable Magnesium-based Coating. International Symposium on Exponential Biomedical DX 2024(eMEDX-24) 2024.12.20
3. S. Aoki, M. Shimabukuro, R. Kishida, T. Yokoi, M. Kawashita. Influence of Applied Voltage on Bacterial Growth on Porous Tantalum Oxide Surfaces Formed by Micro-Arc Oxidation. International Symposium on Exponential Biomedical DX 2024(eMEDX-24) 2024.12.20
4. S. Usuki, S. Okada, M. Shimabukuro, T. Yokoi, T. Ogawa, M. Kawashita. Fundamental verification of enhanced ferroptosis in cancer cells by magnetic hyperthermia using Fe₂-3N particles. The 22nd Asian BioCeramics Symposium (ABC2024) 2024.12.03
5. Taishi Yokoi, Masakazu Kawashita. Development of Octacalcium Phosphate-based Fluorescence Materials. The 22nd Asian BioCeramics Symposium (ABC2024) 2024.12
6. Yuejun Wang, Taishi Yokoi, Masaya Shimabukuro, Masakazu Kawashita. Influence of Varying Calcium Citrate Levels and Different Gelatin Sources on Hydroxyapatite Formation in Octacalcium Phosphate/Calcium Citrate/Gelatin Composites in Simulated Body Fluid. The 22nd Asian BioCeramics Symposium (ABC2024) 2024.12
7. L. Chang, P. Chen, T. Mokudai, M. Kawashita, I. Mizoguchi, H. Kanetaka. Enhancing osteoconductivity and antibacterial properties of titanium via alkali-hot water treatment and nitrogen doping. 2024 Scientific Annual Meeting of ADEAP & CA+inD International Symposium 2024 2024.10.19
8. L. Chang, P. Chen, T. Mokudai, M. Kawashita, I. Mizoguchi, H. Kanetaka. Creation of bioactive titanium with both biocompatible and antibacterial properties. The 4th International Symposium on Design & Engineering by Joint Inverse Innovation for Materials Architecture (DEJI2MA 2024) 2024.10.03
9. Taishi Yokoi, Masakazu Kawashita, Chikara Ohtsuki. Reaction of salts composed of calcium ions and phosphate esters in ALP-modified SBF: Design of bioresponsive ceramics. the 34th Conference and Annual Meeting of the International Society for Ceramics in Medicine (Bioceramics 34) 2024.10
10. Taishi Yokoi, Masakazu Kawashita. Development of highly damage-tolerant calcium phosphate-based ceramic materials for bone repairing applications. The 19th International Workshop on Biomaterials in Interface Science 2024.08
11. Yuejun Wang, Taishi Yokoi, Masaya Shimabukuro, Masakazu Kawashita. Effects of calcium citrate amount and gelatin sources on hydroxyapatite formation in octacalcium phosphate/calcium citrate/gelatin composite in simulated body fluid. 日本バイオマテリアル学会関西ブロック第19回若手研究発表会 2024.07.27
12. Y. Tsutsumi, M. Shimabukuro, T. Manaka, M. Goto, M. Kaodowaki, H. Katayama, M. Kawashita, T. Ishimoto, T. Hanawa. Improvement of corrosion resistance and biosafety for martensitic stainless steel by laser thermal processing. Biomaterials International 2024 2024.07.03
13. R. Miyake, M. Shimabukuro, E. Marukawa, M. Kawashita. Biodegradable coating consisting of Mg and Ca for enhancing both antibacterial activity and osteogenesis. Biomaterials International 2024 2024.07.02
14. M. Shimabukuro, S. Aoki, R. Kishida, T. Yokoi, M. Kawashita. Endowing antibacterial activity to titanium and tantalum surfaces by micro-arc oxidation. Biomaterials International 2024 2024.07.02
15. M. Kobayashi, K. Tsutahara, R. Kawabata, Z. Ng, Y. Hashimoto, T. Kimura, A. Kishida, M. Yamamoto. Characterization Of The Bioink Containing Decellularized Tissue Powder Mixed With Cancer Spheroids. TERMIS 2024 WORLD CONGRESS 2024.06.25 USA
16. S. Say, M. Suzuki, Y. Hashimoto, T. Kimura, A. Kishida. Study On The Post-anti-adhesion Of The 8-arm PEGNHSmodified Porcine Pericardium. TERMIS 2024 WORLD CONGRESS 2024.06.25 USA

17. K. Kaiden, T. Kimura, Y. Hashimoto, K. Akiyoshi, Y.Sasaki, A. Kishida. Preparation And Characterization Of Artificial Extracellular Vesicles Using High Hydrostatic Pressurized Cells.. TERMIS 2024 WORLD CONGRESS 2024.06.25 USA
18. M. Suzuki, T. Kimura, M. Okada, T. Matsumoto, N.Nakamura, Y. Hashimoto, A. Kishida. Preparation Of Mineralized Decellularized Pericardium For Bone-ligament Tissue Application.. TERMIS 2024 WORLD CONGRESS 2024.06.25 USA
19. Sreypich Say、Mika Suzuki、Yoshihide Hashimoto、Tsuyoshi Kimura、Akio Kishida. Effect of 8-arm PEG functionalized porcine pericardium as the antiadhesion membrane in vivo. 第 73 回高分子学会年次大会 2024.06.05 宮城県
20. Sreypich Say、Mika Suzuki、Yoshihide Hashimoto、Tsuyoshi Kimura、Akio Kishida. Effect of 8-arm PEG functionalized porcine pericardium as the antiadhesion membrane in vivo. 第 73 回高分子学会年次大会 2024.06.05 宮城県
21. L. Chang, P. Chen, T. Mokudai, M. Kawashita, H. Kanetaka, I. Mizoguchi. Effects of different amounts of calcium citrate in bone repairing materials on apatite formation in simulated body fluid test. the 48th International Conference and Expo on Advanced Ceramics and Composites (ICACC2024) 2024.01.30

[Awards & Honors]

1. Best Poster Paper Award, Biomaterials International 2024, 2024.07
2. Outstanding Student Poster Award, International Symposium on Exponential Biomedical DX 2024(eMEDX-24), 2024.12

Department of Public Health

Professor: Takeo Fujiwara, MD, MPH, PhD
 Associate Professor: Nobutoshi Nawa, MD, MPH, PhD
 Associate Professor: Ayako Morita, PhD
 Junior Associate Professor: Yukako Tani, PhD
 Project Junior Associate Professor: Yui Yamaoka, PhD
 Assistant Professor: Hisaaki Nishimura, MD
 Specially Appointed Assistant Professor : Yuna Koyama, MD, PhD
 Specially Appointed Assistant Professor : Yu Par Khin, MD, PhD
 Specially Appointed Professor : Douglas Storey, PhD
 Specially Appointed Professor : Pamela Surkan, ScD, PhD, MS

(1) Outline

The purpose of this course is to develop the knowledge and skills of the participants to prevent diseases.

Participants will: understand broad risk factors from individual factors (e.g., genetic factor) and environmental factors, especially social determinants, their interactions; make causal inference applying a life-course perspective on disease onset (e.g., long-term effect of fetus or childhood exposure); perform advanced statistics; acquire attitudes toward social contribution through writing and publishing scientific papers in international journals. The final goal is that the participants are able to plan and implement health policy or program to prevent diseases in a real life setting.

(2) Research

The main focus of the department is as follows:

1. Social epidemiology (impact of social inequality, social capital, social network, and social support on health)
2. Life-course epidemiology (impact of child poverty and adverse childhood experiences on health) and international comparison study
3. Prevention on child abuse and neglect
4. Mental health (antenatal and postnatal mental health, mental health after a disaster, and child mental health)
5. Nutritional epidemiology (childhood nutrition from prenatal to early school-years and the food environment)
6. Environmental health (the physical environment and climate change)
7. Occupational health (harassment and work-place social capital)
8. Infectious Disease Epidemiology (descriptive epidemiology about COVID-19, research on behavioral change)

(3) Lectures & Courses

The purpose of this course is to develop the knowledge and skills of the participants to prevent diseases.

Participants will: understand broad risk factors from individual factors (e.g., genetic factor) and environmental factors, especially social determinants, their interactions; make causal inference applying a life-course perspective on disease onset (e.g., long-term effect of fetus or childhood exposure); perform advanced statistics; acquire attitudes toward social contribution through writing and publishing scientific papers in international journals. The final goal is that the participants are able to plan and implement health policy or program to prevent diseases in a real life setting.

The participants will be able to: 1. explain the risk of disease.

2. verbalize own research question and develop a hypothesis to test it.

3. develop research field or access secondary data to test the hypothesis.

4. explain an epidemiologic study design.

5. calculate a sample size.

6. analyse basic model (multivariate analysis, logistic analysis, etc) and conduct advanced analysis (multilevel analysis, propensity score matching, multiple imputation, etc)

7. justify the research question logically, in scientific writing in English.

8. develop an intervention (policy or program) and design a study protocol to assess its effectiveness.

(4) Publications

[Original Articles]

1. Maeda Y, Tabuchi T, Fujiwara T. Association between adverse childhood experiences and pregnancy morbidities: A nationwide online-based cross-sectional study. *J Obstet Gynaecol Res.* 2024.12; 50(12); 2231-2238
2. Sulaimanova G, Yamaoka Y, Bardella IJ, Fujiwara T. Prevalence of domestic violence against pregnant women living in rural areas: systematic review and meta-analysis. *J Epidemiol Community Health.* 2024.12;
3. Murakawa M*, Nakagawa M*, Nishimura H, Kaneko S, Miyoshi M, Kawai-Kitahata F, Nitta S, Tsuchiya J, Shimizu T, Watakabe K, Mochida T, Inada K, Iizuka Y, Sakai H, Sakurai Y, Sato A, Azuma S, Kawamura T, Maeyashiki C, Kurosaki M, Kusano F, Watanabe H, Kurata H, Karakama Y, Fujiwara T, Nagata Y, Tanaka T, Kakinuma S, Okamoto R, Asahina Y. High serum gamma-glutamyltransferase level after hepatitis C virus elimination is a risk factor for the development of hepatocellular carcinoma. *Hepatol Res.* 2024.12; 54(12); 1128-1138
4. Nawa N, Nishimura H, Fushimi K, Fujiwara T. Association between heat exposure and Kawasaki disease: A time-stratified case-crossover study. *Environ Res.* 2024.12; 263(Pt3); 120231
5. Asanbek kyzy A*, Nawa N, Kalmatov R, Fujiwara T. COVID-19 Vaccine Hesitancy Among Health Care Workers in Developing Countries: A Survey Study in Kyrgyzstan. *Asia Pac J Public Health.* 2024.11; 36(8); 801-805
6. Uchimido R, Kami K, Yamamoto H, Yokoe R, Tsuchiya I, Nukui Y, Goto Y, Hanafusa M, Fujiwara T, Wakabayashi K. Longitudinal Metabolomics Reveals Metabolic Dysregulation Dynamics in Patients with Severe COVID-19. *Metabolites.* 2024.11; 14(12);
7. Doi S, Nawa N, Yamaoka Y, Nishimura H, Koyama Y, Kuramochi J, Fujiwara T. Adverse childhood experiences, economic challenges, and suicide risk under COVID-19 pandemic: Results from U-CORONA study. *Journal of Public Mental Health.* 2024.10; 23(4); 289-302
8. Koyama Y*, Yamaoka Y, Nishimura H, Kuramochi J, Fujiwara T. More adverse childhood experiences are associated with increased social thinning and severe psychological distress. *Commun Psychol.* 2024.10; 2(1); 94
9. Yamaoka Y, Hangai M, Sampei M, Morisaki N. The Associations Between COVID-19-related Stigma of School-age Children and Communicative Support from Parents and Teachers. *J Child Fam Stud.* 2024.10; 33; 3574-3587
10. Koyama Y, Nawa N, Ochi M, Surkan PJ, Fujiwara T*. Epistatic interactions between oxytocin- and dopamine-related genes and trust. *PLoS One.* 2024.09; 19(9); e0308728
11. Iwata N*, Shimazu A, Fujiwara T, Shimada K, Tokita M, Watai I, Kawakami N. The husband's mental health is affected by the wife's happiness, but not vice versa: a longitudinal observation. *Ind Health.* 2024.09; 62(6); 402-406
12. Ando Y, Nagamine Y*, Nakagomi A, Koga C, Kondo N, Ide K, Kondo K, Fujiwara T. Association between internet use and annual health checkups among older Japanese adults: propensity score-matched analysis, Japan gerontological evaluation study cross-sectional study 2016 *BMC public health.* 2024.09; 24(1); 2614

13. Okamoto T, Hanafusa M, Abe T, Shimamura T, Ito M, Wakai Y, Jinta T, Higa K, Kondoh Y, Okouchi Y, Okuda R, Bando M, Suda T, Tomioka H, Fujiwara T, Takase M, Yoshihara S, Odajima H, Miyazaki Y*. Estimated prevalence and incidence of hypersensitivity pneumonitis in Japan. *Allergology International*. 2024.08;
14. Maeda Y, Morita A, Nawa N, Yamaoka Y, Fujiwara T. The Risk of Self-stigma and Discrimination for Healthcare Workers in Developing Countries during COVID-19 pandemic: International multisite study. *Stigma and Health*. 2024.08;
15. Tada Y*, Ishisuka K, Piedvache A, Tanaka H, Ogawa K, Kobayashi M, Horikawa R, Fujiwara T and Morisaki N. Association between diet quality during pregnancy of mothers and that of 3-year-old offspring: A prospective hospital-based birth cohort study. *Journal of Nutritional Science*. 2024.08; 13; e26
16. Suzuki A, Tani Y, Isumi A, Ogawa T, Moriyama K, Fujiwara T. Frequent toothbrushing boosts resilience among children in poverty: results from a population-based longitudinal study. *BMC oral health*. 2024.08; 24(1); 927
17. Kawahara T, Doi SK, Isumi A, Matsuyama Y, Tani Y, Fujiwara T. Impact of COVID-19 pandemic on children overweight in Japan in 2020. *Pediatric obesity*. 2024.08; 19(8); e13128
18. Kawahara T, Isumi A, Ochi M, Doi SK, Surkan PJ, Fujiwara T*. Association between maternal dissatisfaction with oneself at birth and shaking and smothering toward the offspring up to 18 months old. *Child Abuse Negl*. 2024.07; 153; 106816
19. Terada S, Isumi A, Yamaoka Y, Fujiwara T*. Years of education mediate the association between adverse childhood experiences and unintended pregnancy: A population-based study in Japan. *Child Abuse Negl*. 2024.07; 153; 106817
20. Yamaoka Y, Ochi M, Fukui M, Isumi A, Doi S, Fujiwara T, Nawa N. Home visitors' needs and perceptions of the benefits of a home visiting program for childcare support in Japan: A qualitative study of home visitors. *Child Abuse Negl*. 2024.07; 153; 106853
21. Numasawa M, Nawa N, Yamaguchi K, Akita K, Yamawaki M. Association between grit and depressive symptoms among medical students, moderated by academic performance. *Medical education online*. 2024.07; 29(1); 2373523
22. Tani Y, Kawahara T, Sugihara G, Machida M, Amagasa S, Murayama H, Inoue S, Fujiwara T, Shobugawa Y. Childhood Book Availability Helps to Preserve Cognitive Function in Older Adults With Low Education: Results From the NEIGE Study. *The journals of gerontology. Series B, Psychological sciences and social sciences*. 2024.06; 79(6);
23. Suzuki E, Nawa N, Okada E, Akaishi Y, Kashimada A, Numasawa M, Yamaguchi K, Takada K, Yamawaki M. Mixed-methods study of medical students' attitudes toward peer physical examinations in Japan. *BMC medical education*. 2024.06; 24(1); 681
24. Koyama Y, Nawa N, Ochi M, Surkan PJ, Fujiwara T. Joint Roles of Oxytocin- and Dopamine-Related Genes and Childhood Parenting Experience in Maternal Supportive Social Network. *Child Psychiatry Hum Dev*. 2024.06; 55(3); 614-621
25. Manabu S, Nawa N, Noguchi Y, Taki A, Kashimada A, Honda I, Koyama A, Okazaki K, Kondo M, Miyahara H, Ito K, Yamauchi T, Kondo T, Honda-Ozaki F, Kusuda S, Morioka C, Fujiwara T, Morio T, Kashimada K. Stage III Chorioamnionitis Is Associated with Reduced Risk of Severe Retinopathy of Prematurity. *The Journal of pediatrics*. 2024.05; 114085
26. Ishii T, Nawa N, Hosokawa S, Morio T, Fujiwara T. Exploring viral infections' role in Kawasaki disease onset: A study during the COVID-19 pandemic. *Journal of medical virology*. 2024.05; 96(5); e29660
27. 山岡祐衣、越智真奈美、福井充、伊角彩、土井理美、藤原武男、那波伸敏. 養育支援訪問事業における家庭訪問型支援の意義、支援の困難な状況、支援員の関係性作りの心構えについて：インタビュー調査より 子どもの虐待とネグレクト. 2024.05; 26(1);
28. Sasaki N, Watanabe K, Kanamori Y, Tabuchi T, Fujiwara T, Nishi D*. Effects of expanded adverse childhood experiences including school bullying, childhood poverty, and natural disasters on mental health in adulthood. *Sci Rep*. 2024.05; 14(1); 12015

29. Shibata T, Yamaoka Y, Nawa N, Nishimura H, Koyama Y, Kuramochi J, Fujiwara T*. Association of lifestyle and flourishing during the COVID-19 pandemic in Japan. *Front Psychol.* 2024.05; 15; 1341711
30. Omori T, Hanafusa M, Kondo N, Miyazaki Y, Okada S, Fujiwara T, Kuramochi J. Specific sequelae symptoms of COVID-19 of Omicron variant in comparison with non-COVID-19 patients: a retrospective cohort study in Japan. *Journal of thoracic disease.* 2024.05; 16(5); 3170-3180
31. Ishii T, Nawa N, Hosokawa S, Morio T, Fujiwara T. Exploring Viral Infections' Role in Kawasaki Disease Onset: A Study during the COVID-19 Pandemic. *Journal of Medical Virology.* 2024.05; 96(5); e29660
32. Terada S, Nishimura H, Miyasaka N, Fujiwara T*. Ambient temperature and preterm birth: A case-crossover study. *BJOG.* 2024.04; 131(5); 632-640
33. Saito M, Watanabe R, Tamada Y, Takeuchi K, Tani Y, Kondo K, Ojima T. Social disconnection and suicide mortality among Japanese older adults: A seven-year follow-up study. *Social science & medicine (1982).* 2024.04; 347; 116778
34. 福岡豊、西澤颯大、西沢エリック辰哉、天笠志保、村山洋史、藤原武男、井上茂、菖蒲川由郷. GPS および加速度データからの高齢者に共通の身体活動場所の抽出法 電気学会論文誌 C. 2024.04; 144(4); 309-315
35. Khin YP, Yamaoka Y, Abe A, Fujiwara T*. Association of child-specific and household material deprivation with depression among elementary and middle school students in Japan. *Soc Psychiatry Psychiatr Epidemiol.* 2024.02; 59(2); 329-339
36. Terada S, Isumi A, Doi S, Tani Y, Fujiwara T. Association between gestational weight gain and behavioral problems of the offspring aged 6-7 years: A population-based study in Japan. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics.* 2024.02; 166(2); 804-811
37. Suzuki E*, Nawa N, Matsuyama Y, DeYoung K, Fujiwara T. The impacts of legalization of physician assisted suicide on binge drinking among US adults *International Journal of Mental Health and Addiction.* 2024.02;
38. Goto Y, Nagamine Y, Hanafusa M, Kawahara T, Nawa N, Tateishi U, Ueki Y, Miyamae S, Wakabayashi K, Nosaka N, Miyazaki Y, Tohda S, Fujiwara T. Association of excess visceral fat and severe illness in hospitalized COVID-19 patients in Japan: a retrospective cohort study. *International journal of obesity (2005).* 2024.01; 48(5); 674-682
39. Suzuki A, Tani Y, Anzai T, Isumi A, Doi S, Ogawa T, Moriyama K, Fujiwara T. Association between Short Stature at Grade 1 and Permanent Teeth Caries at Grade 6 in Elementary School Children in Japan: A Population-Based Cohort Study. *International Journal of Environmental Research and Public Health.* 2024.01; 21(1); 105

[Conference Activities & Talks]

1. Yu Par Khin, Nobutoshi Nawa, Takeo Fujiwara. Eating Vegetable First & Mental Capital in Children. 第 83 回日本公衆衛生学会総会 2024.10.30 札幌
2. Kumiko Yamaguchi, Chiharu Kawakami, Nobutoshi Nawa, Mitsuyuki Numasawa, Kanako Noritake, Janelle Moross. What Medical Students Should Learn for Medical-Dental Collaboration in a Super-aged Society. AMEE 2024 2024.08.29 The Virtual Conference
3. Y Koyama, A P Tan, E Sadikova, P Setoh, B Broekman, H Tiemeier. Maternal depressive symptoms in childhood and offspring brain cortical and subcortical volumetric change: a repeated imaging study from age 4-10 years.. 2024 SER conference 2024.06.19 Austin

Parasitology and Tropical Medicine

Professor ISHINO Tomoko
 Lecturer SHINZAWA Naoaki
 Project Lecturer NAGAOKA Hikaru
 Assistant Professor Minami Baba
 Assistant Professor Yuto Kegawa
 Medical technologist Misato Tomoda
 Visiting Lecturer Motomi Torii
 Visiting Lecturer Shoji Yamaoka
 Visiting Lecturer Fukumi Nakamura
 Visiting Lecturer Rieko Shimogawara
 Visiting Lecturer KUMAGAI Takashi
 Visiting Lecturer KOBAYASHI Daisuke
 Visiting Lecturer Suganuma Masumi

Graduate Student OWUSU Kofi Baffour-awuah
 Graduate Student Oundavong Sunti
 Graduate Student Mark Tetteh-Tsifoanya
 Graduate Student Quratul-ain Issahaqu
 Graduate Student SEKINE Takashi
 Graduate Student Peter Bolah
 Graduate Student Frederick Ofori Appiah
 Graduate Student Amanor Ivy Brago
 Graduate Student Eric Coffie
 Graduate Student Jasmine Naa Norkor Dowuona
 Graduate Student OKADA Rena
 Technical Assistant MURAYAMA Hisako
 Technical Assistant Tokiko Okamura

(1) Outline

Parasitic diseases continue to significantly impact people's lives worldwide, making their control a critical issue in public health. Malaria, one of the three major infectious diseases globally, infects over 200 million people annually, with approximately 600,000 deaths, primarily in Africa. Tragically, children under the age of five are most affected, with one child dying every two minutes. Schistosomiasis, another parasitic disease, also affects over 200 million people worldwide. However, as a "neglected tropical disease," it has not received sufficient attention or effective countermeasures.

Our research focuses on understanding the mechanisms of infection by these parasitic pathogens and their interactions with the host. By uncovering these fundamental processes, we aim to contribute not only to the biological understanding of parasites but also to the development of vaccines and drugs in collaboration with researchers worldwide, including those in endemic regions.

Our department has a long history of research in parasitology, initially focusing on helminthic diseases. Since 2021, under the leadership of Professor Tomoko Ishine, we have expanded our research to include malaria as a primary focus while continuing to study other significant parasitic diseases such as schistosomiasis.

For malaria, we aim to elucidate the mechanisms of host cell invasion, particularly the interactions between the host and the parasite. Using rodent malaria parasites, *Plasmodium berghei*, and human malaria, *Plasmodium falciparum*, we employ advanced techniques such as reverse genetics and live imaging to investigate these processes. These cutting-edge approaches are central to our efforts to uncover the mechanisms of infection. Additionally, we study the mechanisms of drug resistance and work on the development of novel vaccines.

Furthermore, we conduct field research in endemic regions such as Ghana and Laos, aiming to develop new diagnostic tools and vaccines for parasitic diseases. By integrating laboratory-based research with field studies, we strive to make meaningful contributions to the global fight against parasitic diseases.

(2) Research

(1) Elucidating the Host Cell Invasion Mechanisms of Malaria Parasites:

Malaria parasites efficiently invade and infect various types of host cells throughout their life cycle. Our research focuses on understanding the mechanisms by which sporozoites, the stage responsible for malaria transmission from mosquitoes to humans, reach and infect liver cells. Using genetic modification techniques, we have identified several secreted proteins of the parasite involved in sporozoite infection and have partially elucidated their mechanisms. Moving forward, we aim to identify host cell molecules that interact with these proteins to comprehensively understand the infection process from the perspective of host-parasite interactions. Similarly, we plan to apply these approaches to investigate the mechanisms of red blood cell invasion and sexual reproduction of the parasite within mosquitoes. The fundamental knowledge gained from these studies will be used to collaborate with researchers in endemic regions and other fields to develop methods for blocking infection.

(2) Research Toward the Development of Malaria Vaccines:

In 2021, the World Health Organization (WHO) recommended the use of RTS,S, the first malaria infection-blocking vaccine. While this vaccine represents a significant milestone in malaria control, its efficacy in preventing infection remains around 30%, highlighting the urgent need for improvement. To address this, we have developed a chimeric rodent malaria parasite expressing the human malaria parasite's Circumsporozoite Protein (CSP) and established novel evaluation systems, such as liver-on-a-chip models, to assess inhibitory effects. Using these systems, we are screening for novel inhibitory antibodies and their epitopes to advance the development of next-generation vaccines. Additionally, we are applying similar approaches to develop transmission-blocking vaccines targeting the mosquito stages of the malaria parasite.

(3) Elucidating the Egg-Laying Mechanism of Schistosomes via Extracellular Vesicles:

Schistosomes, dioecious parasitic flatworms, reproduce by mating within blood vessels, during which they lay eggs. Our research focuses on extracellular vesicles as a means of communication between male and female worms during reproduction. We observed that treatment with calpeptin, an inhibitor of extracellular vesicle secretion, reduced both vesicle secretion and egg production. Based on these findings, we are currently using RNA interference (RNAi) to knock down calpain gene family members and analyze their roles in extracellular vesicle secretion and egg-laying induction.

(4) Research Support at the Ghana Research Base:

As part of the collaboration teams with the Noguchi Memorial Institute for Medical Research in Ghana, Our group conducts parasitology research with a focus on malaria. In Ghana, approximately 5 million people, or one-sixth of the population, are infected with malaria annually. To address this significant public health issue, we focus on the mosquito-transmitted stages of the parasite, aiming to apply findings from basic research to practical solutions. Additionally, we leverage insights and experiences unique to endemic regions, as well as parasite strains derived from infected patients, to advance basic research and medical education. By accepting young researchers from the Noguchi Institute as doctoral students and conducting joint research, we are working to establish sustainable collaborations.

(3) Education

Parasitic diseases in Japan have significantly decreased since World War II due to efforts such as community screenings and drug administration. However, recent societal changes, including the pet boom, dietary habits, and advancements in refrigeration technology, have altered the types and trends of parasitic diseases in the country. Additionally, the increase in global trade and travel has led to a rise in imported cases of parasitic diseases, posing a serious threat to public health and safety. The COVID-19 pandemic, which began in late 2019, highlights the importance of keeping medical professionals updated on infectious diseases and preparing for emerging infections. Furthermore, the fact that most "Neglected Tropical Diseases (NTDs)"—a major global health issue in the 21st century—are parasitic diseases underscores the need for international efforts to address these challenges.

Our department aims to educate individuals who can understand, think critically about, and discuss health and welfare issues in various regions of the world. We provide education in the following areas:

1. The current state of parasitic diseases in Japan, including diagnosis and treatment.
2. The global prevalence of parasitic infections and preventive measures.
3. The mechanisms of host infection by parasites and the biological understanding of their life cycles.
4. Basic knowledge of tropical infectious diseases and international health initiatives.
5. The current status of neglected tropical diseases and international countermeasures.

We also teach courses in medical zoology, social medicine, and infectious diseases for medical students, as well as lectures for health sciences and dentistry students. In the Project Semester for medical students, we guide them in basic research methodologies and supervise students participating in fieldwork in Ghana. Through these educational efforts, we aim to nurture future leaders in global health and medical sciences.

(4) Lectures & Courses

We aim to systematically teach knowledge about parasites, parasitic infections, and medical entomology. In doing so, we introduce the history of the discovery and control of various parasitic diseases to cultivate a foundation for addressing emerging and re-emerging infectious diseases in the future. By observing actual parasite specimens firsthand, we encourage students to develop an understanding of parasites from a biological perspective, while linking each disease to its diagnostic methods for better retention. Through practical training, we aim to foster the ability to identify issues independently and work towards solving them.

Our educational approach goes beyond lectures, emphasizing participation in practical training and fieldwork as much as possible. This approach is designed to provide students with realistic problem-setting experiences and to nurture their problem-solving skills.

(5) Clinical Services & Other Works

We actively provide diagnostic advice for parasitic diseases in collaboration with medical institutions both within and outside the university. We receive inquiries from across Japan, not just the Kanto region, contributing to accurate diagnoses. Our research focuses on developing diagnostic methods, treatments, and vaccines for parasitic infections. As part of international collaborative research, we participate in field studies in endemic regions, aiming to contribute to disease control, evaluate vaccine efficacy, and elucidate mechanisms of drug resistance, ultimately benefiting endemic areas through our research efforts.

(6) Publications

[Original Articles]

1. Tachibana, M; Baba, M; Iriko, H; Shinzawa, N; Torii, M; Ishino, T. Identification of a novel protein localized to the crystalloid of the Plasmodium ookinete PARASITOLOGY INTERNATIONAL. 2024.08; 101; 102892
2. Hagadorn KA, Peterson ME, Kole H, Scott B, Skinner J, Diouf A, Takashima E, Ongoiba A, Doumbo S, Doumtabe D, Li S, Sekar P, Yan M, Zhu C, Nagaoka H, Kanoi BN, Li QZ, Long C, Long EO, Kayentao

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[Conference Activities & Talks]

1. Oundavong Sunti, Naoaki Shinzawa, Takashi Sekine, Tatsuya Sawasaki, Hidetaka Kosako, Tomoko Ishino.. Screening for interaction proteins of *Plasmodium* RON3, an important secretory protein for malaria parasite proliferation in the blood stage. 2024.11.06
2. Tetteh-Tsifoanya Mark , Sekine Takashi , Baba Minami, Shinzawa Naoaki, Ishino Tomoko. Identification of receptors on hepatocyte essential for invasion of *Plasmodium falciparum* sporozoites by proximity-dependent biotinylation assay. 分子寄生虫学ワークショップ 2024.08.27
3. Phenotypic assessment of pseudokinase pPK4 disrupted clones in *Plasmodium yoelii*. 第93回日本寄生虫学会大会 2024.03.10
4. Essential role of Pleckstrin Homology domain-containing protein 1 (PH1) in AMA1 secretion during erythrocyte invasion by *Plasmodium yoelii*. 第93回日本寄生虫学会大会 2024.03.09
1. The elucidation of the molecular mechanisms of malaria infection and the roadmap towards malaria vaccine development. 2024.07.29

Forensic Medicine

Professor
Kana UNUMA

Associate Professor
Toshihiko AKI

Assistant Professor
Takeshi FUNAKOSHI

Specially Appointed Assistant Professor
Ryo WATANABE
Shuheng WEN

Graduate Student
Miyu KOMATSU
Shutaro NAGANO

(1) Outline

The system for investigating the cause of death is being improved, and the number of forensic autopsies is increasing dramatically, so there are high expectations for the work of forensic pathologists. Our aim is to train forensic pathologists who can carry out forensic autopsies. We are engaging in forensic practice in Tokyo City as well as Ibaraki prefecture.

(2) Research

Research Subjects

- 1) Toxicology
- 2) Forensic pathology

(3) Education

Purpose of education

Forensic medicine provides fundamental human rights, public safety and nation' s welfare to make a fair judgment on the items on the law which requires the medical knowledge. Education of forensic medicine is included forensic medicine in a narrow sense and medical law. Purpose of education in forensic medicine is to provide students opportunity to study the essential knowledge of the relationship between medical and society

(include law, ethics, suit and administration). Students are also taught a blood type and an alcohol medicine in a practical training.

(4) Lectures & Courses

Understanding of the system for the clarification of the cause of death, forensic autopsy, procedures for determining the cause of death, sudden death, and forensic toxicology.

(5) Clinical Services & Other Works

Practical services

Forensic Medicine provides the expert opinion on a living body and a corpse to clarify causes of wound and death, mainly entrusted by a public prosecutor or the police, thereby, contributing fair trial in a court.

(6) Publications

[Original Articles]

1. Kana Unuma, Shuheng Wen, Sho Sugahara, Shutaro Nagano, Toshihiko Aki, Tadayuki Ogawa, Shino Takeda-Homma, Masakazu Oikawa, Akihiro Tojo. Thallium reabsorption via NKCC2 causes severe acute kidney injury with outer medulla-specific calcium crystal casts in rats. Arch Toxicol. 2024.10;
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3. Hikari Tachibana, Moeka Nomura, Takeshi Funakoshi, Kana Unuma, Toshihiko Aki, Koichi Uemura. Incomplete autophagy and increased cholesterol synthesis during neuronal cell death caused by a synthetic cannabinoid, CP-55,940. Neurotoxicology. 2024.06; 103; 215-221
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[Conference Activities & Talks]

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2. 鵜沼香奈. 刑事事件の法医鑑定における 神経病理学的検索の実際 (シンポジウム: 今こそ頭部外傷の神経病理について考えよう—司法制度におけるその重要性和将来の展望—). 第 65 回日本神経病理学会総会学術研究会 2024

Department of Health Policy and Informatics

Professor: Kiyohide FUSHIMI

Associate Professor: Daisuke SHINJO

Graduate Student: Masato KOIZUMI, Yukiko TSUKAO, Hiromichi Otaka, Ai Shinjo, Tomonori TAKEUCHI, Kenichi MIYAMOTO, Kei YAMAMOTO, Yasuyuki FUSEDA

Graduate Research Student: Kazushige ENDO

(1) Research

- 1) Functional differentiation and coordination of healthcare facilities
- 2) Development and application of patient case mix system for Japanese healthcare settings
- 3) Application of information technology to standardization of health care and sharing of health care information.

(2) Education

Health policy informatics is a branch of health policy science which deals with the application of information technology to health policy research. Main objective of health policy informatics in the graduate course is to acquire ability to independently design, manage and accomplish researches in health policy and health informatics fields.

(3) Publications

[Original Articles]

1. Ikenouchi K, Takahashi D, Mandai S*, Watada M, Koyama S, Hoshino M, Takahashi N, Shoda W, Kuyama T, Mori Y, Ando F, Susa K, Mori T, Iimori S, Naito S, Sohara E, Fushimi K, Uchida S. Impact of COVID-19 versus other pneumonia on in-hospital mortality and functional decline among Japanese dialysis patients: a retrospective cohort study. *Sci Rep.* 2024.03; 14(1); 5177
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3. Chloe Braun*(Co-first), Tomonori Takeuchi*(Co-first), Josh Lambert, Lucas Liu, Sarah Roberts, Stuart Carter, William Beaubien-Souligny, Ashita Tolwani, Javier A. Neyra. Association of Continuous Renal Replacement Therapy Downtime with Fluid Balance Gap and Clinical Outcomes: A Retrospective Cohort Analysis Utilizing EHR and Machine Data *Journal of Intensive Care.* 2024.12; 12(55);
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5. Ryo Seishima, Hisateru Tachimori, Kazumasa Fukuda, Norihiko Ikeda, Hiroaki Miyata, Kiyohide Fushimi, Yuko Kitagawa. Impact of COVID-19 on hospital visit behaviour in cancer patients in Japan: a nationwide study. *BMJ Open.* 2024.12; 14(12); e084630

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10. Nobutoshi Nawa, Hisaaki Nishimura, Kiyohide Fushimi, Takeo Fujiwara. Association between heat exposure and Kawasaki disease: A time-stratified case-crossover study. *Environ Res*. 2024.12; 263(Pt 3); 120231
11. Hiroshi Magara, Yuri Nakamura, Takuaki Tani, Shinobu Imai, Anna Kiyomi, Kensuke Yoshida, Kiyohide Fushimi, Munetoshi Sugiura. Comparison of the Safety of Aspirin Monotherapy and Aspirin and P2Y12 Inhibitor Combination Therapy in Patients Post Coil Embolization During Admission: A Cross-Sectional Study Using a Nationwide Inpatient Database. *Drugs Real World Outcomes*. 2024.12; 11(4); 679-689
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[Books etc]

1. Tomonori Takeuchi, Yuko Nakajima. *Rosen's Emergency Medicine 10th Edition*. Elsevier Japan, 2024.07
2. Tomonori Takeuchi. *Textbook of Physical Diagnosis, 8th Edition*. Elsevier Japan, 2024

[Conference Activities & Talks]

1. Tomonori Takeuchi, Alexander H. Flannery, Lucas J. Liu, Augusto Cama-Olivares, Kiyohide Fushimi, Jin Chen, Sarah C. Huen, Ashita J. Tolwani, Javier A. Neyra. Incidence and Clinical Outcomes of Sepsis-Associated Acute Kidney Injury: A multicenter contemporary cohort study. *ASN Kidney Week 2024.10.25 San Diego, CA, USA*
2. Kullaya Takkavatakarn, Joshua Lambert, Justin Kauffman, Tomonori Takeuchi, Augusto Cama-Olivares, Stuart Goldstein, Jin Chen, Lili Chan, Girish N Nadkarni, Javier A Neyra. Machine Learning Model for Predicting Early Mortality in Critically Ill Patients Requiring Continuous Renal Replacement Therapy. *ASN Kidney Week 2024.10.25 San Diego, CA, USA*
3. Tomonori Takeuchi, Seda Babroudi, Orlando M. Gutierrez, Lama Ghazi, Javier A. Neyra. Social Risk Factors Associate with Disparate Post-Hospitalization Care Among AKI Survivors. *ASN Kidney Week 2024.10.25 San Diego, CA, USA*

4. Augusto Cama-Olivares, Chloe Braun, Tomonori Takeuchi, Emma C. O'Hagan, Katheryn Kaiser, Lama Ghazi, Jin Chen, Lui G. Forni, Sandra L. Kane-Gill, Marlies Ostermann, Benjamin Shickel, Jacob Ninan, Javier A. Neyra. Artificial Intelligence / Machine Learning Externally Validated Models for Acute Kidney Injury Risk-Classification: A Systematic Review and Meta-Analysis. ASN Kidney Week 2024.10.25 San Diego, CA, USA
5. David Ray Chang, Hsiu-Yin Chiang, Yi-Ching Chang, Tomonori Takeuchi, Che-Chen Lin, Jin Chen, Javier A. Neyra*, Chin-Chi Kuo*. A Population-based Imputation Approach for Missing Baseline Serum Creatinine Values. ASN Kidney Week 2024.10.25 San Diego, CA, USA
6. Udit Nangia, Prathap Simhadri, Tomonori Takeuchi, Hari naga Garapati, Sreekant Avula, Nihar K. Jena, Devansh H. Patel, Prabhat Singh, Deepak Chandramohan.. Acute Kidney Injury Outcomes Among Hospitalized Acute Myeloid Leukemia Patients with Sepsis. ASN Kidney Week 2024.10.25 San Diego, CA, USA
7. Filippo Firenzuoli, Tomonori Takeuchi, Ehsan Ghamarian, Sean M. Bagshaw, Ron Wald, Javier Neyra. Incidence of Hypophosphatemia and Clinical Outcomes in Patients Exposed to RRT: A Post-Hoc Analysis of the STARRT-AKI Trial. 2024.10.25 San Diego, CA, USA
8. Devansh Patel, Augusto Cama-Olivares, Ashutosh Tamhane, Victor Ortiz-Soriano, Tomonori Takeuchi, Francesco Galasso, Lili Chan, Ashita Tolwani, Girish Nadkarni, Javier Neyra. Clinical factors associated with hospital mortality in critically ill adult COVID patients with AKI requiring CRRT. National Kidney Foundation 2024.05.15 Long Beach, CA
9. Tomonori Takeuchi, Alexander H Flannery, Lucas J Liu, Augusto Cama-Olivares, Jin Chen, Sarah C Huen, Ashita J Tolwani, Javier A Neyra. Epidemiology of Sepsis-Associated Acute Kidney Injury. AKI & CRRT 2024 (the 29th International Conference on Advances in Critical Care Nephrology) 2024.03.13 San Diego, CA, USA
10. James Odum, Tomonori Takeuchi, Chloe Braun, Lucas Liu, David Askenazi, Javier Neyra. Epidemiology of Sepsis-Associated Acute Kidney Injury in Adolescent Patients Admitted to Adult ICUs. AKI & CRRT 2024 (the 29th International Conference on Advances in Critical Care Nephrology) 2024.03.12 San Diego, CA, USA
11. Augusto Cama-Olivares, Ashutosh Tamhane, Victor Ortiz-Soriano, Douglas Farrell, Huei Hsun Wen, Tomonori Takeuchi, Patel Devansh, Francesco Galasso, Jin Chen, Lili Chan, Ashita J. Tolwani, Girish N. Nadkarni, Javier A. Neyra. Clinical factors associated with hospital mortality in critically ill adult COVID patients with AKI requiring CRRT: A multicenter study. AKI & CRRT 2024 (the 29th International Conference on Advances in Critical Care Nephrology) 2024.03.12 San Diego, CA, USA

[Awards & Honors]

1. Fellow in Training Grant at the 29th International Conference on Advances in Critical Care Nephrology, AKI & CRRT 2024, 2024.03
2. The 1st Place Poster Abstract Award at the 29th International Conference on Advances in Critical Care Nephrology, AKI & CRRT 2024, 2024.03
3. 2024 George M. O'Brien Kidney Resource Alliance (OKRA) travel award, National Coordinating Center George M. O'Brien Kidney Resource Alliance George M. O'Brien Kidney Resource Alliance, 2024.10

Department of Life Sciences and Bioethics

Masayuki Yoshida
Yusuke Ebana
Hiroko Kohbata
Maki Gau
Kyoko Yaono
Mayo Kurobe

(1) Outline

support system for the development of education, research, and clinical services in the field of bioethics. While advising on the regulatory authorities of research ethics guidelines, we also provide support to the university's internal review board and also serve as the headquarter of research ethics committees at domestic medical universities nationwide.

Moreover, we organize research ethics seminars for medical professionals and researchers throughout the university to ensure scientific and ethical integrity. In the clinical field, we are in charge of the Department of Medical Genetics which provides genetic diagnosis and treatment for hereditary cancers and rare diseases with a system to provide genetic counseling to clients, including patients and their families.

(2) Publications

[Original Articles]

1. Yusuke Ebana, Mariko Komine, Takuro Nishimura, Tetsuo Sasano, Masayuki Yoshida. Filamin C Truncating Variant Causes Severe Conduction Defects and Mild Cardiomyopathy. *Cureus*. 2024.11; 16(11); e74631
2. Yasushi Imai, Kengo Kusano, Takeshi Aiba, Junya Ako, Yoshihiro Asano, Mariko Harada-Shiba, Masaharu Kataoka, Tomoki Kosho, Toru Kubo, Takayoshi Matsumura, Tetsuo Minamino, Kenji Minatoya, Hiroyuki Morita, Masakazu Nishigaki, Seitaro Nomura, Hitoshi Ogino, Seiko Ohno, Masayuki Takamura, Toshihiro Tanaka, Kenichi Tsujita, Tetsuro Uchida, Hiroyuki Yamagishi, Yusuke Ebana, Kanna Fujita, Kazufumi Ida, Shunsuke Inoue, Kaoru Ito, Yuki Kuramoto, Jun Maeda, Keiji Matsunaga, Reiko Neki, Kenta Sugiura, Hayato Tada, Akihiro Tsuji, Takanobu Yamada, Tomomi Yamaguchi, Eiichiro Yamamoto, Akinori Kimura, Koichiro Kuwahara, Koji Maemura, Tohru Minamino, Hiroko Morisaki, Katsushi Tokunaga, on behalf of the Japanese Circulation Society, Japanese College of Cardiology, Japanese Society of Pediatric Cardiology and Cardiac Surgery Joint Working Group. JCS/JCC/JSPCCS 2024 Guideline on Genetic Testing and Counseling in Cardiovascular Disease *Circulation Journal*. 2024.10;
3. Takashi Ikenouchi, Junichi Nitta, Osamu Inaba, Miho Negishi, Miki Amemiya, Toshikazu Kono, Tasuku Yamamoto, Kazuya Murata, Iwanari Kawamura, Kentaro Goto, Takuro Nishimura, Tomomasa Takamiya, Yukihiro Inamura, Kensuke Ihara, Susumu Tao, Akira Sato, Masateru Takigawa, Yusuke Ebana, Shinsuke Miyazaki, Tetsuo Sasano, Tetsushi Furukawa. Embryological Classification of Arrhythmogenic Triggers Initiating Atrial Fibrillation. *J Am Coll Cardiol*. 2024.10;
4. Eriko Adachi, Ryuichi Nakagawa, Atsumi Tsuji-Hosokawa, Maki Gau, Shizuka Kirino, Analia Yogi, Hisae Nakatani, Kei Takasawa, Tomomi Yamaguchi, Tomoki Kosho, Masanori Murakami, Toshihiro Tajima, Tomonobu Hasegawa, Tetsuya Yamada, Tomohiro Morio, Osamu Ohara, Kenichi Kashimada.

A MinION-based Long-Read Sequencing Application With One-Step PCR for the Genetic Diagnosis of 21-Hydroxylase Deficiency. J Clin Endocrinol Metab. 2024.02; 109(3); 750-760

5. Egawa M, Ikeda M, Miyasaka N, Harada-Shiba M, Yoshida M. Physicians' Perspective Toward Hypertensive Disorders of Pregnancy and Future Cardiovascular Diseases in Japan. Journal of atherosclerosis and thrombosis. 2024.02;

[Conference Activities & Talks]

1. Yusuke Ebana. How to solve research ethics issues? -Role of Certified Research Ethics Professionals (CReP) as an Ethical Review Expert-. World Conference of Research Integrity (WCRI) 2024.06.02 Athens, Greek
2. Makiko Egawa, Kinya Ishikawa, Eriko Takamine, Sayako Takahashi, Mariko Komine, Hiroko Kohbata, Taro Ishiguro, Maki Gau, Yusuke Ebana, Masayuki Yoshida. Predictive genetic testing for late-onset, inherited neurological diseases: a case series of 40 clients. 日本人類遺伝学会第 69 回大会 2024.10.10 札幌市
3. Yusuke Ebana. Genetic risk score of cerebral infarction in atrial fibrillation genome-wide association study. Asia-Pacific Heart Rhythm Society (APHRS) Conference 2024 2024.09.27 Sydney
4. 伊藤 翼, 鈴木 理絵, 甲畑 宏子, 高田 美乃莉, 羽田 平, 宮本 守員, 水足 邦雄, 今井 耕輔, 笹 秀典, 高野 政志. 多発性内分泌腫瘍症 1 型合併妊娠の 1 例—遺伝カウンセリングの立場から—. 第 30 回日本遺伝性腫瘍学会 学術集会 2024.05.31 仙台

Forensic Dentistry

Professor Koichi SAKURADA
 Associate Professor Hisako SAITOH
 Lecturer Hajime UTSUNO
 Assistant Professor Saki MINEGISHI
 Assistant Professor Shuuji NAMIKI
 Graduate Student Maiko TOYA
 Graduate Student Muhammad Garry Syahriza HANAFI
 Graduate Student Nanami AOKI
 Graduate Student Sayaka YAMADA
 Graduate Student Sakura KOIDE

(1) Outline

Forensic dentistry plays an important role in society through the use identification of victims after major accidents or disasters using dental findings, as well as the identification of cadavers or persons from biological samples in relation to crime. In particular, the establishment of two laws related to cause of death investigation in June 2012 further promoted research, identification, and education related to individual identification. The primary function of our laboratory is the identification of individuals from hard tissues such as teeth and bones, soft tissues, body fluids, or facial images, using the latest molecular biological and imaging techniques.

(2) Research

1. Individual identification
 - Identification based on dental findings
 - Identification using hard tissues such as teeth and bones, soft tissues, and body fluids
 - Identification based on facial reconstruction and image analysis
2. Child abuse and neglect
3. Dental accidents and lawsuits
4. Problems associated with the dental care system
5. Forensic toxicology

(3) Education

We teach dental students a relation between death investigation systems and dentists and make them understand that society expects them as dentists to perform individual identification based on dental findings. Also, students are likely to have opportunities to assist the regional administrative and police activities in the future. To protect the rights of the deceased individuals and improve public health, dental students need to acquire basic knowledge about forensic medical sciences including postmortem changes and cause of death identification. To foster independent researchers, we teach graduate students the latest research directions in forensic dentistry and how to plan their own research project. In addition, students learn practical individual identification methods and their importance through forensic autopsy.

(4) Lectures & Courses

We believe that students learn more effectively in an environment where they can simultaneously conduct practical work and research.

(5) Clinical Services & Other Works

Forensic autopsy for the identification of cadavers and other related activities. Individual identification following accidents or disasters. Participation in disaster prevention and individual identification training programs held by various communities.

(6) Publications

[Original Articles]

1. Sayaka Nagasawa, Yuichiro Hirata, Sho Miyamoto, Seiya Ozono, Shun Iida, Harutaka Katano, Shigeki Tsuneya, Kei Kira, Susumu Kobayashi, Makoto Nakajima, Hiroyuki Abe, Masako Ikemura, Isao Yamamoto, Kimiko Nakagawa, Kazumi Kubota, Shinji Akitomi, Iwao Hasegawa, Tetsuo Ushiku, Tadaki Suzuki, Hiroto Iwase, Yohsuke Makino, Hisako Saitoh. Changes in SARS-CoV-2 viral load and titers over time in SARS-CoV-2-infected human corpses. *PLoS One*. 2024.03; 19(3); e0287068
2. Akutsu T, Minegishi S, Watanabe K, Toyomane K, Yamagishi T, Sakurada K. Quantitative evaluation of endometrium-expressed mRNAs for the purpose of discriminating between menstruation and traumatic vaginal injury in sexual assault cases. *International journal of legal medicine*. 2024.02;
1. Jun Ohta, Saki Minegishi, Koichi Sakurada. Neisseria mucosa DNA-based identification of human saliva *Forensic Dental Science*. 2024.12; 17(2); 47-51
2. Hiroko Oka, Hisako Saitoh, Saki Minegishi, Masataka Nagao. Verification of materials for dental treatments in Vietnam and their background *Forensic Dental Science*. 2024.12; 17(2); 52-57
3. Tomoko Akutsu, Isao Yokota, Ken Watanabe, Kochi Toyomane, Takayuki Yamagishi, Koichi Sakurada. Verification of Single-target multiplex RT-PCR method for identification of a single body fluid - Comparison with Multi-target multiplex RT-PCR method targeting 5 types of body fluids - *Jpn J Forensic Sci Technol*. 2024.01; 29(1); 85-96

[Conference Activities & Talks]

1. Utsuno, H., Others.. The observation of the ear morphology for facial reconstruction (approximation). 20th Meeting of the International Association for Craniofacial Identification 2024.10.04 Granada Spain
2. Utsuno H.. Dental Anthropology. Inovasi dan Kolaborasi dalam Forensik Odontologi untuk Menghadapi Tantangan Global 2024.09.28 Jakarta Indonesia
1. Hisako Saitoh, Koichi Sakurada. Assessment of SARS-CoV-2 infectivity in COVID-19 corpses. The 89th Annual Meeting of the Stomatological Society, Japan 2024.12.07 Bunkyo-ku, Tokyo
2. Hisako Saitoh, Sayaka Yamada, Koichi Sakurada. Radiocarbon dating of birth years using teeth -A study based on the condition of the corpses-. The 66th Annual Meeting of Japanese Association for Oral Biology 2024.11.03 Nagasaki city
3. Sayaka Yamada, Hisako Saitoh, Koichi Sakurada. Radiocarbon dating of birth years using teeth -A study of method using collagen extraction from dentin-. The 66th Annual Meeting of Japanese Association for Oral Biology 2024.11.03 Nagasaki city
4. Tomoko Akutsu, Saki Minegishi, Ken Watanabe, Koichi Sakurada. Evaluation of the applicability of the RT-qPCR-based menstrual blood marker detection method to forensic specimens. The 93rd Kanto District Meeting of the Japanese Society of Legal Medicine 2024.10.12 Narita city
5. Sayaka Yamada, Hisako Saitoh, Gakuto Uratomi, Saki Minegishi, Hajime Utsuno, Shyuji Namiki, Maiko Toya, Hanafi Muhammad Garry Syahrizal, Nanami Aoki, Sakura Koide, Koichi Sakurada. Comparison of DNA quantity, decomposition index, and STR profiling using different methods for DNA extraction from teeth. The 93rd Kanto District Meeting of the Japanese Society of Legal Medicine 2024.10.12 Narita city

6. Kaori Iwahara, Keiji Inoue, Takashi Nakajima, Hitoshi Terada, Noboru Ishikawa, Hirofumi Aboshi, Koichi Sakurada, Yoshihiro Yamada. Disaster prevention and mitigation at the Tokyo and local dental associations. 20th National Convention of Police Dental Association 2024.08.03 Yamaguchi city
7. Kunitsugu Tanaka, Maiko Satoh, Toutsu Kawataki, Yo Takeda, Takeshi Yoshida, Takashi Moriyama, Tomoaki Aki, Toshiya Hara, Tasaku Nakayama, Takshi Soehara, Tetsuya Kanbe, Morio Kaneko, Yoshio Moriya, Seiko Katsumura, Hirofumi Tsutsumi, Kazunari Shiozaki, Koichi Sakurada, Hisako Saitoh, Hikaru Izawa, Keita Satoh. Role of police dentistry in the basic act on the promotion of cause of death Investigations: The usefulness of the Kanagawa prefectural police dentist training seminar. 20th National Convention of Police Dental Association 2024.08.03 Yamaguchi city
8. Koichi Sakurada. Criminal investigation: why and how to identify someone?. Tokyo Medical and Dental University Open Campus 2024 2024.08.01 Tokyo Medical and Dental University
9. Hanafi Muhammad Garry Syahrizal, Hajime Utsuno, Hisako Saith, Saki Minegishi, Shuuji Namiki, Menik Priaminiarti, Nurtami Soedarsono, Koichi Sakurada . Preliminary Study Comparing Facial soft tissue depth between Indonesian and Japanese populations. The 108th Congress of the Japanese Society of Legal Medicine 2024.06.06 Okayama city
10. Hisako Saitoh, Isao Yamamoto, Katsuhiko Okuda, Yoshihiro Yamada, Koichi Sakurada, Hirotaro Iwase, Keiko Shimizu. Study on the use of intraoral scanners for obtaining dental findings from cadavers. The 108th Congress of the Japanese Society of Legal Medicine 2024.06.06 Okayama city
11. Hajime Utsuno, Hanafi Muhammad Garry Syahrizal, Nanami Aoki, Shuuji Namiki, Yosuke Makino, Saki Minegishi, Maiko Toya, Hisako Saitoh, Hirotaro Iwase, Koichi Sakurada. Study on the relationship between the average condylar point and the tragus when performing facial reconstruction. The 108th Congress of the Japanese Society of Legal Medicine 2024.06.06 Okayama city
12. Shuuji Namiki, Aumi Motomura, Naoki Saitoh, Hisako Saitoh, Hajime Utsuno, Saki Minegishi, Yosuke Makino, Hirotaro Iwase, Koichi Sakurada. A case of childhood acute myeloid leukemia in which the patient was presumed to have died without receiving appropriate treatment for religious reasons.. 18th Annual Scientific Meeting of Japanese Society of Forensic Dental Science 2024.05.26 Osaka city
13. Hisako Saitoh, Koichi Nakakuki, Sayaka Nagasawa, Yosuke Makino, Shinji Akitomi, Kenichiro Hashizume. Relationship between dentists engaged in identification work and bereaved families: Disaster response with the embalming effect in mind. The 29th Annual Meeting of Japanese Association for Disaster Medicine 2024.02.24
14. Hisako Saitoh, Koichi Nakakuki, Sayaka Nagasawa, Yosuke Makino, Isao Yamamoto, Kimiko Nakagawa, Iwao Hasegawa, Shinji Akitomi, Kenichiro Hashizume. The effect of embalming on the families of COVID-19 victims and the involvement of medical researchers: Results of a questionnaire survey of bereaved families. The 29th Annual Meeting of Japanese Association for Disaster Medicine 2024.02.23
15. Hisako Saitoh, Koichi Nakakuki, Sayaka Nagasawa, Yosuke Makino, Isao Yamamoto, Kimiko Nakagawa, Iwao Hasegawa, Shinji Akitomi, Kenichiro Hashizume. Development of personal identification system based on dental findings in preparation for future disasters. The 29th Annual Meeting of Japanese Association for Disaster Medicine 2024.02.23

[Social Contribution]

1. Personal identification using dental findings, DNA typing, and others (197 cases) , 2024.01.01 - 2024.12.31
2. 2023 Personal identification training program (Second) (Koichi Sakurada) , Tokyo Metropolitan Government Bureau of Public Health and Medical Care , Dental Association Building , 2024.03.01
3. 2024 Personal identification training program (First) (Koichi Sakurada), Tokyo Metropolitan Government Bureau of Public Health and Medical Care , Dental Association Building, 2024.07.19
4. The present, past and future of forensic dentistry (Hisako Saito), Osaka Dental Association, Osaka Dental Association building, 2024.08.10
5. 2024 Personal identification training program in Kanagawa (Koichi Sakurada, Hisako Saitoh) , Kanagawa Dental Association, Tsurumi University, 2024.10.13

6. Relationship between dentists engaged in identification and bereaved families (Hisako Saitoh), Tokushima Prefectural Liaison Council of Police, Medical Association, and Dental Association, Tokushima Dental Association building, 2024.11.21
7. Child Abuse and Elder Abuse from a Dentist's Perspective (Hisako Saitoh), Yamagata Dental Association, Yamagata Dental Association building, 2024.12.22

Dental Education Development

Professor: Naoko SEKI

(1) Research

- 1) Research on curriculum for professional education to deliver health care
- 2) Comparative study of domestic and international dental education
- 3) Research and development of educational methods in professional education for health care
- 4) Research and development of English education programs in professional education for health care

(2) Education

The educational goal of this section as part of the graduate school, is to help students training to deliver health care learn the basics of medical/dental curricula: educational objectives, strategies and evaluation. This section is currently involved in the following education as the coordinators of multiple modules: the students' research projects, courses for global competencies including various English courses; courses for international exchange/global-mindset for both undergraduate and postgraduate students; and courses for clinical skill acquisition as a part of life-long learning.

(3) Clinical Services & Other Works

[Coordination for Seminar, Symposium, Workshop or other events]

1. International Faculty Development Course (IFDC) (at TMDU/Science Tokyo)
2. International Course for Clinical Dentistry (ICCD)
3. Collaborative Continuing Education Course Provision between Melbourne Dental School and Tokyo Medical and Dental University (TMDU)/Institute of Science Tokyo (Science Tokyo)

(4) Publications

[Original Articles]

1. Liao SR, Seki N, Foxton R, Sireerat K, Akiyama M, Kanamori Y, Moross J, Shinada K, Chen S, Morio I. An investigation into the cognitive flexibility of undergraduate dental hygiene students at two dental schools in Asia *Journal of Dental Sciences*. 2024.10; 19(4); 2196-2202
2. Kanako Noritake, Jun Tsuruta, Koji Mizutani, Keiko Kondo, Hitomi Suzuki, Naoko Adachi, Naoko Seki, Ridan Cao, Risako Mikami, Sayaka Katagiri, Yuji Kabasawa, Hiroshi Nitta. Educational effects of dental hygiene student intervention in dental student clinical practicum *Journal of Dental Sciences*. 2024.10;

[Conference Activities & Talks]

1. Kanako Noritake, Jun Tsuruta, Koji Mizutani, Keiko Kondo, Hitomi Suzuki, Naoko Adachi, Naoko Seki, Risako Mikami, Yuji Kabasawa, Arata Ebihara, Masayuki Hideshima, Hiroshi Nitta. Overview and Effectiveness of Interprofessional Education in clinical practicum at TMDU School of Dentistry. The 56th Annual Meeting of the Japan Society for Medical Education 2024.08.09 Tokyo

Department of Dental Public Health

Professor Jun Aida
 Associate Professor Yusuke Matsuyama
 Junior Associate Professor Miho Ishimaru
 Assistant Professor Takashi Zaitso
 Medical staff Risa Aritomi
 Collaborative researcher Sakura Kiuchi
 Office administrator Sumi Ito
 Graduate Student Tomoya Saito
 Akiko Okuda
 Ho Sy Minh Duc
 Satomi Shimada
 Masuko Sayo
 Sharmin Farzana
 Kewei Wang
 Syunya Masuko
 Aishwarya Gaikwad
 Safira Khairinisa
 Tasnim Zarin
 Fadli Alwi

(1) Outline

In "clinical practice," patients are diagnosed and treated, but "epidemiology" is used to diagnose people in society, and "public health" is used to maintain and promote the health of population in society through this process. The Department of Health Promotion Dentistry aims to promote people's health through epidemiology, public health, and the clinical and field activities of Fresh Breath Clinic.

Epidemiology" is also useful for future clinicians. Epidemiology is indispensable to determine the characteristics of one's own clinic and the condition of patients objectively from data, and to provide evidence-based prevention and treatment.

Public health" is an essential study for those who work in public administration at the national, prefectural, and municipal levels. Public health dentists work to maintain and promote the health of society. It is important to acquire a public health knowledge in order to contribute to the population health.

We also conduct dental examinations at health centers and companies, as well as at the " Fresh Breath Clinic," which specializes in the treatment of halitosis. Halitosis is the third most common dental and oral health concern, and is a factor that hinders people's communication in the workplace and in the community. As a department of a university hospital specializing in halitosis treatment, which is rare in the world, we provide state-of-the-art halitosis treatment equipped with measuring instruments, which are few in Japan, to contribute to well-being. Here, as dentists and dental hygienists, we are able to acquire a few special skills.

By acquiring such special expertise, we are training people who can contribute to the promotion of people's health as "epidemiological researchers," "administrative professionals," and "clinicians who can use epidemiology to understand their own patients' conditions and determine the best treatment based on data and evidence,

and who can also provide halitosis treatment,” as one-of-a-kind human resources.

(2) Research

Major research themes in the field

- Research on causal inference between oral and general health
- Research on health inequalities and social determinants of health
- Research on the construction of a diagnosis and treatment system for halitosis

(3) Education

1) Graduate education

Doctoral Course Health Promotion Dentistry Advanced Theory (1st year), Seminar (1-2 years), Research Practice (2-3 years)

Graduate School of Medical and Dental Sciences Course Advanced Theory Health Science Course

Master’s Course Environmental and Social Medicine and Dentistry

2) Undergraduate education

For first-year students of the School of Dentistry

Module 01 "Introduction to Dentistry": Unit 03 "Current Dentistry", Unit 04 "Early Clinical Experience Practicum

For second-year students of the School of Dentistry

Module 04 "Society and Environment": Unit 02 "Lifestyle and Health

For third-year students of the School of Dentistry

Module 10 "Prevention and Health Care": Unit 01 "Prevention of Oral Diseases (Lecture and Practice)", Unit 02 "Prevention of Oral Diseases (Practical Training)

For fourth-year students of the School of Dentistry

Module 19 "Research Experience Practicum

For 5th and 6th year students of the School of Dentistry

Module 29 "Comprehensive Clinical Practice

For fourth-year students of the Department of Oral Health Sciences

Module 29: Clinical Practice

(4) Lectures & Courses

1) Graduate education

The program will train dental professionals who can conduct research and regional diagnosis from epidemiology, statistics, and public health. To this end, cutting-edge research will be conducted in an international network with an understanding of international research context.

In the advanced course, basic, clinical, and epidemiological studies on oral disease prevention and oral health promotion will be reviewed. Lectures and discussions will be held on prevention of oral diseases, dental public health, epidemiology of oral diseases, social aspects of oral diseases, primary health care and health promotion, and the relationship between health care systems and educational systems and oral health promotion.

2) Undergraduate Education

Lifestyle and Health": To help students understand the relationship between health and social systems and the

environment, and to acquire the knowledge, skills, and attitudes necessary to become dentists who can help people promote their health.

Prevention of Oral Diseases I & II”: To acquire the knowledge, skills, and attitudes necessary for students to become dentists who practice prevention and health management of oral diseases.

(5) Clinical Services & Other Works

Clinical Services

“Fresh breath clinic” in Dental hospital, Tokyo Medical and Dental University is a special clinic for diagnosis, treatment and prevention of oral malodor. About half of oral malodor patients are referred from other departments in the dental hospital or outside dental clinics. Other patients visit the clinic by finding the information of the clinic from mass media such as the internet, newspapers and television.

For oral malodor examination, gas chromatography and gas sensor instrument are used to measure the concentration of volatile sulfur compounds (VSCs) along with the organoleptic test. Oral malodor is treated based on diagnosis by precise measurement and oral examination, besides psychological aspects of the patient are paid attention. Treatment of oral malodor needs continuous periodontal disease management and oral care in cooperation with oral care department in the dental hospital and patient’s family dentist.

(6) Publications

[Original Articles]

1. Tomoka Matsumura, Jun Aida, Yushi Abe, Yu Oikawa, Takeshi Kuroshima, Hiroyuki Harada, Shigeru Maeda. Obesity and postoperative flap complications in maxillofacial reconstruction surgery ORAL SURGERY ORAL MEDICINE ORAL PATHOLOGY ORAL RADIOLOGY. 2024.12; in press;
2. Atsuhide Takesue, Yoshimune Hiratsuka, Katsunori Kondo, Jun Aida, Atsushi Nakagomi, Shintaro Nakao. Association Between Visual Impairment and Daily Internet Use Among Older Japanese Individuals: Cross-Sectional Questionnaire Study. JMIR Form Res. 2024.12; 8; e58729
3. Sayo Masuko, Yusuke Matsuyama, Shiho Kino, Katsunori Kondo, Jun Aida. Changes in leisure activity, all-cause mortality, and functional disability in older Japanese adults: The JAGES cohort study. Journal of the American Geriatrics Society. 2024.11;
4. Aki Yazawa, Xiaoyu Li, Koichiro Shiba, Sakurako S Okuzono, Hiroyuki Hikichi, Jun Aida, Katsunori Kondo, Ichiro Kawachi. Resilience factors affecting long-term trajectories of depressive symptoms in the aftermath of the Great East Japan Earthquake and Tsunami among older adults. J Gerontol B Psychol Sci Soc Sci. 2024.11;
5. Sakurako S Okuzono, Kate Burrows, Koichiro Shiba, Aki Yazawa, Hiroyuki Hikichi, Jun Aida, Katsunori Kondo, Ichiro Kawachi. Pre-disaster income inequality and post-disaster mental health: A natural experiment from the 2011 Great East Japan Earthquake and Tsunami. Health Place. 2024.11; 90; 103363
6. T Yamamoto, U Cooray, T Kusama, S Kiuchi, H Abbas, K Osaka, K Kondo, J Aida. Childhood Socioeconomic Status Affects Dental Pain in Later Life. JDR Clin Trans Res. 2024.09; 23800844241271740
7. Sakura Kiuchi, Yusuke Matsuyama, Kenji Takeuchi, Taro Kusama, Upul Cooray, Ken Osaka, Jun Aida. Number of Teeth and Dementia-free Life Expectancy: A 10-Year Follow-Up Study from the Japan Gerontological Evaluation Study. J Am Med Dir Assoc. 2024.09; 25(11); 105258
8. Ishimaru, M; Zaitzu, T; Kino, S; Inoue, Y; Taira, K; Takahashi, H; Tamiya, N. Recent dental visits and family caregiving among individuals with dental symptoms: A nationwide cross-sectional study in Japan COMMUNITY DENTISTRY AND ORAL EPIDEMIOLOGY. 2024.08; 52(4); 406-412
9. Tomoki Kawahara, Satomi Kato Doi, Aya Isumi, Yusuke Matsuyama, Yukako Tani, Takeo Fujiwara. Impact of COVID-19 pandemic on children overweight in Japan in 2020. Pediatr Obes. 2024.08; 19(8); e13128

10. MatsuyamaYusuke. Complete Loss of Natural Teeth and Loneliness: A Fixed-Effect Analysis. *Journal of Dental Research*. 2024.08; 220345241263265
11. Sakura Kiuchi, Kenji Takeuchi, Masashige Saito, Taro Kusama, Noriko Nakazawa, Kinya Fujita, Katsunori Kondo, Jun Aida, Ken Osaka. Differences in cumulative long-term care costs by dental visit pattern among Japanese older adults: the JAGES cohort study. *J Gerontol A Biol Sci Med Sci*. 2024.08;
12. Shiho Kino, Yudai Tamada, Kenji Takeuchi, Atsushi Nakagomi, Koichiro Shiba, Taro Kusama, Takafumi Yamamoto, Jun Aida. Exploring the relationship between oral health and multiple health conditions: An outcome-wide approach. *J Prosthodont Res*. 2024.07; 68(3); 415-424
13. Yudai Tamada, Kenji Takeuchi, Taro Kusama, Masashige Saito, Tetsuya Ohira, Kokoro Shirai, Chikae Yamaguchi, Katsunori Kondo, Jun Aida, Ken Osaka. Reduced number of teeth with and without dental prostheses and low frequency of laughter in older adults: Mediation by poor oral function. *J Prosthodont Res*. 2024.07; 68(3); 441-448
14. Akio Shimizu, Takaaki Ikeda, Yasuhiro Miyaguni, Sho Takeda, Yudai Tamada, Jun Aida. Association between the incidence of functional disability and frequency of eating together among older adults living alone: a 6-year follow-up study from the Japan Gerontological Evaluation Study. *Age Ageing*. 2024.07; 53(7);
15. Taro Kusama, Kenji Takeuchi, Sakura Kiuchi, Jun Aida, Ken Osaka. The association between objective and subjective oral health conditions and the presence of anorexia of aging among Japanese older Adults Appetite. 2024.07; 198; 107332
16. Yusuke Matsuyama, Takahiro Tabuchi. Health utility attributable to oral conditions in Japanese adults. *Community Dent Oral Epidemiol*. 2024.07; 52(6); 911-918
17. Rikuya Hosokawa, Toshiyuki Ojima, Tomoya Myojin, Jun Aida, Katsunori Kondo, Naoki Kondo. Neighborhood Environments and Healthy Life Expectancy in Older Adults: A 6-year Longitudinal Cohort Study Based on Data from the Japan Gerontological Evaluation Study. *JMA J*. 2024.07; 7(3); 328-333
18. Zaitsu, T; Saito, T; Oshiro, A; Kawaguchi, Y; Kawachi, I. Simplifying Oral health evaluation: a novel approach through single-item surveys *BMC ORAL HEALTH*. 2024.06; 24(1); 669
19. Hiroyuki Hikichi, Kanako Taku, Jun Aida, Katsunori Kondo, Ichiro Kawchi. Longitudinal associations between post-traumatic stress and post-traumatic growth among older adults 11 years after a disaster. *Epidemiol Psychiatr Sci*. 2024.06; 33; e33
20. Jun Aida, Yuko Inoue, Takahiro Tabuchi, Naoki Kondo. Modifiable risk factors of inequalities in hypertension: analysis of 100 million health checkups recipients. *Hypertens Res*. 2024.06; 47(6); 1555-1566
21. Kimura Y, Jo T, Hashimoto Y, Kumazawa R, Ishimaru M, Matsui H, Yokoyama A, Tanaka G, Yasunaga H. Epidemiology of patients with lymphangioliomyomatosis: A descriptive study using the national database of health insurance claims and specific health checkups of Japan. *Respiratory investigation*. 2024.05; 62(3); 494-502
22. Morohoshi, H; Matsuyama, Y; Zaitsu, T; Oshiro, A; Kondo, K; Aida, J. Determining the most appropriate socioeconomic status indicator for describing inequalities in dental visits by Japanese older people *GERODONTOLOGY*. 2024.05;
23. Kimura Y, Jo T, Inoue N, Suzukawa M, Hashimoto Y, Kumazawa R, Ishimaru M, Matsui H, Yokoyama A, Tanaka G, Sasabuchi Y, Yasunaga H. Association of Novel Antihyperglycemic Drugs Versus Metformin With a Decrease in Asthma Exacerbations. *The journal of allergy and clinical immunology. In practice*. 2024.05;
24. Mikami R, Mizutani K, Ishimaru M, Gohda T, Iwata T, Aida J. Preventive dental care reduces risk of cardiovascular disease and pneumonia in hemodialysis population: a nationwide claims database analysis. *Scientific reports*. 2024.05; 14(1); 12372
25. Yusuke Matsuyama, Takahiro Tabuchi. Does Tobacco Smoking Increase Social Isolation? A Mendelian Randomization Study. *Am J Epidemiol*. 2024.04; 193(4); 626-635

26. T Yamamoto, Y Mochida, K Irie, N U Altanbagana, S Fuchida, J Aida, K Takeuchi, M Fujita, K Kondo. Regional Inequalities in Oral Frailty and Social Capital. *JDR Clin Trans Res.* 2024.04; 23800844241238648
27. Okuzawa-Iwasaki M, Ishida Y, Ishizaki-Terauchi A, Shimizu-Tomoda C, Aida J, Ono T. Contributions of Alveolar Bone Density and Habitual Chewing Side to the Unilateral Failure of Orthodontic Mini-Screws: A Cross-Sectional Study *Applied Sciences.* 2024.04; 14(7); 3041
28. Y Matsuyama, J Aida, K Kondo, K Shiba. Heterogeneous Association of Tooth Loss with Functional Limitations. *J Dent Res.* 2024.04; 103(4); 369-377
29. Matsunaga LH, P. Aldrich D, Faiad C, Aoki T, Tseng P-H, Aida J:. The Role of Social Capital in Depression During the COVID-19 Pandemic *International Perspectives in Psychology.* 2024.04; 13(2); 68-78
30. Yamamoto T, Kiuchi S, Ishimaru M, Fukuda H, Yokoyama T. Associations between school-based fluoride mouth-rinse program, medical-dental expense subsidy policy, and children's oral health in Japan: an ecological study. *BMC public health.* 2024.03; 24(1); 762
31. Keiko Ishimura, Ryoto Sakaniwa, Kokoro Shirai, Jun Aida, Kenji Takeuchi, Katsunori Kondo, Hiroyasu Iso. Frequency of going outdoors and risk of poor oral health among older Japanese adults: a longitudinal cohort from the Japan Gerontological Evaluation Study. *J Epidemiol.* 2024.02;
32. Shiho Kino, Keiko Ueno, Daisuke Nishioka, Naoki Kondo, Jun Aida. Prevalence of dental visits in older Japanese adults receiving public assistance. *Community Dent Oral Epidemiol.* 2024.02; 52(1); 68-75
33. Aoki Jin, Zaitzu Takashi, Oshiro Akiko, Aida Jun. Association of Stressful Life Events With Oral Health Among Japanese Workers(タイトル和訳中) *Journal of Epidemiology.* 2024.02; 34(1-2); 16-22
34. Rikuya Hosokawa, Toshiyuki Ojima, Tomoya Myojin, Jun Aida, Katsunori Kondo, Naoki Kondo. Estimating Health Expectancy in Japanese Communities Using Mortality Rate and Disability Prevalence. *JMA J.* 2024.01; 7(1); 21-29
35. Sato M, Ono S, Yamana H, Okada A, Ishimaru M, Ono Y, Iwasaki M, Aida J, Yasunaga H. Effect of periodontal therapy on glycaemic control in type 2 diabetes. *Journal of clinical periodontology.* 2024.01; 51(4); 380-389
36. Kimura Y, Suzukawa M, Jo T, Hashimoto Y, Kumazawa R, Ishimaru M, Matsui H, Yokoyama A, Tanaka G, Yasunaga H. Epidemiology of severe childhood asthma in Japan: A nationwide descriptive study. *Allergy.* 2024.01; 79(6); 1598-1602
37. Ho DSM, Zaitzu T, Ihira H, Iwasaki M, Yoshihara A, Suzuki S, Inoue M, Yamagishi K, Yasuda N, Aida J, Shinozaki T, Goto A, Tsugane S, Sawada N. Association Between Oral Malodor and Dementia: An 11-Year Follow-Up Study in Japan. *Journal of Alzheimer's disease reports.* 2024; 8(1); 805-816

[Conference Activities & Talks]

1. Mei Harada, Sachi Umemori, Hiroshi Nitta, Jun Aida. The Association between Dental Visits and Chewing Ability - JAGES cross-sectional study -. 第 89 回口腔病学会学術大会 2024.12.07
2. Mei Harada, Sachi Umemori, Yusuke Matsuyama, Hiroshi Nitta, Jun Aida. Mediating Effect of Dental Prosthetics on Chewing Ability Recovery. 第 72 回国際歯科研究学会日本部会 (JADR) 総会・学術大会 2024.11.17
3. Miao M, Hattori M, Aida J, Murase M, Haraguchi M, Wakabayashi N. The survival rates and risk factors of dental prostheses: A retrospective study. The 71st Annual Meeting of the American Academy of Maxillofacial Prosthetics 2024.11.03 Naples Grande Beach Hotel (Naples, Florida USA)
4. Jun Aida. Social capital and functional recovery of older adults after the Great East Japan Earthquake and Tsunami, Japan. Asia Pacific Health Security Action Framework (APHSAF), Stakeholders Meeting 2024 2024.07.24 マニラ、オンライン

5. Ayane Horike, Kohei Yamaguchi, Jun Aida, Kanako Toda, Rieko Moritoyo, Kanako Yoshimi, Kazuharu Nakagawa, Haruka Tohara. Are Individuals with a propensity for procrastination more likely to have lower oral function. 2024 Pan-Pacific Dentistry Joint Symposium (TMDU-Otago-Peking-Melbourne-SNU) 2024.05.20 Seoul National University School of Dentistry, Education Building, 5th floor
6. Upul Cooray, Ankur Singh, Jun Aida, Ken Osaka, Marco Aurelio de Anselmo Peres. Intervening on Poverty to Reduce Dental Pain Among US Adult. 2024 IADR/AADOCR/CADR General Session & Exhibition 2024.03.15 New Orleans
7. Satomi Shimada, Yusuke Matsuyama, Jun Aida. Mediation Effect of Oral Health on Inequalities in Dementia. 2024 IADR/AADOCR/CADR General Session & Exhibition 2024.03.15 New Orleans

[Awards & Honors]

1. Best Reviewer Award 2023, 2024.01

Department of Global Health Entrepreneurship

Professor: Keiko Nakamura, MD, PhD

Junior Associate Professor: Kaoruko Seino, PhD (– 30 Apr 2024)

Assistant Professor: Ayano Miyashita, PhD (1 May 2024 –)

Specially Appointed Assistant Professor: Yurhi Tashiro, MPH, PhD (1 Spt 2024 –)

Alemi Sharifullah, MD, PhD (– 31 Jan 2024)

Graduate Student:

Kouki Akahoshi, MD; Ayano Miyashita, MSc;

Yasushi Sakuramoto MD, MPH, MPA;

Hideko Sato, RN, MPH;

Anderson Bendera, MD;

Kamila Dost, MD;

Eugene Meshi, MSc;

Zia-ul-haq Safi, MD;

Minh Tri Tran Xuan, MD;

Thao Vi, MD;

Iftikhar Halimza, MD;

Angelica Latorre, MPH;

Ana Kriselda Rivera, MPH;

Prangkhwan Jiaranaisilawong, MD;

Rober Day;

(1) Outline

The Department of Global Health Entrepreneurship seeks to elucidate physical, social, economic and cultural factors determining inequity in health. The department works closely with WHO and other international agencies to help develop guidelines of scientific evaluation and recommended practices.

(2) Research

Major Research Topics:

- 1) Transfiguration of the ecosystem and its interaction with human health
- 2) Socio-cultural factors determining health
- 3) Social entrepreneurship development through applying the Healthy Settings approach
- 4) Use of information technology to improve public health
- 5) International health workforce and trade in health services
- 6) Universal health coverage in ageing society

(3) Education

PhD programs

Our doctoral program provides a flexible curriculum that allows students to customize their research goals, methods, and activities based upon their own interests and preferences. Students on the Public Health Medicine (PHM) track of the Disease Prevention Global Leader Program (DP-GLP) attain the skills required for public health professionals with an international perspective. The program prepares them for leadership roles in public institutions. Advanced students from many countries around the world are now enrolled. All the classes are conducted in English, thus facilitating the acquisition of international communication skills.

A rich variety of educational activities have been arranged in the program. These include: individual discussion sessions with professors and other faculty members; field investigations; and seminars on various topics such as community health care, community medicine, public health policy, biostatistics, academic presentation, development of foreign language skills, and communication skills. Students work closely with faculty members on an individual basis in setting the right direction for their research and confirmation of their progress.

Master Programs

Master degree students receive systematic intensive training that leads to the acquisition of broad expertise in the field of global public health. This program is open to students who have majored in any field.

(4) Lectures & Courses

The objective of our postgraduate education is to provide professional qualifications to high-caliber people who exhibit leadership in the advancement of public health and promotion of health on an international scale. The department helps students attain the knowledge, skills, attitude, and experiences that are necessary for competent health specialists and social entrepreneurs in healthcare.

By completion of the doctoral course, the participants are expected to be able to:

- Assess health and well being the populations in local, national, and international settings,
- Assess evidence to show effectiveness of health interventions, programs and strategies,
- Think strategically to develop local, national, and international policies,
- Manage projects to successful completion
- Demonstrate leadership in local, national, or international public health programs
- Communicate properly when listening, presenting, writing, and negotiating
- Pursue a full-cycle of an academic, public health research project
- Facilitate learning of staff, students, and colleagues, and
- Practice and respect professional ethics in a socio-culturally diverse environment.

(5) Publications

[Original Articles]

1. Tran XMT, Nguyen HTL, Tran TV, Seino K, Ohno-Matsui K, Tran TV, Igarashi-Yokoi T, Vo TV, Nakamura K. . Factors protecting against progression of myopia in school students exposed to societal change in Vietnam: a 3-year cohort study. *BMJ Open*. 2024.12; 15; e085853
2. Halimzai I, Nakamura K, Seino K, Miyashita A. Hemat S, Alemi S, Saeedzai SA. Implications of the dissemination of healthy lifestyle advice for Afghan adults without histories of hypertension diagnosis or treatment. *Journal of Rural Medicine*. 2024.12;
3. Dost K, Nakamura K, Alemi S, Tashiro Y, Seino K, Hemat S. . Inequality in Afghanistan in the use of prenatal healthcare services according to the sex of newborns. *Journal of Rural Medicine*. 2024.10; 19(4); 221-231
4. Tran TV, Nguyen HTL, Tran XMT, Tashiro Y, Seino K, Vo TV, Nakamura K. Academic stress among students in Vietnam: A three-year longitudinal study on the impact of family, lifestyle, and academic factors. *Journal of Rural Medicine*. 2024.10; 19(4); 279-290

5. Miyashita A, Nakamura K, Kibusi SM, Meshi EB, Bendera A, Sato H, Al-Sobaihi S, Tashiro Y, Ramaiya KL, Sunguya BF, Seino K. . Health insurance in rural Tanzania promotes self-care for non-communicable disease patients via management behaviours. *International Health*. 2024.09;
6. Keanjoom R, Toyoda P, Nakamura K. Geographical variation, demographic and socioeconomic disparities in active ageing: the situation in Thailand. *Public Health in Practice*. 2024.05; 16(7); 100509
7. Vo MTH, Nakamura K, Seino K, Moncatar TRT, Han TDT, Siongco KLL, Tashiro Y, Vo TV. Can collaboration among health and social care workers play a role in addressing geriatric care challenges? A qualitative case study in Central Vietnam *International Health*. 2024.04; 16; 387-398
8. Seino K, Nakamura K, Alemi S. Social interactions and heat stress mitigation among elderly people in a healthy city. *Lancet Planetary Health*. 2024.04; 8(S); S12
9. Ramani-Chander A, Nakamura K, . Challenges and enablers for scaling up interventions targeting non-communicable diseases: A qualitative study applying the Consolidated Framework for Implementation Research to 19 research projects worldwide. *BMC Public Health*. 2024.03; 2; e000710-e00071
10. Bendera A, Nakamura K, Seino K, Alemi S.. Performance of the non-laboratory based 2019 WHO cardiovascular disease risk prediction chart in Eastern Sub-Saharan Africa. *Nutrition, Metabolism and Cardiovascular Diseases*. 2024.02; 34; 1448-1455
11. Moncatar TR, Vo THM, Siongco KL, Tri HTD, Seino K, Gomez AV, Canila C, Javier R, Vo TV, Tashiro Y, Lorenzo FM, Nakamura K. Gaps and opportunities in addressing the needs of older adults in the Philippines and Vietnam: A qualitative exploration of health and social workers' experiences in urban care settings. *Frontiers in Public Health*. 2024.02; 12; 1269116
12. Tran XMT, Nakamura K, Al-Sobaihi S, Seino K. Parental engagement in caregiving activities and its association with socioeconomic and child-rearing environment at home in Vietnam. *Early Child Development and Care*. 2024.01; 194(1); 118-133

[Conference Activities & Talks]

1. Nakamura K. Updating Regional Development of Healthy Cities.. Griffith University, Brisbane 2024, International Symposium 2024.12.06 Brisbane
2. Nakamura K, Guinto R. 国際保健からプラネタリーヘルス: Global Health to Planetary Health. 匠講話 2024.11.25 Tokyo
3. Nakamura K.. How to Build a People-centered Smart Health Community? Implementation Science for Healthy Cities.. The 2nd World Health City Forum 2024.11.13 Incheon
4. Nakamura K, Seino K, Latorre A, Rivera AK, Miyashita A, Tashiro Y.. A Protocol for an Implementation Science Research: Healthy School Environments Supporting Healthy and Informed Choices of Food and Beverage in the Philippines.. The 89th Annual Meeting of the Japanese Society of Health and Human Ecology 2024.10.12 Tokyo
5. Nakamura K.. Our Commitments and Efforts to Advance Health Equity.. The 10th Global Conference of the Alliance for Healthy Cities 2024.09.27
6. Nakamura K.. Learning for Healthy Cities.. The 10th Global Conference of the Alliance for Healthy Cities 2024.09.26
7. Nakamura K.. WHO Special Session: Leveraging healthy city indicators to accelerate commitment and action in the Western Pacific Region.. The 10th Global Conference of the Alliance for Healthy Cities 2024.09.26
8. Nakamura K.. Urban Governance for Health and Well-being.. The 10th Global Conference of the Alliance for Healthy Cities 2024.09.25 Seoul, Republic of Korea
9. Nakamura K.. Overview of Healthy Cities programme and Age-friendly Environments.. WHO Regional Meeting on Building Sustainable Age-friendly Environments in the Western Pacific 2024.09.23 Seoul, Republic of Korea

10. Nakamura K.. Healthy Cities Indicators:What Alliance for Healthy Cities has done so far.. WHO Preliminary Meeting – Establishing context and equity-based Healthy Cities Indicators for WPR. 2024.08.27 Manila, Philippines
11. Nakamura K. Planetary Health and Healthy Cities.. ASEAN Institute for Health Development, Mahidol University Special Lecture 2024.08.22
12. Nakamura K. Healthy Cities and Loneliness.. WHO Technical Consultation on Loneliness in Cities. 2024.07.11
13. Nakamura K, Kiyu A.. Healthy Cities Initiatives. Planetary Health Alliance Summit 2024 6th Annual Meeting 2024.04.18
14. Nakamura K.. Overview of Planetary Health: Healthy Planet Healthy People. . Debate Session 1: Planetary Health. Médecins Sans Frontières 2024.03.23
15. Nakamura K. Global Health Entrepreneurship towards Planetary Health: Healthy Planet Healthy People. Special Lecture on Planetary Health Faculty of Public Health, Naresuan University 2024.01.25
16. Nakamura K. Healthy Cities in Blue and Green Zones: opportunities for actions in local settings. Expert Symposium: Planetary Health and Health Systems HSR2023 Western Pacific Preconference 2024.01.12

Department of Clinical Biostatistics

Professor

Akihiro Hirakawa

Lecturer

Hiroyuki Sato

Graduate Students

Ryoichi Hanazawa

Masanao Sasaki

Masaya Watanabe

Yosuke Shimizu

Ryo Kitabayashi

Masashi Wakabayashi

Mihiro Kaga

Masaya Tanahashi

Takahiro Masuda

Risa Murakami

Junpei Okabe

Shoko Tanaka

Yusuke Tanaka

Yuji Nagao

Wataru Fukuokaya

Daisuke Miyabe

Tosiyuki Watanabe

Shogo Ando

Iori Kajikawa

Yumen ou

Moeka Kojima

Tomoki Nishizawa

Ryohei Matsuo

Miharu Mitsutake

Specially Appointed Resercher

Shin Watanabe

(1) Outline

The effectiveness of new treatments is evaluated through medical research involving human subjects. Medical research includes various types, such as observational studies and interventional studies, and in all cases, it is crucial to appropriately quantify treatment effects based on the collected data. To achieve this, it is necessary to select appropriate study designs and statistical methods.

Clinical biostatistics (also referred to as biostatistics or medical statistics) is a field that studies trial designs and statistical analysis methods to accurately and efficiently assess treatment effects. This field is essential for establishing Evidence-Based Medicine (EBM) and Personalized Medicine. Our research area focuses on:

- (i) Research and development of clinical biostatistical methodologies,
- (ii) Conducting clinical research utilizing advanced study designs and statistical analysis methods, and
- (iii) Practicing data science in the medical and healthcare fields.

Through these research activities, we aim to accelerate the development of new treatments and contribute to the realization of a healthier society.

Clinical Biostatistics Program

We welcome applications from:

- Graduate students (Master's and Ph.D. programs) aiming to become biostatisticians or medical data scientists.
- Graduate students in Ph.D. programs (including medical doctors, dentists, pharmacists, nurses, and clinical laboratory technicians) who wish to systematically study clinical research design and statistical analysis and obtain a Doctor of Medicine (M.D.-Ph.D.) by publishing clinical research papers.
- Graduate students in Master's and Ph.D. programs working in pharmaceutical and medical device companies, contract research organizations (CROs), and healthcare service development companies who wish to systematically study clinical trial methodologies and medical data analysis and obtain a doctoral degree (such as Ph.D. in Medicine). Working professionals are also welcomed in the Ph.D. program.

Graduate students in Master's and Ph.D. programs can engage in a variety of research themes, including:

- Development of novel clinical biostatistical methodologies
- Data analysis in the medical and healthcare fields
- Regulatory science research
- Conducting basic and advanced clinical studies (both prospective and retrospective)

Applicants from diverse academic backgrounds are welcome. Students from fields such as economics, science, engineering, informatics, and life sciences have been accepted into the program. Additionally, working professionals, including medical doctors and those employed in the pharmaceutical industry, are enrolled as professional graduate students in the Ph.D. program.

We offer programs that provide foundational education in clinical biostatistics and healthcare data analysis. Degrees available in the Ph.D. program include Doctor of Mathematical and Medical Sciences, Doctor of Medicine, and Doctor of Science.

If you are considering applying, please contact us for a laboratory visit and discussion about research topics.

(2) Research

Our primary research themes include:

1. Research and development of clinical biostatistical methodologies (study design and statistical analysis)
2. Conducting clinical research using advanced trial designs and statistical analysis methods
3. Statistical evaluation methods and applications for diverse medical and healthcare data

(3) Education

【Graduate School of Medical and Dental Sciences】

Clinical Trial Methodology (Basic & Applied)

【Integrated Research Institute】

Faculty Development Program: "Clinical Research Paper Writing Course (Interventional Studies)"

(4) Lectures & Courses

Our goal is to enable students to understand and apply trial design and statistical analysis methods for the accurate and efficient evaluation of treatment effects. Specifically, we aim to develop the following competencies, ultimately contributing to the realization of a healthier society:

1. Designing study protocols suited to research hypotheses
2. Conducting sample size calculations for studies

3. Selecting and applying appropriate data analysis methods
4. Developing programming skills for data analysis
5. Explaining and implementing advanced statistical analysis techniques
6. Conducting research and development of novel statistical methodologies

(5) Clinical Services & Other Works

Our research group is involved in the following external projects:

1. Research and development of master protocol-based trial designs and statistical analysis methods for cancer precision medicine
2. Regulatory science research related to pharmaceuticals, medical devices, and regenerative medicine under AMED (Japan Agency for Medical Research and Development)
3. AMED Public-Private Innovation Demonstration Platform for Dementia Measures
4. Practical applications of medical and healthcare data science (Hirosaki University COI Project)

(6) Publications

[Original Articles]

1. Hanazawa, R; Sato, H; Hirakawa, A; Alzheimers Dis Neuroimaging Initiative. Mixture Disease Progression Model to Predict and Cluster the Long-Term Trajectory of Cognitive Decline in Alzheimer's Disease THERAPEUTIC INNOVATION & REGULATORY SCIENCE. 2024.12;
2. Hiromune Katsuda, Masanori Kobayashi, Go Ito, Ami Kawamoto, Susumu Krimura, Hiroyuki Sato, Akihiro Hirakawa, Keiichi Akahoshi, Atsushi Kudo, Kazuo Ohtsuka, Ryuichi Okamoto. Evaluating endoscopic ultrasound-guided tissue acquisition for diagnosis of small pancreatic neuroendocrine neoplasms. Endosc Int Open. 2024.11; 12(11); E1379-E1385
3. Osuga Y, Kobayashi T, Hirakawa A, Takayanagi T, Nogami M, Tayzar K, Mochiyama T, Hirayama M, Foidart JM, Harada T. Efficacy and safety of estetrol (15 mg)/drospirenone (3 mg) combination in a cyclic regimen for the treatment of primary and secondary dysmenorrhea: a multicenter, placebo-controlled, double-blind, randomized study. Fertility and sterility. 2024.11;
4. Sato Y, Shimizu S, Ueda K, Suzuki T, Suzuki S, Miura R, Ando M, Tsuda K, Iwata O, Muramatsu Y, Kidokoro H, Hirakawa A, Hayakawa M, SHEILD team. Safety and tolerability of a Muse cell-based product in neonatal hypoxic-ischemic encephalopathy with therapeutic hypothermia (SHIELD trial). Stem cells translational medicine. 2024.11; 13(11); 1053-1066
5. Fujimaru T, Mori T, Sekine A, Chiga M, Mandai S, Kikuchi H, Mori Y, Hara Y, Fujiki T, Ando F, Susa K, Iimori S, Naito S, Hanazawa R, Hirakawa A, Mochizuki T, Suwabe T, Ubara Y, Uchida S, Sohara E. Importance of IFT140 in Patients with Polycystic Kidney Disease Without a Family History. Kidney international reports. 2024.09; 9(9); 2685-2694
6. Mori N, Nanki T, Hirakawa A, Yamato M, Kaneko Y, Shiokawa R, Ozaki R, Kawabata N, Ohmagari N. Tocilizumab in combination with standard of care in patients with severe COVID-19 pneumonia: efficacy and safety from a phase 3 clinical trial in Japan. Journal of infection and chemotherapy : official journal of the Japan Society of Chemotherapy. 2024.09;
7. Sakyo Hirai, Ryoichi Hanazawa, Masataka Yoshimura, Keigo Shigeta, Yohei Sato, Naoki Taira, Yoshihisa Kawano, Jun Karakama, Yoshiki Obata, Mutsuya Hara, Kenji Yamada, Yosuke Ishii, Kana Sawada, Shogo Imae, Hikaru Wakabayashi, Hirotaka Sagawa, Kyohei Fujita, Shoko Fujii, Satoru Takahashi, Akihiro Hirakawa, Shigeru Nemoto, Kazutaka Sumita. Safety and Efficacy of Management for Intraprocedural Rupture During Endovascular Treatment for Intracranial Aneurysms. Neurosurgery. 2024.08;
8. Murofushi K, Katagiri H, Mitomo S, Hirohata K, Furuya H, Hanazawa R, Hirakawa A, Yagishita K, Kaneoka K. Exploring age-related changes in motor function: insights from the peak decline found in Koji Awareness screening test. Scientific reports. 2024.08; 14(1); 18903

9. Noritaka Suzuki, Yawara Eguchi, Takashi Hirai, Takuya Takahashi, Yohei Takahashi, Kota Watanabe, Tomohiro Banno, Kyohei Sakaki, Satoshi Maki, Yuuichi Takano, Yuki Taniguchi, Yasuchika Aoki, Takamitsu Konishi, Yutaka Hiraizumi, Masatsune Yamagata, Akihiro Hirakawa, Seiji Ohtori. Outcome of intradiscal condoliase injection therapy for patients with recurrent lumbar disc herniation. *Asian Spine J.* 2024.08; 18(4); 550-559
10. Hajime Tanaka, Yuki Fukawa, Kouhei Yamamoto, Kousuke Tanimoto, Akira Takemoto, Takayasu Mori, Hisashi Hasumi, Mayumi Kinoshita, Takumi Kanazawa, Asuka Furukawa, Koichiro Kimura, Hiroyuki Sato, Akihiro Hirakawa, Shohei Fukuda, Yuma Waseda, Soichiro Yoshida, Steven C Campbell, Yasuhisa Fujii. Prognostic impact and genomic backgrounds of renal parenchymal infiltration or micronodular spread in non-metastatic clear cell renal cell carcinoma. *Mod Pathol.* 2024.08; 100590
11. Ohara M, Hirata K, Matsubayashi T, Chen Q, Shimano K, Hanazawa R, Hirakawa A, Yokota T, Hattori T. Circular walking is useful for assessing the risk of falls in early progressive supranuclear palsy. *Journal of neurology.* 2024.07;
12. Yamaoka H, Hirai S, Hanazawa R, Yoshimura M, Hayashi T, Kaneoka A, Yamada K, Yoshino Y, Ebiko Y, Yamamura T, Ishikawa M, Sagawa H, Aoyama J, Fujii S, Fujita K, Kawano Y, Hirakawa A, Sumita K. A thoracic CT imaging parameter predicting access difficulty in acute stroke thrombectomy. *Clinical neurology and neurosurgery.* 2024.07; 244; 108453
13. Takahashi Y, Kobori A, Hiroshima K, Sakamoto Y, Kimura M, Inaba O, Tanimoto K, Hanazawa R, Hirakawa A, Goya M, Sasano T. MAP-AF: A Multicenter, Single-Blind, Randomized Controlled Trial. *Circulation. Arrhythmia and electrophysiology.* 2024.07; 17(8); e012829
14. Harada T, Kobayashi T, Hirakawa A, Takayanagi T, Nogami M, Mochiyama T, Hirayama M, Foidart JM, Osuga Y. Efficacy and safety of estetrol (E4) 15 mg/drospirenone (DRSP) 3 mg combination in a cyclic regimen for the treatment of endometriosis-associated pain and objective gynecological findings: A multicenter, placebo-controlled, double-blind, randomized study. *Fertility and sterility.* 2024.07;
15. Nishikawa T, Kakunaga S, Tamura K, Ando M, Ozaki T, Kawai A, Ueda T, Kawasaki M, Tomatsuri S, Okamura N, Kamikura M, Hamada A, Yoshida A, Hirakawa A, Shibata T, Nakamura K, Yonemori K. Efficacy and safety of nivolumab monotherapy in patients with unresectable clear cell sarcoma and alveolar soft part sarcoma (OSCAR Trial/NCCH1510). *Cancer.* 2024.07;
16. Ito S, Kinugasa Y, Yamauchi S, Sato H, Hirakawa A, Ishihara S, Shiomi A, Kanemitsu Y, Suto T, Takahashi H, Itabashi M, Shiozawa M, Hiyoshi M, Kobatake T, Komori K, Egi H, Ozawa H, Yamaguchi T, Inada R, Ito M, Hirano Y, Furutani A, Tanabe Y, Ueno H, Ohue M, Hida K, Kawai K, Sunami E, Ishida H, Uehara K, Watanabe J, Hotchi M, Ishibe A, Takii Y, Hiro J, Numata M, Takemasa I, Kato T, Kakeji Y, Hirata A, Ajioka Y. Long-term Outcome After Surgical Resection of Paraaortic Lymph Node Metastasis of Colorectal Cancer: A Multicenter Retrospective Study. *Diseases of the colon and rectum.* 2024.07;
17. Kobayashi M, Niimi M, Katsuda H, Akahoshi K, Kinowaki Y, Sasaki M, Hirakawa A, Tateishi U, Tanabe M, Okamoto R. Optimization of Endoscopic Ultrasound Characteristics in the Diagnosis of Malignant Intraductal Papillary Mucinous Neoplasm. *Pancreas.* 2024.07; 53(6); e521-e527
18. Kato, M; Shiota, M; Kimura, T; Hanazawa, R; Hirakawa, A; Takamatsu, D; Tashiro, K; Matsui, Y; Hashine, K; Saito, R; Yokomizo, A; Yamamoto, Y; Narita, S; Hashimoto, K; Matsumoto, H; Akamatsu, S; Nishiyama, N; Eto, M; Kitamura, H; Tsuzuki, T. Validation study on the 2 mm diameter cutoff in lymph node-positive cases following radical prostatectomy in accordance with the AJCC/UICC TNM 8th edition: Real-world data analysis from a Japanese cohort *INTERNATIONAL JOURNAL OF UROLOGY.* 2024.06; 31(6); 662-669
19. Arai, S; Hanaoka, M; Yamauchi, S; Baba, H; Hanazawa, R; Sato, H; Hirakawa, A; Tokunaga, M; Kinugasa, Y. Modified oral antibiotics and mechanical bowel preparation (OAMBP) versus conventional OAMBP for sigmoid colon and rectal surgery: A multicenter randomized non-inferiority trial *ANNALS OF GASTROENTEROLOGICAL SURGERY.* 2024.06;
20. Yatabe Y, Hanaoka M, Hanazawa R, Hirakawa A, Mukai T, Kimura K, Yamanoi K, Kono J, Yokota M, Takahashi H, Kobayashi A, Kobayashi K, Ichikawa N, Yasui M, Nakane K, Yamamoto M, Takenaka A, Nakamura Y, Takemasa I, Yabusaki N, Akamoto S, Tatarano S, Murata K, Manabe T, Fujimura

- T, Kawamura M, Egi H, Yamaguchi S, Terai Y, Inoue S, Ito A, Kinugasa Y. Robotic versus open and laparoscopic pelvic exenterations for pelvic cancer: a multicenter propensity-matched analysis in Japan. *Surgical endoscopy*. 2024.06; 38(8); 4390-4401
21. Mikamo H, Takahashi S, Yamagishi Y, Hirakawa A, Harada T, Nagashima H, Noguchi C, Masuko K, Maekawa H, Kashii T, Ohbayashi H, Hosokawa S, Maejima K, Yamato M, Manosuthi W, Paiboonpol S, Suganami H, Tanigawa R, Kawamura H, IVERMILCO Study Group. Efficacy and safety of ivermectin in patients with mild COVID-19 in Japan and Thailand. *Journal of infection and chemotherapy : official journal of the Japan Society of Chemotherapy*. 2024.06; 30(6); 536-543
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[Books etc]

1. Takahiro Masuda, Kenji Wakabayashi. Perinatal Anesthesiology. Chu-gai Igaku Sha, 2024.06 (ISBN : 978-4-498-05554-4)

[Conference Activities & Talks]

1. Kenichiro Ozaki, Kenji Wakabayashi, Nobuyuki Nosaka, Hideo Yamanouchi, Yuka Mishima, Takahiro Masuda, Ryo Uchimido, Toshihiro Kubo, Kohei Yamaguchi, Takuma Okumura, Akira Yoshizawa, Mitsuzumi Okada, Teruko Kunisawa, Sirinthip Amornsuradech, Ayane Horike, Ryota Kanai, Kazuharu Nakagawa, Ayako Nakane, Kazumasa Kubota, Haruka Tohara. Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits. The 4th Annual Meeting of the International Society of Oral Care (ISOC) 2024 2024.04.27 Tokyo, Japan
2. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsuradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. 歯科学生のための集中治療室における多職種協働実習 スマートグラスを用いたオンラインから実臨床への展開 (Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits). 日本口腔ケア学会雑誌 2024.04.01
3. Ryo Kitabayashi, Hiroyuki Sato, Akihiro Hirakawa. Under-parameterized design with unit information prior in oncology basket trials. 2024 ENAR Spring Meeting 2024.03 Baltimore
4. Hironaga Satake, Kentaro Yamazaki, Yusuke Suwa, Takahiro Tsushima, Yasunobu Ishizuka, Shogen Boku, Atsuo Takashima, Toshifumi Yamaguchi, Masako Asayama, Mitsuru Yokota, Koji Numata, Takashi Ohta, Hisateru Yasui, Yosuke Kito, Yasumasa Takii, Ryo Kitabayashi, Yusuke Sano, Haruhiko Fukuda, Tetsuya Hamaguchi, Yukihide Kanemitsu. First report of the randomized phase III study of bi-weekly trifluridine/tipiracil (FTD/TPI) plus bevacizumab (BEV) vs. FTD/TPI monotherapy for chemorefractory metastatic colorectal cancer (mCRC): JCOG2014 (ROBiTS). ASCO GI 2024 2024.01 San Francisco

Department of Healthcare Quality and Safety

Professor Atsushi Kudo

Secretary Haruko Itahashi

(1) Outline

Create a system of patient safety necessary for hospital management. Research a system that enables cooperation among various professions and allows medical procedures to be carried out appropriately.

(2) Research

- 1 Development of quality indicators for hospital management
- 2 Research into common understanding of terminology among medical professionals
- 3 Speech-to-text conversion specialized for the medical field
- 4 Establishment of an information sharing and recording system in the emergency first-aid field using AI
- 5 Elucidation of the cognitive strategies of experienced doctors in comparative diagnosis of chest X-ray images based on hybrid eye movement analysis
- 6 Establishment of rules for the use of medical information

(3) Education

Pre-graduate education: In systematic lectures, students learn the basics of medical safety management in Japan and the perception of medical care in the legal profession. In the medical safety clinical training, students learn about errors that can occur during treatment of each organ, how to explain things to patients, the role that each department plays within the hospital, and practice in intubation and CVC. In the courtroom training, students learn about the thought processes and issues faced by legal professionals.

Post-graduate education: Students attend various in-hospital seminars on medical safety and learn how to write medical safety management reports.

(4) Lectures & Courses

Pre-graduation education: Students are taught general, basic, and practical knowledge to be able to analyze various problems that arise in clinical settings from the perspectives of patients, medical professionals, and legal professionals. Students are taught what kind of system should be created within the hospital organization to form optimal rules.

Postgraduate education: Students gain clinical experience in each medical department and division in order to carry out the above-mentioned analyses in clinical settings, and will become able to obtain specialist or instructor status in at least one field. In graduate school, they will utilize this experience to conduct research.

(5) Clinical Services & Other Works

Clinical activities: Patients safety rounds, regular medical safety meetings, analysis of impact level 3b or higher, medical safety management committee, death discharge case verification meeting, MM conference, monitor alarm control team, high-difficulty new medical technology review committee, unapproved new drug review committee, Ministry of Health, Labor and Welfare on-site inspection, Tokyo Metropolitan Government on-site inspection, external audit, hospital function evaluation

External activities: National University Hospital Medical Safety Management Council, Tokyo District Court Medical Executive Committee, Symposium for mutual understanding between the medical and legal communities, Supreme Court Judicial Training and Research Institute, Japan Society for Quality and Safety in Healthcare, Japan Society for Medical Safety, Japan Society for Medical Safety Promotion, Center investigation, Internal accident investigation committee of other hospitals, International Association of Risk Management in Medicine, Journal of Medical Safety

(6) Clinical Performances

Iryō anzen kanri iinkai 14-kai jiko chōsa iinkai 6 jirei wākingugurūpu 12 MM kanfa 1-kai shibō taiin jirei kenshō 591-ken 3 b ijō no jirei kenshō 341-ken-kō nando shinki iryō gijutsu no shinsei kensū 9-ken (kyōka sū 8-ken) mi shōnin shinki iyakuhin no shinsei 105-ken (kyōka sū 97-ken) gaibu kansa 2-kai kōsei Rōdōshō/ Tōkyōto tachiiri kensa 1-kai byōin kinō hyōka 1-kai kunitachidaigaku byōin sōgo piarebyū 1-kai kunitachidaigaku byōin sōgo chekku 1-kai iryō anzen ni kakaru kaku iinkai kara no setsumei to hōkoku o uke, naiyō no seisa iryō shikobōshi hōsaku no kenshō jisshi, kakushu manyuaru no sakutei oyobi kenshūnado anzen kanri repōto-tō kara no jiko no kenshō to saiatsu bōshi-saku no kentō anzen kanri repōto no chōsa bunseki-tō o okonau to tomoni, shikobōshi ni kansuru shidō-tō

370 / 5,000

Medical Safety Management Committee: 14 times

Accident Investigation Committee: 6 cases

Working Group: 12

MM Conference: 1 time

Verification of cases of discharge due to death: 591 cases

Verification of cases of 3b or higher: 341 cases

Number of applications for highly difficult new medical technologies: 9 cases (8 approvals)

Number of applications for unapproved new drugs: 105 cases (97 approvals)

External audits: 2 times

Ministry of Health, Labor and Welfare/Tokyo Metropolitan Government: 1 on-site inspection

Hospital function evaluation: 1 time

National University Hospital Mutual Peer Review: 1 time

National University Hospital Mutual Check: 1 time

Receive explanations and reports from each committee related to medical safety and examine the contents

Verification and implementation of measures to prevent medical accidents, formulation of various manuals and training, etc.

Verification of accidents from safety management reports, etc. and consideration of measures to prevent recurrence

Investigation and analysis of safety management reports, etc., and guidance on accident prevention etc.

(7) Publications

[Original Articles]

1. Hiromune Katsuda, Masanori Kobayashi, Go Ito, Ami Kawamoto, Susumu Krimura, Hiroyuki Sato, Akihiro Hirakawa, Keiichi Akahoshi, Atsushi Kudo, Kazuo Ohtsuka, Ryuichi Okamoto. Evaluating endoscopic ultrasound-guided tissue acquisition for diagnosis of small pancreatic neuroendocrine neoplasms. Endosc Int Open. 2024.11; 12(11); E1379-E1385
2. Kudo Atsushi, Toba Mikayo, Morishita Koji, Nishiyama Akira, Fujii Yasushisa, Uchida Shinichi, Okawa Atsushi. DRAMATIC CHANGES IN HOSPITAL SYSTEMS DUE TO THE COVID-19

PANDEMIC HAVE INCREASED THE NUMBER OF INCIDENT REPORTS PER 1000 INPATIENTS: A SINGLE-CENTER RETROSPECTIVE STUDY(タイトル和訳中) Journal of Medical Safety. 2024.11; 2024; 40-50

3. Kentaro Yamada, Toshitaka Yoshii, Mikayo Toba, Satoru Egawa, Shingo Morishita, Yu Matsukura, Takashi Hirai, Atsushi Kudo, Kiyohide Fushimi. Trends in the surgical treatment for metastatic spinal tumor in Japanese administrative data between 2012 and 2020. Int J Clin Oncol. 2024.07; 29(7); 911-920
4. Yamada Kentaro, Yoshii Toshitaka, Toba Mikayo, Egawa Satoru, Morishita Shingo, Matsukura Yu, Hirai Takashi, Kudo Atsushi, Fushimi Kiyohide. 2012～2020 年の日本の診療情報データにみられる転移性脊椎腫瘍に対する外科治療の傾向 (Trends in the surgical treatment for metastatic spinal tumor in Japanese administrative data between 2012 and 2020) International Journal of Clinical Oncology. 2024.07; 29(7); 911-920
5. Kinowaki Y, Fukumura Y, Kawade G, Sugita K, Kinowaki K, Akahoshi K, Kobayashi M, Ono H, Kudo A, Tanabe M, Akashi T, Ohashi K, Kurata M. Gene expression profiling of pancreatic neuroendocrine carcinoma and mixed neuroendocrine-non-neuroendocrine neoplasm. Gene. 2024.01; 893; 147916

[Conference Activities & Talks]

1. 工藤 篤. 医療裁判に対する医療従事者の意見. 令和 6 年度医療機関、弁護士会及び裁判所協議会 2024.12.12 東京
2. 工藤 篤. 医療安全 Q1 2024 年報告 . 第 38 回国立大学附属病院医療安全管理協議会総会 2024.12.11 佐賀
3. 工藤 篤. 我が国の医療安全保障. 第 38 回国立大学附属病院医療安全管理協議会総会 2024.12.10 佐賀
4. 工藤 篤. 関東甲信越地区会議報告. 第 38 回国立大学附属病院医療安全管理協議会総会 2024.12.10 佐賀
5. 工藤 篤. 医療安全管理体制と事故調査. 令和 6 年度茨城県医療安全研修会 2024.12.08 水戸
6. 工藤 篤、武田浩文、鳥羽美佳代、森脇睦子. 薬剤師歴が影響したインシデントの特徴と傾向 ～14 年分の医療事故情報収集等事業データを用いた検討～. 第 19 回医療の質・安全学会学術集会 2024.11.30 横浜市
7. 工藤 篤. 肝転移治療の進歩. 第 86 回日本臨床学会外科学会学術集会 2024.11.21
8. 工藤 篤. 裁判に関する医療界の見解. 医療界と法曹界の相互理解のためのプログラム 2024.10.16 東京
9. Masahiro Yamane, Shohei Motohashi, Daisuke Asano, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Hiroaki Ono, Keiichi Akahoshi, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. The value of ablation therapy combined with surgical resection for neuroendocrine liver metastasis. ILLS 2024 in Kyoto 2024.10.01 Kyoto
10. Yohey Tabe, Suguru Miyazawa, Hiroki Ueda, Daisuke Asano, Yoshiya Ishikawa, Shuichi Watanabe, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. Treatment Outcomes of Laparoscopic Partial Hepatectomy with Focus on Difficulty Scoring System. ILLS 2024 in Kyoto 2024.10.01
11. Suguru Miyazawa, Hiroaki Ono, Daisuke Asano, Toshitaka Sugawara, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Keiichi Akahoshi, Atsushi Kudo, Sadakatsu Ikeda, Minoru Tanabe. Therapeutic strategy of gastroenteropancreatic neuroendocrine neoplasms(GEP-NENs) based on comprehensive genomic profiling tests. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.29 Hiroshima
12. Atsushi Nara, Keiichi Akahoshi, Hiroki Ueda, Koichiro Morimoto, Daisuke Asano, Shuichi Watanabe, Yoshiya Ishikawa, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. Usefulness of the Novel Rupture Severity Score (NRSS) in Determining the Timing of Transarterial Embolization (TAE) for Ruptured Hepatocellular Carcinoma. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.29 Hiroshima
13. Akira Ito, Keiichi Akahoshi, Daisuke Asano, Yoshiya Ishikawa, Shuichi Watanabe, Hiroki Ueda, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. Hepatectomy After Pancreatoduodenectomy Has a High Risk of Postoperative Complications. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.29 Hiroshima

14. Hiroaki Ono, Daisuke Asano, Toshitaka Sugawara, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Keiichi Akahoshi, Atushi Kudo, Shinji Tanaka, Minoru Tanabe. Investigation of the usefulness of TNMG classification in pancreatic neuroendocrine tumors. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
15. Hiroki Ueda, Atsushi Nara, Daisuke Asano, Toshitaka Sugawara, Shuichi Watanabe, Yoshiya Ishikawa, Keiichi Akahoshi, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. How does ADL/QOL change before and after liver resection in the elderly?. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
16. Daisuke Asano, Keiichi Akahoshi, Yoshiya Ishikawa, Toshitaka Sugawara, Shuichi Watanabe, Hiroki Ueda, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. What is the safe and shortest way to learn laparoscopic liver surgery? DSS-based training system and safety use of CUSA. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
17. Shouhei Motohashi, Daisuke Asano, Toshitaka Sugawara, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Hiroaki Ono, Keiichi Akahoshi, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. The optimal surgical treatment strategy in patients of pancreatic body/tail NETs with liver metastases. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
18. Teruchika Koyama, Toshitaka Sugawara, Daisuke Asano, Yoshiya Ishikawa, Shuichi Watanabe, Hiroki Ueda, Keiichi Akahoshi, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. Prognostic factors for pancreatic ductal adenocarcinoma after resection and its predictive model. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
19. Miyazawa Suguru, Ono Hiroaki, Asano Daisuke, Sugawara Toshitaka, Watanabe Shuichi, Ishikawa Yoshiya, Ueda Hiroki, Akahoshi Keiichi, Kudo Atsushi, Ikeda Sadakatsu, Tanabe Minoru. HBP 癌に対するゲノム情報を活用した外科的治療の経験 包括的ゲノムプロファイリング検査に基づく膵消化管神経内分泌腫瘍 (GEP-NEN) の治療戦略 (Experience with genome-informed surgical treatment of the HBP cancer Therapeutic strategy of gastroenteropancreatic neuroendocrine neoplasms (GEP-NENs) based on comprehensive genomic profiling tests). 日本肝胆膵外科学会・学術集会プログラム・抄録集 2024.06.01
20. Koyama Teruchika, Sugawara Toshitaka, Asano Daisuke, Ishikawa Yoshiya, Watanabe Shuichi, Ueda Hiroki, Akahoshi Keiichi, Ono Hiroaki, Kudo Atsushi, Tanaka Shinji, Tanabe Minoru. 生物学的切除可能境界膵癌 膵管腺癌切除後の予後予測因子とその予測モデル (Biological Borderline Resectable Pancreatic Cancer Prognostic factors for pancreatic ductal adenocarcinoma after resection and its predictive model). 日本肝胆膵外科学会・学術集会プログラム・抄録集 2024.06.01
21. Nara Atsushi, Akahoshi Keiichi, Ueda Hiroki, Morimoto Koichiro, Asano Daisuke, Watanabe Shuichi, Ishikawa Yoshiya, Ono Hiroaki, Kudo Atsushi, Tanaka Shinji, Tanabe Minoru. 破裂した肝細胞癌に対する肝動脈塞栓療法 (TAE) の実施時期の決定における Novel Rupture Severity Score (NRSS) の有用性 (Usefulness of the Novel Rupture Severity Score (NRSS) in Determining the Timing of Transarterial Embolization (TAE) for Ruptured Hepatocellular Carcinoma). 日本肝胆膵外科学会・学術集会プログラム・抄録集 2024.06.01
22. Motohashi Shouhei, Asano Daisuke, Sugawara Toshitaka, Watanabe Shuichi, Ishikawa Yoshiya, Ueda Hiroki, Ono Hiroaki, Akahoshi Keiichi, Kudo Atsushi, Tanaka Shinji, Tanabe Minoru. 肝転移を伴う膵体/尾部 NET 患者における至適外科治療戦略 (The optimal surgical treatment strategy in patients of pancreatic body/tail NETs with liver metastases). 日本肝胆膵外科学会・学術集会プログラム・抄録集 2024.06.01
23. Asano Daisuke, Akahoshi Keiichi, Ishikawa Yoshiya, Sugawara Toshitaka, Watanabe Shuichi, Ueda Hiroki, Ono Hiroaki, Kudo Atsushi, Tanaka Shinji, Tanabe Minoru. 腹腔鏡下肝手術を安全に最短で習得する方法とは? DSS ベースのトレーニングシステムと CUSA の安全な使用方法 (What is the safe and shortest way to learn laparoscopic liver surgery? DSS-based training system and safety use of CUSA). 日本肝胆膵外科学会・学術集会プログラム・抄録集 2024.06.01
24. Ito Akira, Akahoshi Keiichi, Asano Daisuke, Ishikawa Yoshiya, Watanabe Shuichi, Ueda Hiroki, Ono Hiroaki, Kudo Atsushi, Tanaka Shinji, Tanabe Minoru. 膵頭十二指腸切除術後の肝切除は術後合併症のリスクが高い (Hepatectomy After Pancreatoduodenectomy Has a High Risk of Postoperative Complications). 日本肝胆膵外科学会・学術集会プログラム・抄録集 2024.06.01

25. Ueda Hiroki, Nara Atsushi, Asano Daisuke, Sugawara Toshitaka, Watanabe Shuichi, Ishikawa Yoshiya, Akahoshi Keiichi, Ono Hiroaki, Kudo Atsushi, Tanaka Shinji, Tanabe Minoru. 高齢者における肝切除前後のADL/QOLはどのように変化するのか?(How does ADL/QOL change before and after liver resection in the elderly?). 日本肝胆膵外科学会・学術集会プログラム・抄録集 2024.06.01

[Patents]

1. ORGAN FUNCTION MAINTAINING AND AMELIORATING SOLUTION, Patent Number : PCT/JP2006/304269

Department of Rehabilitation Medicine

Professor	Toshitaka YOSHII
Associate Professor	Tomoko SAKAI
Adjunct Lecturer	Tetsuya JINNO
Assistant Professor	Masanobu HIRAO

Graduate Student	Yuji TAKAHASHI
	Koji IKEMATSU
	Yasue MIZUSHIMA

(1) Research

Research Subjects

- 1) Rehabilitation for total joint arthroplasty
- 2) Motion and gait analysis of healthy and disabled subjects
- 3) Biomechanical research for prevention of sports injury
- 4) Patient safety in rehabilitation medicine
- 5) Osteoporosis of children (individuals) with severe motor and intellectual disabilities

(2) Lectures & Courses

Rehabilitation medicine consists of physical, occupational and speech therapy. Main theme of rehabilitation medicine in graduate course is to study 3-dimensional motion analysis in activities of daily living and molecular biological analysis of disuse atrophy.

(3) Publications

[Original Articles]

1. Ryo Onuma, Fumihiko Hoshi, Hiroshi R Yamasaki, Ryosuke Tozawa, Tomoko Sakai, Tetsuya Jinno. Association between freezing of gait and anticipatory postural adjustments in Parkinson's disease. J Phys Ther Sci. 2024.10; 36(10); 667-671
2. Tomoko Sakai, Masanobu Hirao, Yusuke Takashina, Ryo Kitagawa, Tsutomu Oishi. Radiofrequency echographic multi-spectrometry-based measurement of bone mineral density in patients with severe motor and intellectual disability: An opportunity for patients with severe scoliosis and hip dislocation. Bone Rep. 2024.09; 22; 101781
3. Ohmi T, Katagiri H, Amemiya M, Ikematsu K, Miyazaki M, Koga H, Yagishita K. Gait analysis of patients with knee osteoarthritis who can run versus cannot run Gait Posture. 2024.07; 112; 67-72
4. Ryo Onuma, Fumihiko Hoshi, Hiroshi R Yamasaki, Tomoko Sakai, Tetsuya Jinno. New quantitative evaluation of anticipatory postural adjustments using a smartphone in patients with Parkinson's disease. Physiother Theory Pract. 2024.05; 40(5); 1022-1027

5. Ryo Onuma, Hiroshi R Yamasaki, Fumihiko Hoshi, Ryosuke Tozawa, Yuki Soutome, Tomoko Sakai, Tetsuya Jinno. Analysis of the characteristics of anticipatory postural adjustments in older adults using smartphones: Association between cognitive and balance functions. *Gait Posture*. 2024.05; 112; 115-119
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Department of Gerodontology and Oral Rehabilitation

Professor KANAZAWA Manabu
Associate Professor
INOKOSHI Masanao
Associate Professor
KOMAGAMINE Yuriko
Junior Associate Professor
HAMA Youhei
Assistant Professor
KASHIWAZAKI Kennta
Assistant Professor
MIYAYASU Anna
Assistant Professor
MOTOMURA Kazuo
Assistant Professor
Nakai Hiroto
Assistant Professor
ONUMA Hiraku
Assistant Professor
SOEDA Hitomi
Assistant Professor
SOEDA Yumika
Visiting Lecturer
AKIYAMA Yo
Visiting Lecturer
BABA Yuuya
Visiting Lecturer
HADA Tamaki
Visiting Lecturer
HATANO Keita
Visiting Lecturer
HAYAKAWA Wakako
Visiting Lecturer
HIRAYAMA Daisuke
Visiting Lecturer
Hiratsuka Tomohiro
Visiting Lecturer
INOUE Minoru
Visiting Lecturer
Kobayashi Shoji
Visiting Lecturer
Kubota Kazumasa
Visiting Lecturer
OTAKE Ryosuke
Visiting Lecturer
Osada Eiji

Visiting Lecturer
SATO Yusuke
Visiting Lecturer
SHIMIZUBATA Makoto
Visiting Lecturer
SUZUKI Hiroyuki
Visiting Lecturer
Satoshi Teranaka
Visiting Lecturer
TAKEUCHI Shuhei
Visiting Lecturer
TANOUE Mariko
Visiting Lecturer
Takahashi Noboru
Visiting Lecturer
Takeuchi Satoshi
Visiting Lecturer
Tomioka Eiji
Visiting Lecturer
UEHARA Yoko
Visiting Lecturer
WATANABE Masataka
Visiting Lecturer
Watanabe Ikki
Visiting Lecturer
YAMAGA Eijiro
Visiting Lecturer
YAMAMOTO Mao
Visiting Lecturer
YANAGIHARA Yuiko
Visiting Lecturer
YOSHIZAKI Taro
Visiting Lecturer
Yoneyama Takeyoshi
Graduate Student
AKIYAMA Yo
Graduate Student
AUNG Soe Myint
Graduate Student
BA Htoo Chit
Graduate Student
CHANG CHUN WEI
Graduate Student
FUTATSUYA Ryouta
Graduate Student
IWASE Risa
Graduate Student
KASHIWAZAKI Kennta
Graduate Student
KATADA Haruko
Graduate Student
KHIN Moe Thu
Graduate Student
KHIN Pyae Sone
Graduate Student
KIKUTA Miho
Graduate Student
LI Chengze

Graduate Student
LU Yibing
Graduate Student
LWIN Phyo Aung
Graduate Student
MATSUZAKI Mayuko
Graduate Student
MUKAI Mariko
Graduate Student
NAMANO Sahaprom
Graduate Student
NGUYEN Thi Khanh An
Graduate Student
OKADA Mitsuzumi
Graduate Student
OKKAR Kyaw
Graduate Student
QI Keyu
Graduate Student
REN Xiangyu
Graduate Student
SEKIMOTO Yu
Graduate Student
SUNAMI Akiho
Graduate Student
TANG Bohan
Graduate Student
THEIN Soe
Graduate Student
UEDA Kaori
Graduate Student
WANG Bohua
Graduate Student
WU Shanglin
Graduate Student
XU Kaiqi
Graduate Student
YANAGIHARA Yuiko
Graduate Student
ZHOU Wenming
Dental Resident
CHANG CHUN WEI
Dental Resident
FUTATSUYA Ryouta
Dental Resident
KIKUTA Miho
Dental Resident
SUNAMI Akiho
Dental Resident
UEDA Kaori
Dental Resident
YAMAGUCHI Kohei

(1) Outline

The current Department of Gerodontology and oral rehabilitation was formed in 2013 through the merger of the Department of Complete Denture Prosthodontics the Department of Gerodontology. The aim is to produce human resources who can respond quickly and powerfully to the rapidly progressing aging of society

from the perspective of dental medicine, and to create the necessary evidence. The education, research and clinical work that was ongoing before the merger has continued unchanged, but the merger has also produced additional benefits. In other words, we are conducting research that will make a significant contribution to the realization of a healthy and long-lived society, including research related to full dentures, research on the overall management of dental treatment, research on the changes in the oral cavity of the elderly due to aging, and research on the oral function and nutritional status of the elderly.

(2) Research

1. Research on a method for evaluating masticatory performance (Mastication check gum)

Based on the concept that this method can be used by anyone, our department has developed a color-changeable chewing gum (Mastication Check Gum) for evaluating masticatory performance in collaboration with Lotte Co. We are conducting research on how to use it effectively.

2. Longitudinal study of the relationship between oral function and systemic frailty

Although there have been many studies on the relationship between oral function and general health, there are still many unclear aspects of the longitudinal relationship between the two. This study will conduct a comprehensive longitudinal survey of the factors involved in this relationship, and will examine the causal relationship and prevention methods.

3. The effect of denture adhesives on an ill-fit denture

Although denture adhesives are only supposed to be used for a short period of time on dentures that are in good condition under the supervision of a dentist, there are few reports on the risks/benefits of using them on dentures with ill-fit. In this study, we will examine the risks/benefits of denture adhesives on dentures with poor fit.

4. Milled complete dentures

In order to reduce the number of patient visits, improve the quality of treatment, and improve the mechanical properties of dentures, we have developed a method called the 'TMDU (Science Tokyo) Customised Disc Method' (patented in Japan and the USA, patent pending in Europe) in which a customised disc is made for each patient, with the artificial teeth arranged in order, and the denture is milled with the denture base and artificial teeth already combined. The entire process of designing and fabrication of dentures is carried out on a computer, and by introducing AI assistance into denture design, we are aiming to further digitise the process, while at the same time preparing for social implementation.

5. Full-digital partial denture

We have developed a method for manufacturing a 'custom disc for partial dentures' by applying the TMDU (Science Tokyo) custom disc method developed for the manufacture of complete dentures, and incorporating a metal frame that has been three-dimensionally formed using the SLM method, together with pre-arranged artificial teeth that have been arranged for each patient. This allows the artificial tooth part, metal frame and denture base part to be milled as a single block. Through joint research with milling machine manufacturers, we are investigating the appropriate design of custom plates, and examining and evaluating the clinical application of partial dentures that can be used for various types of missing teeth.

6. Implant overdenture

We began clinical research on implant overdentures (IODs) for patients with edentulous mandibles in 2008, and we have now treated over 100 patients, with some cases having been followed for over 10 years.

To date, we have conducted research on IOD using ball attachments, magnetic attachments and mini-implants, as well as research on implant placement and denture movement. We are currently conducting clinical research on maxillary IOD, and are continuing to build up evidence.

7. SaMD (Software as a Medical Device)

The enforcement of the 'Act on the Quality, Efficacy and Safety of Pharmaceuticals, Medical Devices, etc.' in 2014 has made it possible for software intended for the diagnosis and treatment of diseases to be distributed as standalone products, and it has become regulated as 'medical device programs'. As a result, the development of medical device programs is progressing in various fields of medicine. In this field, we are developing applications (medical device programmes) to support the treatment of periodontal disease and oral muscle function therapy for patients with malocclusion, and we are evaluating their clinical effectiveness, including their synergistic effect

with face-to-face consultations.

8. MR Device-assisted dental implant surgery

We have started developing a system for remotely guiding implant surgery using mixed reality (MR) with a highly versatile MR device (HoloLens 2, Microsoft). With this system, surgeons can concentrate on the surgical field as usual without needing large equipment or monitors, and even inexperienced surgeons can receive real-time guidance from skilled dentists. In addition, the introduction of digital equipment makes it possible to accumulate data on excellent treatment techniques (movements of the surgeon's hands, handpieces, and burs) that have not been quantified until now, or 'god hands'.

9. Assessment of the effect of chewing training on periodontal disease treatment and oral function

To assess the effects of chewing training in addition to periodontal disease treatment on periodontal disease treatment and oral function in those who need periodontal disease treatment.

10. Assessment of the effect of chewing gum before eating on blood glucose level and hormones after eating.

To assess the effects of chewing gum before eating on postprandial blood glucose level and secretion of gastrointestinal hormones in older adults.

11. Assessment of the effects of implant prosthetics on cognitive function

To assess the effects of implant prosthetic treatment on cognitive function longitudinally.

12. Evaluation of mechanical properties and accuracy verification of polyetheretherketone (PEEK) using the Fused Deposition Modeling (FDM) method

Mechanical properties and accuracy of PEEK by FDM may differ depending on the orientation of the lamination. In addition, adhesion strength to cold cure resin for denture bases may vary due to differences in surface treatment. In this study, to investigate whether FDM PEEK can be clinically applied as a replacement material for denture base frameworks and metal clasps, we will evaluate the mechanical properties and accuracy of FDM PEEK in three different printing orientations and evaluate its adhesion to denture base materials in three distinct surface treatments.

13. Physical property modification of 3D printed photopolymer resin for denture base

3D-printed photopolymer resins for denture bases have low mechanical properties, causing problems such as denture base fracture and adhesion of stains to the printed layer of the denture base. This study aims to improve the low mechanical properties and stain adhesion of 3D-printed photopolymer resin for denture bases by adding fillers such as nano-zirconia, cellulose nanofiber, and zinc phosphate filler.

14. Analysis of dental material behavior using the Smoothed Particle Hydrodynamics (SPH) method

Using the SPH method, which enables the mathematical analysis of large-deformation objects, we conduct computer simulations to study material behavior. This allows us to analyze the stress distribution in dental materials such as soft relining materials and resin-bonded fixed dental prosthesis, thereby determining optimal application methods and clarifying their mechanical properties.

15. Clinical trial of PEEK bridges

We are conducting a clinical trial to evaluate the success and survival rates of three-unit bridges made from polyether ether ketone (PEEK), a promising alternative to traditional metal crowns. Since PEEK bridges are not yet covered by insurance, this study aims to provide clinical evidence for their viability.

16. Effects of dietary guidance using smartphone apps in addition to dental treatment on food and nutrition intake

Recently, medical institutions and companies have partnered and collaborated to develop a number of meal-recording applications. One such application is Mogumogu Diary, which is used to monitor the eating habits of older adults and provide dietary guidance. We are investigating the effect of dietary guidance using Mogumogu Diary on the food and nutritional intake of older adults by combining dietary guidance using Mogumogu Diary with conventional dental treatment.

17. A single-arm clinical study to evaluate the safety and clinical performance of dentures with the MTS700 ultra-thin magnetic attachment

The magnetic structure of magnetic attachments is usually 1.0 to 1.8 mm thick, making it difficult to apply in cases where sufficient denture space cannot be secured. Recently, ultra-thin magnetic attachments have been developed as a solution to this problem, and we are conducting clinical trials to investigate the safety and clinical performance of dentures with the ultra-thin magnetic attachment MTS700.

18. Research on a New Method of Improving Oral Dryness by Mechanical Stimulation

Many basic research results have been reported on the physical stimulation effects of mechanical stimulation on muscles and bones. In this study, we used an acceleration machine to examine the effects of continuous mechanical stimulation of salivary glands on salivary secretion.

19. Assessment of extra-high translucent dental zirconia

Zirconia ceramics offer excellent mechanical properties and biocompatibility, and are widely used in dental restorative materials, however, 3Y-TZP cannot be used in anterior fixed dental prostheses because of its low translucency. This study aims to investigate the translucency, mechanical properties, microstructure, crystalline phase, and low-temperature degradation of high translucent zirconia (4-6mol% yttria-stabilized zirconia).

20. Assessment of extra-high translucent dental zirconia

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(3) Education

Given the increased health needs of an aging society, we aim to integrate diverse clinical specialties related to geriatric dental practice and to educate individuals of fundamental studies in each field. We emphasize a comprehensive approach to patient interactions by examining daily life functionality rather than focusing only on their diseases.

(4) Clinical Performances

We manage the prosthodontic and special care departments.

(5) Publications

[Original Articles]

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[Conference Activities & Talks]

1. Jingrong Wang, Anna Miyayasu, Maiko Iwaki, Roubing Ha, Manabu Kanazawa. Accuracy of 3D-printed castable resin patterns for removable partial denture frameworks using the vacuum-sealed method and heat-treatment. 89th Conference of the Stomatological Society 2024.12.07
2. Okkar Kyaw, Inokoshi M, Kanazawa M. Fracture toughness evaluation of zirconia ceramics through multiple in silico chevron-notch beam models. 89th Conference of the Stomatological Society 2024.12.06 Tokyo
3. Inokoshi M. Overview and future perspectives of dental zirconia research. RWTH - Science Tokyo Joint Workshop on "TransMedMat" 2024.12.03 Aachen
4. Wu Shanglin, Yuriko Komagamine, Tamaki Hada, Qi Keyu, Nguyen Thi Khanh An, Manabu Kanazawa. Effect of autoclaving post-treatment and thermocycling on the optical and mechanical properties of the 3D-printed denture teeth resin. 2024.12.01
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14. Kikuta M, Inokoshi M, Yamamoto M, Kanazawa M. Curing time evaluation of 4-META/MMA-TBB resin as restorative materials. Academy of Dental Materials 2024 2024.10.03 Turin
15. Inokoshi M. Impact of S-PRG filler-containing dental materials. The 133rd Annual Meeting of the Japan Prosthodontic Society / The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.07 hybrid (web, Makuhari)
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4. Inokoshi M. Writing English academic papers: a guide for beginners to intermediate researchers. The 133rd Annual Meeting of the Japan Prosthodontic Society 2024.07.07 hybrid (web, Makuhari)
5. Yuji Uchida, Atsushi Takaichi, Yuka Kajima, Hidekazu Takahashi, Manabu Kanazawa, Noriyuki Wakabayashi. Digitalization of removable partial dentures -Consideration of bonding method between metal framework and denture base. The 133rd Annual Meeting of the Japan Prosthodontic Society 2024.07.06 Chiba
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7. Kazuo Motomura, Shigekazu Tanaka. High-precision dental processing of natural teeth and zirconia using femto-second laser. 7th Laser Processing Grant Research Results Presentation 2024.04.24 Yokohama
8. Iwase R, Inokoshi M, Katada H, Minakuchi S. Translucency of machinable fully-sintered dental zirconia. The 82nd General Session of the Japanese Society for Dental Materials and Devices (JSDMD) 2024.04.21 Kagoshima

[Awards & Honors]

1. Arthur R. Frechette Prosthodontic Research Award Finalist (Ha Roubing), International Association for Dental Research; IADR, 2024.03

[Others]

1. Inokoshi M. Bilateral Joint Research Projects (Joint research with Germany (DAAD)), 2024.12
Concept development for microstructuring oral implant-supported prostheses via femtosecond laser irradiation to improve soft tissue integration
2025-2026

Department of Dysphagia Rehabilitation

(1) Outline

The Department of Dysphagia Rehabilitation has been established in 2020. In the context of Japan's super-aged society, our goal is to cultivate professionals capable of practicing dysphagia patients. Our clinical targets are not limited to the older patients but also include adults and children, offering treatment modalities for outpatients, home and facility care visits, as well as support for inpatients at TMDU hospitals. Recently, we have also initiated telemedicine. Our research encompasses not only the swallowing functions and its training methods but also investigates the aging changes in the perioral muscles (tongue, masticatory muscles, and swallowing-related muscles), the connection between these changes and overall health, the impacts of oral intake on the body.

(2) Research

1. Development of Devices for Assessing Dysphagia, Oral Function Decline, and Oral Frailty

We are developing an advanced device for quantitatively assessing swallowing functions and their clinical applications. Previously, we developed a mouth-opening force gauge aimed at simplifying the assessment of swallowing function and oral function decline, for which we have obtained a patent. Currently, we are developing devices to measure aspects that were previously difficult to assess, such as jaw movement during chewing, biting force, and the strength of muscles involved in eating and swallowing. Additionally, these devices can be applied not only for dysphagia but also for evaluating oral frailty and oral function decline, which have gained importance in recent years.

2. Nutritional Studies Using a Gastrotomy Model in Rats

In older adults and patients with dysphagia, enteral nutrition methods like gastrostomy are chosen to prevent aspiration pneumonia and malnutrition. While gastrostomy is a nutrition intake method with many advantages, it can also lead to chronic gastrointestinal disorders. Therefore, we have created a gastrotomy model in rats, raising them on various types of nutrition to explore changes in nutritional value and gut microbiota.

3. Image Analysis of Swallowing Function in Patients with Cervical Spine Diseases

There have been several studies on postoperative dysphagia in patients with cervical spine diseases. However, few such patients have kinematically analyzed the causes of dysphagia. In collaboration with the Department of Orthopedic Surgery at our medical school, we analyze the hyoid bone movement before and after surgery in patients with cervical spine diseases based on videofluoroscopic swallow studies to investigate the causes of postoperative dysphagia.

4. Comprehensive Research on the Collaboration between Medical and Dental Care for Stroke Patients

For stroke patients, the effects of interventions and methods for managing oral functions through medical-dental collaboration have not been established. Thus, we introduced early oral function management interventions for stroke patients admitted to our university hospital to reduce the incidence of acute pneumonia. We have also completed a care manual and a medical-dental collaboration guidebook for acute phase stroke patients and are currently verifying the intervention effects in multi-institutional cooperative research, aiming to establish methods for managing oral functions through medical-dental collaboration across Japan.

5. Development of an Innovative Intraoral Device for Alternative Voice Production in Total Laryngectomy Patients

Total laryngectomy patients significantly impair their quality of life due to the loss of speaking function. Although alternative voice methods such as electronic larynxes and esophageal speech have been used, they come with issues like the need for surgery and high costs. We are advancing the development and effectiveness verification of a completely different, removable intraoral alternative voice method.

6. Unraveling Frailty in the Older Adults Focused on Perioral Muscles and Establishing a New Functional Evaluation Method

Frailty and sarcopenia in older adults are widely recognized globally. Although evaluations of frailty focus on muscle mass, strength, and physical function, similar considerations for the perioral muscles have not progressed. We aim to clarify frailty occurring in the perioral muscles using ultrasound diagnostic devices for muscle mass evaluation and dedicated measuring devices for muscle strength and function, establishing a simple, clinically applicable method for assessing oral and swallowing functions.

7. Verification of the Effectiveness of Carbonated Thickened Beverages and Development of a Two-Stage Angle Endoscope for Patients with Dysphagia

Patients with dysphagia often cannot consume carbonated drinks due to the risk of aspiration. While carbonation has been reported to have beneficial effects on swallowing, no studies have been reported on the intake of carbonated drinks thickened to reduce this risk. We are verifying the effects of carbonation on swallowing dynamics with thickened carbonated beverages. Additionally, the design of endoscopes used for evaluating swallowing function has not changed for nearly 30 years. We have developed a two-stage bending endoscope, improving the traditional single-bend shaft, and are verifying its effectiveness. This allows observation of the posterior tracheal wall, potentially improving the detection accuracy of aspiration.

8. Development of a Non-Invasive Swallowing Function Evaluation Device Using Fluorescent Substances

Swallowing endoscopy and videofluoroscopic swallow studies are performed in various clinical settings, but both are invasive and require a high level of operator skill, affecting the accuracy of the examination and diagnosis. Therefore, a practical, non-invasive, and repeatable new examination method is sought. We are developing a non-invasive aspiration risk detection system that applies fluorescence measurement of food-grade fluorescent substances in collaboration with other universities.

9. Research on the Digitalization of Dysphagia Rehabilitation, Including Online Consultations and Intraoral Scanners

Digitalization is steadily progressing in dentistry. The utility of digital technology, including for dysphagia rehabilitation and dental home visit services is increasing, yet its widespread use is currently limited. We are engaged in verifying the usefulness of online consultations and digital devices (especially intraoral scanners) in dysphagia rehabilitation and home visit services, as well as developing new devices suitable for clinical use.

(3) Education

In anticipation of an increasingly aging society, we are dedicated to developing professionals who can contribute to healthcare, nursing care, and society at large through dysphagia rehabilitation and other means. Our undergraduate education not only covers lectures related to dysphagia but also provides opportunities to learn about multidisciplinary collaboration in the field through accompanying home visits, facility visits, or hospital consultations.

(4) Clinical Services & Other Works

We are conducting evaluations of swallowing functions using videoendoscopic and videofluoroscopic evaluation of swallowing, as well as implementing rehabilitation based on these assessments. Our department places a strong emphasis on home healthcare through home visits, striving not only to evaluate the feasibility of oral intake but also to ensure patients can enjoy their lives to the fullest, without losing the joy of eating, by adjusting the consistency of food, posture, and the patient's environment. In outpatient care, we primarily focus on the rehabilitation of patients after oral cancer surgery but also cater to patients with swallowing disorders caused by a variety of diseases, unique to a university hospital setting. Additionally, we have established an environment capable of telemedicine, targeting patients with dysphagia living in medically underserved areas. Telemedicine

have also proven to be effective in situations where face-to-face interactions are impossible due to measures against COVID-19.

(5) Clinical Performances

Our department specializes in providing dysphagia rehabilitation in home healthcare settings. Therefore, we are fully capable of effective collaboration with primary care dentists responsible for oral hygiene and oral function management in dental home visit services. Additionally, telemedicine can be offered not only to patients within the country but also to those abroad.

(6) Publications

[Original Articles]

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3. Sirinthip Amornsuradech, Kohei Yamaguchi, Kazuharu Nakagawa, Kanako Yoshimi, Rieko Moritoyo, Haruka Tohara. Aging-associated differences between perioral and trunk muscle characteristics 2024.11; (14);
4. Aritoshi Uchida, Kazuharu Nakagawa, Kanako Yoshimi, Yuki Nagasawa, Kohei Yamaguchi, Naofumi Uesaka, Haruka Tohara. Intermittent breaking of isolation may ameliorate decrease in physical activity caused by isolation PLoS ONE. 2024.11;
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6. Mori, H; Nakane, A; Yokota, Y; Tohara, H; Nakayama, T. Caregiver burden and eating-related guilt during dysphagia rehabilitation: A descriptive cross-sectional time series study JOURNAL OF PARENTERAL AND ENTERAL NUTRITION. 2024.10; 48(7); 818-826
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9. Yamaguchi K, Okumura T, Oikawa Y, Nakagawa K, Yoshimi K, Harada H, Tohara H. Effect of oral intake initiation-establishment interval on hospital stay after oral cancer surgery Oral Diseases. 2024.05;
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12. Miyachi, M; Yamaguchi, K; Yanagida, R; Hino, T; Yoshimi, K; Nakagawa, K; Tohara, H; Kisara, A. ACTUAL CONDITION SURVEY OF OBSTRUCTIVE RESPIRATORY EVENTS IN CONVALESCENT POST-STROKE PATIENTS WITH DYSPHAGIA SLEEP. 2024.05; 47;

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14. Shimizu A, Yamaguchi K, Maeda K. Editorial: Malnutrition in Dysphagia: Nutritional Assessment and Management in Clinical Practice Frontiers in Nutrition. 2024.04;
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17. Yamada T, Yamaguchi K, Horike A, Takahashi K, Amornsuradech S, Nakagawa K, Yoshimi K, Tohara H. Development and evaluation of a new intraoral voice assist device called the voice retriever. Laryngoscope investigative otolaryngology. 2024.02; 9(1); e1204
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1. YANASHITA, Yuzu. An Attempt to Introduce MFT (Oral Myofunctional Therapy) in Wind Instrument Education A Practical Example in a Junior High School Wind Band 2024.09; 3; 1-10
2. Impact of Obstructive Respiratory Events on Swallowing Function at Discharge in Patients with Cerebrovascular Disorders in the Recovery Phase - A Prospective Cohort Study *The Japanese Journal of Dysphagia Rehabilitation*. 2024.08;
3. Chizuru Namiki, Koji Hara, Ryosuke Yanagida, Kenichiro Kobayashi, Takami Hino, Masako Oshima, Naoki Ishibashi, Yoshiko Ueda, Haruka Tohara. Development and Clinical Application of Saliva Suction System Using a Dental Mouthpiece to Preventing Saliva Aspiration 2024.04; 28(1); 43-49

[Misc]

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[Conference Activities & Talks]

1. 山口浩平. 内視鏡検査による嚥下機能の見える化. 第23回日本睡眠歯科学会総会・学術集会 2024.11.03
2. Amornsuradech Sirinthip, Kohei Yamaguchi, Kazuharu Nakagawa, Kanako Yoshimi, Rieko Moritoyo, Haruka Tohara. Oral hypofunction is not related to trunk muscle characteristics in healthy older adults. 10th Asian Conference for Frailty and Sarcopenia 2024.10.11 Asia Hotel, Bangkok
3. Ayane Horike, Kohei Yamaguchi, Kanako Toda, Kanako Yoshimi, Kazuharu Nakagawa, Haruka Tohara. Risk preference is associated with oral function in older adults. 10th Asian Conference for Frailty and Sarcopenia 2024.10.09 Bangkok, Thailand
4. Ryosuke Yanagida, Haruka Tohara, Hidetaka Wakabayashi, Shoji Kinoshita, Kotomi Sakai, Tokiko Isowa, Kazuharu Nakagawa, Kohei Yamaguchi, Kanako Yoshimi, and Ryo Momosaki. Time spent away from bed is associated with both oral hygiene and function in older adults requiring nursing care.. iADH 2024 Seoul 2024.09.27 Seoul, Korea
5. Sirinthip Amornsuradech, Kohei Yamaguchi, Kazuharu Nakagawa, Kanako Yoshimi, Yuki Nagasawa, Rieko Moritoyo, Haruka Tohara. What is a better indicator of grip strength in older adults: the average or the maximum value of tongue pressure and jaw opening force?. International Association for Disability & Oral Health (iADH) 2024 2024.09.26 Mayfield Hotel, Seoul, Korea
6. 新永拓也, 山口浩平. 低強度呼吸筋トレーニングが呼吸・口腔・咀嚼機能に与える影響. 2024.08.31
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17. Toru Yamada, Takahiro Shinohara, Shuji Ouchi, Suguru Mabuchi, Kazuharu Nakagawa, Kanako Yoshimi, Mitsuko Saito, Kenji Toyoshima, Yoshiaki Tamura, Atsushi Araki, Kojima Masayuki, Masayoshi Hashimoto. Comparison of diaphragm function in sarcopenia and non-sarcopenia in the elderly. 9th Geriatric Innovation Forum 2024.01.20 名古屋
1. Do new sing-based rehabilitation materials improve oral function?. 72nd Scientific Meeting of the Japanese Society of Stomatognathic Function 2024.12.14
2. Yuzu Yanashita, Kanako Yoshimi, Chika Takahashi, Kazuharu Nakagawa, Kohei Yamaguchi, Haruka Tohara. Importance of oral function in the performance of wind instruments. 72nd Scientific Meeting of the Japanese Society of Stomatognathic Function 2024.12.14 Institute of Science Tokyo
3. Ayane Horike, Kohei Yamaguchi, Kanako Toda, Haruka Tohara. Association Between Procrastination Tendency and Swallowing-Related Muscle Strength: A Cross-Sectional Study of Community-Dwelling Older Adults. The 18th Annual Meeting of the Behavioral Economics Society (2024) 2024.12.07 Ritsumeikan University Osaka Ibaraki Campus
4. Ayane Horike, Kohei Yamaguchi, Kanako Toda, Haruka Tohara. Are individuals with a propensity for procrastination more likely to have lower oral/physical function?. The 19th Annual Conference of JHEA 2024.09.07
5. Case Report: Tongue Protection Mouthpiece for a Patient with Amyotrophic Lateral Sclerosis.. The 30th Annual Meeting of the Japanese Society of Dysphagia Rehabilitation 2024.08.31

6. Enhanced Oral Intake; A Case study of Collaborative Care between a local Dentist, Registered Dietitian and Specialist Online Consultation at Home . The 30th Annual Meeting of the Japanese Society of Dysphagia Rehabilitation 2024.08.31
7. Yuki Yao, Ayane Horike, Kazuharu Nakagawa, Kanako Yoshimi, Mitsuko Saito, Chizuru Namiki, Kouhei Yamaguchi, Haruka Tohara. Efficacy of training with a respiratory trainer (Doffin) - Case report of two patients with dysphagia. 2024.08.30
8. Chizuru Namiki, Koji Hara, Ryosuke Yanagida, Takuma Okumura, Kenichiro Kobayashi, Hiroshige Taniguchi, Haruka Tohara, . Effects of Tongue Pressure Resistance Training on Masticatory Function. 2024.08.30
9. Ayane Horike, Kohei Yamaguchi, Kanako Toda, Kanako Yoshimi, Kazuharu Nakagawa, Haruka Tohara. Are individuals with a propensity for procrastination more likely to have lower swallowing function?. 2024.08.30
10. Uchida Aritoshi, Kazuharu Nakagawa, Yuki Nagasawa, Kanako Yoshimi, Kohei Yamaguchi, Haruka Tohara. Influence of social isolation as a possible cause of dysphagia and effective intervention methods - A basic study using rat. The 30th Japanese Society of Dysphagia Rehabilitation 2024.08.30 Fukuoka International Congress Center
11. A case of an elderly oral cancer patient who found it difficult to take tablets before surgery so that we could consider how to deal with the problem. 2024.08.30
12. Yoshiko Hara, Ayako Nakane, Mitsuko Saito, Sirinthip Amornsuradech, Haruka Tohara. The relationship between cough acupuncture stimulation and cough reflex. The Japanese Society of Gerodontology 2024.06.30 Sapporo
13. Progressive supranuclear palsy Functional Maintenance for ADL and Swallowing Functional Decline. The 35th Congress of the Japanese Society of Gerodontology 2024.06.28

Laboratory Medicine

Professor Shuji TOHDA
Junior Associate Professor Tadashi KANOUCHI
Junior Associate Professor Mai ITOH
Assistant Professor Ayako NOGAMI
Graduate Students Toshihisa SATTA, Haruka KUMADA, Honoka SEZUTSU

(1) Outline

Laboratory medicine is a field of research to develop analytical methods of pathophysiology of various diseases, new diagnostic tests, and diagnosis-supporting system using laboratory tests.

(2) Research

Our research subjects are as follows:

- 1) Cellular and molecular mechanism of abnormal growth of acute leukemia cells and drug-sensitivity tests for molecularly targeted therapy
- 2) Molecular diagnostic tests for cancer and detection of minimal residual cancer cells
- 3) Mechanism of abnormal growth of lymphoma cells
- 4) Molecular diagnostic tests for infectious diseases

(3) Education

To graduates students, we provide opportunity to study and develop novel diagnostic tests using cellular and molecular biological technique in our laboratories.

To undergraduate students, we give a lecture and practical training on laboratory medicine.

(4) Lectures & Courses

Main objective of Laboratory Medicine in the graduate course is to provide students opportunity to study analysis of pathophysiology, development of new diagnostic tests, and establishment of diagnosis-supporting system using laboratory tests. We focus on the analysis of pathophysiology of hematological malignancies and the development of molecular diagnostic tests for cancer and infectious diseases.

(5) Clinical Services & Other Works

We are performing laboratory tests for hematology, clinical chemistry, immunology, and microbiology in cooperation with doctors and technologists of clinical laboratory in University hospital. We give a lecture on laboratory tests at meetings of laboratory medicine-related societies.

(6) Clinical Performances

We are developing new diagnostic methods collaborating with various clinical departments. We are also supporting them in their diagnostic procedure.

(7) Publications

[Original Articles]

1. Itoh M, Tohda S. ERK inhibitors suppress the growth of leukemia cells Anticancer Research. 2024.12; 44(12); 5263-5270
2. Nogami, A; Amemiya, HJ; Fujiwara, H; Umezawa, Y; Tohda, S; Nagao, T. Targeting USP14/UCL5: A Breakthrough Approach to Overcoming Treatment-Resistant FLT3-ITD-Positive AML INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES. 2024.10; 25(19);
3. Umezawa Y, Yoshifuji K, Tanaka K, Nogami A, Nagano K, Tsuji A, Nagao T, Yamamoto M, Kajiware M, Tohda S, Mori T. Impact of BK polyomavirus viremia on the outcomes of allogeneic hematopoietic stem cell transplantation. Annals of hematology. 2024.05; 103(5); 1737-1744
4. Yotaro Motomura, Kota Yoshifuji, Takayoshi Tachibana, Hiroshi Takase, Ayako Arai, Keisuke Tanaka, Keigo Okada, Ayako Nogami, Yoshihiro Umezawa, Chizuko Sakashita, Masahide Yamamoto, Takehiko Mori, Toshikage Nagao. Clinical factors for central nervous system progression and survival in primary vitreoretinal lymphoma. Br J Haematol. 2024.04; 204(4); 1279-1287
5. Kumada H, Itoh M, Tohda S. Effect of Ferroptosis Inducers and Inhibitors on Cell Proliferation in Acute Leukemia. Anticancer research. 2024.03; 44(3); 1003-1010
6. Itoh M, Sasaki S, Tohda S. Renin-Angiotensin System Inhibitors Suppress the Growth of Leukemia Cells. Anticancer Research. 2024.03; 44(3); 1183-1192
7. Goto Y, Nagamine Y, Hanafusa M, Kawahara T, Nawa N, Tateishi U, Ueki Y, Miyamae S, Wakabayashi K, Nosaka N, Miyazaki Y, Tohda S, Fujiwara T. Association of excess visceral fat and severe illness in hospitalized COVID-19 patients in Japan: a retrospective cohort study. International journal of obesity (2005). 2024.01; 48(5); 674-682

[Books etc]

1. Ayako Nogami. What Hematologists Expect from Bone Marrow Pathology Diagnosis. 2024.08

[Conference Activities & Talks]

1. Yamazaki A., Yoshimoto A., Ichimura N., Tohda S., Ohkawa R. Validation and Application of Direct Measurement Method for Erythrocytes Cholesterol Content. 17th Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB) Congress 2024.11.01 Sydney
2. 浜野 しずか, 田中 圭祐, 高畑 篤, 坂東 夏菜, 島田 智仁, 吉藤 康太, 梅澤 佳央, 野上 彩子, 長尾 俊景, 山本 正英, 豊田 茂雄, 森 毅彦. 精巣原発悪性リンパ腫の治療成績. 日本血液学会学術集会 2024.10.01
3. Mai Itoh, Shuji Tohda. ERK inhibitors suppress the growth of leukemia cells.. 53rd Annual Science meeting, International Society for Experimental Hematology 2024.08.30 Chicago, USA
4. Itoh M, Tohda S. ERK inhibitors suppress the growth of leukemia cells. 53rd Annual Scientific Meeting, International Society for Experimental Hematology 2024.07.29
5. Yamazaki A., Yokoyama S., Okazaki M., Ai M., Miyake S., Takahashi J., Kameda T., Ichimura N., Tohda S., Ohkawa R. Influence of lipoprotein(a) on the accuracy of LDL-cholesterol measurement. European Atherosclerosis Society 92nd Congress 2024.05.27 Lyon
1. Ayako Nogami. Basic Seminar, Leucopenia. The 71st Annual Meeting of Japanese Society of Laboratory Medicine 2024.11.28 Osaka

2. Aina Tomori, Ayako Nogami, Maho Kawakami, Yasutaka Nakata, Kota Yoshifuji, Keisuke Tanaka, Yoshihiro Umezawa, Tkatoshi Koyama, Takehiko Mori. Successful treatment with rituximab for refractory acquired hemophilia A. The 86th Annual Meeting of the Japanese Society of Hematology 2024.10.01
3. Keisuke Tanaka, Kota Yoshifuji, Yoshihiro Umezawa, Ayako Nogami, Yuya Sasaki, Hisako Nakamaki, Maho Kawakami, Aina Tomori, Yasumasa Nakata, Makiko Ogawa, Toshikage Nagao, Masahide Yamamoto, Michiko Kajiware, Takehiko Mori. Stem cell mobilization with pegfilgrastim in healthy donor.. The 46th annual meeting of Japanese society for transplantation and cellular therapy 2024.03.24
4. Kota Yoshifuji, Yuri Takimoto, Marie yagi, Fumihiko Ouchi, Hikari Kanai, Momoko Chiba, Takuma Harada, Hiroki Hatsusawa, Keisuke Tanaka, Ayako Nogami, Yoshihiro Umezawa, Akiko Uchiyama, Toshikage Nagao, Masahide Yamamoto, Takehiko Mori. Outbreak and infection control of BK polyomavirus hemorrhagic cystitis. The 46th annual meeting of Japanese Society for Transplantation and Cellular Therapy 2024.03.23

Department of Intensive Care Medicine

Professor and Chairman

Kenji Wakabayashi (2021.10.1 -)

Specially Appointed Professor

Hideo Takahashi (2017.4.1 -)

Associate Professor

Hideo Yamanouchi (2023.4.1 -2024.4.31)

Nobuyuki Nosaka (2024.4.1～)

Specially Appointed Associate Professor

Toyomu Ugawa (Intensive Care Unit) (2021.4.1～2023.1.31)

Junior Associate Professor

Hideo Yamanouchi (2019.4.1 -2023.3.31)

Nobuyuki Nosaka (2022.4.1 -2024.3.31)

Yoshiki Sento (Anesthesiology) (2023.4.1-)

Ayako Noguchi (Intensive Care Unit) (2023.4.1 -)

Assistant Professor

Takahiro Masuda (Intensive Care Unit) (2014.4.1 -)

Fumi Maruyama (Intensive Care Unit) (2017.2.1 -2024.3.31)

Yuka Mishima (2023.4.1 -)

Ryo Uchimido (Intensive Care Unit) (2024.4.1-)

Specially Appointed Assistant Professor

Nobuhiro Shiota (Intensive Care Unit) (2017.4.1 -)

Ryo Uchimido (Intensive Care Unit) (2020.4.1 -2024.3.31)

Yoichi Iki (Intensive Care Unit) (2023.10.1-)

Yuka Mishima (Intensive Care Unit) (2017.4.1 -2023.3.31)

Yusuke Kuwahara (Intensive Care Unit) (2023.4.1-)

Toshihiro Kubo (Intensive Care Unit) (2019.10.1 -)

Kotaro Noda (Intensive Care Unit) (2024.4.1-)

Fellow:

Kouki Kiyama (Intensive Care Unit)(2022.4.1 -)

Tomoki Hongo (Intensive Care Unit)(2023.4.1 -2024.3.31)

Kazuki Aizeki (Intensive Care Unit) (2024.4.1-)

Postgraduate students:

Nobuhiro Shiota (2017.4.1 -)

Yoichi Iki (2018.4.1 -)

Michiko Abe (2019.4.1 -)

Yuka Mishima (2019.4.1 -2023.3.31)

Ryo Uchimido (2020.4.1 -)

Toshihiro Kubo (2021.4.1-)

Ichiro Osawa (2021.4.1-)

Adjunct lecturer

Yoshito Ujike (2017.4.1 -)

Satoru Hashimoto (2022.10.1 -)

Shotaro Matsumoto (2022.10.1 -)

Hideo Yamanouchi(2024.4.1-)

(1) Outline

Critical care medicine provides intensive care and treatment for critically ill patients. To treat critically ill patients, intensivists have to catch the changes of the patients' condition by monitoring and evaluation, and practice appropriate therapy. It is important that intensivists practice minute-to-minute titration therapy in cooperation with other multidisciplinary professionals.

Practice of critical care medicine includes intensive care for various types of shock, acute respiratory distress syndrome/acute lung injury, sepsis, multiple organ dysfunction syndrome, abnormal acid-base balance, electrolyte disturbance, acute kidney injury, central nervous system dysfunction, and hospital-acquired infection, mechanical ventilation, pharmacological support, cardiopulmonary support system, blood purification, and nutrition support.

(2) Research

We proceed big data analysis and translational research to gain a better understanding of the pathophysiology of diseases in intensive care. The department is also involved in a number of problem-solving studies in daily clinical practice and in medical education research.

(3) Education

We provide lectures for 4th year student of school of medicine (Mechanical ventilation and ARDS, Nutrition in ICU, End-stage care in ICU, PICS). We also provide programs in ICU for clinical clerkship for 5th and 6th-year student of school of medicine. Residents have great opportunity to study patient management with multiple procedures in ICU.

(4) Lectures & Courses

We provide the unique educational conference called “academic day” every Tuesday for not only students but residents and Fellows.

(5) Clinical Services & Other Works

Intensivists are responsible for respiratory, circulatory and metabolic management and treatment of critically ill patients. We conduct multidisciplinary rounds every weekday morning to formulate and implement the most appropriate management and treatment strategy for each patient involving pharmacists, dietitians, rehabilitation staff, and clinical engineers. Risk Assessment System (RAS), a unique initiative started in March 2017 to prevent adverse events in the general ward of our hospital by making rounds of all wards during the daytime on weekdays, with a total of 400 consultations per year.

(6) Clinical Performances

Early mobilization and early nutrition are implemented to improve the outcome of critically ill patients. We support the intensive care management of each department day and night. Furthermore, this year, we took on the challenge of crowdfunding to create an cartoon to raise awareness of post-intensive care syndrome (PICS).

(7) Publications**[Original Articles]**

1. Nosaka N, Noguchi A, Takeuchi T, Wakabayashi K. Long-term prevalence of PTSD symptom in family members of severe COVID-19 patients: a serial follow-up study extending to 18 months after ICU discharge. *Journal of intensive care*. 2024.12; 12(1); 53

2. Nosaka Nobuyuki, Noguchi Ayako, Takeuchi Takashi, Wakabayashi Kenji. Long-term prevalence of PTSD symptom in family members of severe COVID-19 patients: a serial follow-up study extending to 18 months after ICU discharge(タイトル和訳中) Journal of Intensive Care. 2024.12; 12; s40560-024
3. Nobuyuki Nosaka, Tatsuhiko Anzai, Kenji Wakabayashi. Height status matters for risk of mortality in critically ill children. J Intensive Care. 2024.10; 12(1); 42
4. Nosaka Nobuyuki, Anzai Tatsuhiko, Wakabayashi Kenji. Height status matters for risk of mortality in critically ill children(タイトル和訳中) Journal of Intensive Care. 2024.10; 12; s40560-024
5. Osawa, I; Hara, Y; Sukeyama, S; Mizuno, N; Nosaka, N; Kirimura, S; Onishi, I; Takata, M; Nakauchi, H; Takeuchi, H; Wakabayashi, K. Accurate Assessment of Respiratory Physiology Is Essential for Preclinical Drug Development in a Mouse Model of COVID-19-induced ARDS AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE. 2024.05; 209;
6. Nosaka Nobuyuki, Wakabayashi Kenji. Were you a family member, or a COVID-19 patient?(タイトル和訳中) Acute Medicine & Surgery. 2024.03; 11(1); 1 of 1
7. Shirasaki Kasumi, Hifumi Toru, Nakanishi Nobuto, Nosaka Nobuyuki, Miyamoto Kyohei, Komachi Miyuki H., Haruna Junpei, Inoue Shigeaki, Otani Norio. Postintensive care syndrome family: A comprehensive review(タイトル和訳中) Acute Medicine & Surgery. 2024.03; 11(1); 1 of 12-12 of 12
8. Goto Y, Nagamine Y, Hanafusa M, Kawahara T, Nawa N, Tateishi U, Ueki Y, Miyamae S, Wakabayashi K, Nosaka N, Miyazaki Y, Tohda S, Fujiwara T. Association of excess visceral fat and severe illness in hospitalized COVID-19 patients in Japan: a retrospective cohort study. International journal of obesity (2005). 2024.01; 48(5); 674-682
9. Shirasaki K, Hifumi T, Nakanishi N, Nosaka N, Miyamoto K, Komachi MH, Haruna J, Inoue S, Otani N. Postintensive care syndrome family: A comprehensive review. Acute medicine & surgery. 2024.01; 11(1); e939
10. Nosaka N, Wakabayashi K. Were you a family member, or a COVID-19 patient? Acute medicine & surgery. 2024.01; 11(1); e947
11. Oike K, Ishibashi O, Nosaka N, Hirota S. The Impact of Multidisciplinary Team Intervention for Early Mobilization of Patients with Aneurysmal Subarachnoid Hemorrhage in Stroke Care Unit: A Retrospective Cohort Study. Physical therapy research. 2024; 27(3); 166-172

[Books etc]

1. Noguchi A, Wakabayashi K et al.. Support Book for managing rapid response system. 2024.09 (ISBN : 978-4-8157-3119-9)

[Conference Activities & Talks]

1. Tsuchiya Issei, Uchimido Ryo, Minegishi Yu, Yokoe Ryo, Tominaga Yoshiki, Wakabayashi Kenji. ICU 時系列データの活用 JIPAD データと電子カルテの可視化 (Utilization of ICU Time-Series Data: Visualization of JIPAD Data and Electronic Medical Records). 日本集中治療医学会雑誌 2024.09.01
2. Yokoe Ryo, Uchimido Ryo, Minegishi Yu, Tominaga Yoshiki, Tsuchiya Issei, Wakabayashi Kenji. PIICS 患者における血流感染と ICU 死亡率との関連 (The association of Bloodstream Infections with ICU Mortality in Patients with PIICS). 日本集中治療医学会雑誌 2024.09.01
3. Yuichiro HARA. HIV-1 潜伏感染細胞特異的排除戦略に有用な新規低分子化合物の評価. 第 32 回日本抗ウイルス療法学会学術集会 2024.08.29 Kumamoto, Japan
4. 野口綾子. Rapid response system の鍵は信頼と相互リスペクトにある. 日本集中治療医学会 第 8 回 関東甲信越支部学術集会 2024.08.24
5. Yuichiro HARA. Evaluation of a novel small-molecule LRA candidate. Summer Retrovirus Conference 2024 (SRC2024) 2024.07.19 Kumamoto, Japan
6. 廣田 千穂, 長井 聡子, 小谷 愛, 緒方 泰子. 心血管疾患患者の服薬行動における意図的・非意図的ノンアドヒアランス: スコーピングレビュー. 第 30 回日本心臓リハビリテーション学会学術集会 2024.07.13 神戸

7. 野口綾子, 辻尾有利子. クリティカルケアが必要な成人と小児重症患者のケアにおける非日常を乗り越える. 第20回 日本クリティカルケア看護学会学術集会 2024.06.23
8. Ichiro Osawa, Yuichiro Hara, Sayaka Sukegawa, Naoaki Mizuno, Nobuyuki Nosaka, Susumu Kirimura, Ichihiro Onishi, Masao Takata, Hiromitsu Nakauchi, Hiroaki Takeuchi, Kenji Wakabayashi. Accurate Assessment of Respiratory Physiology Is Essential for Preclinical Drug Development in a Mouse Model of COVID-19-induced ARDS. 2024.05.27 SanDiego, USA
9. Ichiro Osawa, Yuichiro Hara, Sayaka Sukegawa, Naoaki Mizuno, Nobuyuki Nosaka, Susumu Kirimura, Ichihiro Onishi, Masao Takata, Hiromitsu Nakauchi, Hiroaki Takeuchi, Kenji Wakabayashi. Accurate Assessment of Respiratory Physiology Is Essential for Preclinical Drug Development in a Mouse Model of COVID-19-induced ARDS. ATS 2024 2024.05.17 SanDiego
10. Kenichiro Ozaki, Kenji Wakabayashi, Nobuyuki Nosaka, Hideo Yamanouchi, Yuka Mishima, Takahiro Masuda, Ryo Uchimido, Toshihiro Kubo, Kohei Yamaguchi, Takuma Okumura, Akira Yoshizawa, Mitsuzumi Okada, Teruko Kunisawa, Sirinthip Amornsiradech, Ayane Horike, Ryota Kanai, Kazuharu Nakagawa, Ayako Nakane, Kazumasa Kubota, Haruka Tohara. Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits. The 4th Annual Meeting of the International Society of Oral Care (ISOC) 2024 2024.04.27 Tokyo, Japan
11. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsiradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits(タイトル和訳中). 日本口腔ケア学会雑誌 2024.04.01
12. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsiradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. 歯科学生のための集中治療室における多職種協働実習 スマートグラスを用いたオンラインから実臨床への展開 (Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits). 日本口腔ケア学会雑誌 2024.04.01
13. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsiradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. 歯科学生のための集中治療室における多職種協働実習 スマートグラスを用いたオンラインから実臨床への展開 (Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits). 日本口腔ケア学会雑誌 2024.04.01
14. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsiradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. 歯科学生のための集中治療室における多職種協働実習 スマートグラスを用いたオンラインから実臨床への展開 (Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits). 日本口腔ケア学会雑誌 2024.04.01
15. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsiradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. 歯科学生のための集中治療室における多職種協働実習 スマートグラスを用いたオンラインから実臨床への展開 (Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits). 日本口腔ケア学会雑誌 2024.04.01
16. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsiradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa

Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. 歯科学生のための集中治療室における多職種協働実習 スマートグラスを用いたオンラインから実臨床への展開 (Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits). 日本口腔ケア学会雑誌 2024.04.01

17. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsuradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. 歯科学生のための集中治療室における多職種協働実習 スマートグラスを用いたオンラインから実臨床への展開 (Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits). 日本口腔ケア学会雑誌 2024.04.01
18. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsuradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. 歯科学生のための集中治療室における多職種協働実習 スマートグラスを用いたオンラインから実臨床への展開 (Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits). 日本口腔ケア学会雑誌 2024.04.01
19. Ozaki Kenichiro, Wakabayashi Kenji, Nosake Nobuyuki, Yamanouchi Hideo, Mishima Yuka, Masuda Takahiro, Uchimido Ryo, Kubo Toshihiro, Yamaguchi Kohei, Okumura Takuma, Yoshizawa Akira, Okada Mitsuzumi, Kunisawa Teruko, Amornsuradech Sirinthip, Horike Ayane, Kanai Ryota, Nakagawa Kazuharu, Nakane Ayako, Kubota Kazumasa, Tohara Haruka. 歯科学生のための集中治療室における多職種協働実習 スマートグラスを用いたオンラインから実臨床への展開 (Multidisciplinary Collaboration Practice in Intensive Care Units for Dental Students: Expansion from Smart Glass Online to Real Visits). 日本口腔ケア学会雑誌 2024.04.01
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21. Ryo Yokoe, Ryo Uchimido, Yu Minegishi, Yoshiki Tominaga, Issei Tsuchiya, Kenji Wakabayashi. The association of Bloodstream Infections with ICU Mortality in Patients with PIICS. 第51回日本集中治療医学会学術集会 2024.03.14

Department of General Dentistry

Professor Hiroshi NITTA
 Associate Professor Akira NISHIYAMA
 Associate Professor Kanako NORITAKE
 Junior Associate Professor Ken-ichi TONAMI
 Junior Associate Professor Masayuki HIDEISHIMA
 Assistant Professor Sachi UMEMORI
 Assistant Professor Daisuke KIDO
 Project Assistant Professor Hitan SOU
 Project Assistant Professor Hirohito MIKI
 Hospital Staff Shoko KAIDA
 Hospital Staff Yumine KIUCHI
 Hospital Staff Hideyuki TAKAMATSU
 Hospital Staff Shoko TOBE
 Hospital Staff Akitaka HATTORI
 Hospital Staff Yuya HAMADA
 Hospital Staff Yuko MITSUMA
 Hospital Staff Shizuru WATANABE
 Graduate student/Hospital Staff Ayako SEKIGUCHI
 Graduate student/Hospital Staff Mei HARDA

(1) Outline

Recent dentistry is sectionalized into various specialized fields of research and education. On the other hand, as a general practitioner, a dentist must possess not only integrated knowledge and skills of all the fields but also should be competent to apply such generalized knowledge and skills to individual patients. The department of General Dentistry performs researches and education for practicing such general and holistic dentistry. General dentistry related to clinical and affective education for dental students and residents. Therefore, the research theme includes dental education as well as oral diagnosis and general dentistry, cooperating with the department of Educational System in Dentistry, Behavioral Dentistry and Educational Media Development. Researches for sleep apnea syndrome have been also conducted in association with Dental Clinic for Sleep Disorders. The clinic of department of General Dentistry is Oral Diagnosis and General Dentistry which missions in the Dental Hospital are initial diagnosis for new outpatients and general dental practice. Clinics of General Dentistry 1 and 2, where dental students and residents are trained, also relate to the department of General Dentistry.

(2) Research

Recent research themes are listed below.

1. Study for structure of health problems and treatment planning for dental patients.
2. Study for verification and improvement of oral diagnosis.
3. Study for dental education for dental students and residents.

(3) Education

The educational objective of General Dentistry is that the students/residents acquire transversal academic framework of dental knowledge and skills and competency to provide patients with personalized treatment.

(4) Lectures & Courses

The educational objective of General Dentistry is that the students/residents acquire transversal academic framework of dental knowledge and skills and competency to provide patients with personalized treatment.

(5) Clinical Services & Other Works

The clinic of department of General Dentistry is Oral Diagnosis and General Dentistry. In the clinic, dental examination and health assessment for new outpatients are conducted to decide initial treatment plan and a clinic in charge for the patients. The patients who need comprehensive dental care and who cannot cooperate students' practice also attend this clinic to receive general dental practice.

(6) Clinical Performances

In the Dental Hospital, the clinic of Oral Diagnosis and General Dentistry is the first clinic for new outpatients. That is, the clinic is responsible for constructing good relationship between patients and the hospital. Therefore, the doctors pay attention actively to psychosocial aspects of patients during examination. In diagnosing and deciding clinic for patients, initial-treatment plans are introduced to patients. In this process, doctors think treatment plans together with patients thoroughly to obtain sound informed consent. Many patients who visits the dental hospital demands high medical level of the university hospital while not a few patients needs primary care. Oral Diagnosis and General Dentistry provides such patients with general dental practice to meet various kinds of patients' needs, makes effort to improve patients' satisfaction.

(7) Publications

[Original Articles]

1. Kanako Noritake, Jun Tsuruta, Koji Mizutani, Keiko Kondo, Hitomi Suzuki, Naoko Adachi, Naoko Seki, Ridan Cao, Risako Mikami, Sayaka Katagiri, Yuji Kabasawa, Hiroshi Nitta. Educational effects of dental hygiene student intervention in dental student clinical practicum *Journal of Dental Sciences*. 2024.10;
2. Ayako Sekiguchi, Ridan Cao, Sachi Umemori, Kanako Noritake, Masayo Sunaga, Atsuhiro Kinoshita, Ken-ichi Tonami, Hiroshi Nitta. Educational effectiveness of remote training with smart glasses for impression-taking *Journal of Dental Education*. 2024.11;
3. Hiroyuki Ishiyama, Shaoyuan Liu, Akira Nishiyama, Kenji Fueki. Morning headache caused by obstructive sleep apnea misdiagnosed as temporomandibular disorders-related headache: A case report. *Journal of Prosthodontics Research*. 2024.08;
4. Keiji Komatsu, Denny Chao, Takanori Matsuura, Daisuke Kido, Takahiro Ogawa. Advancing osseointegration research: A dynamic three-dimensional (3D) in vitro culture model for dental implants *Journal of Dental Sciences*. 2024.07;
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1. Yoshihiro Yamaguchi, Kazuhiro Ooi, Hidemichi Yuasa, Akira Nishiyama, Yoshizo Matsuka, Takahiro Abe, Shinpei Matsuda, Yuki Watanabe, Yoshitaka Suzuki, Miki Kashiwagi, Azuma Kosai, Kenichi Sugai, Keika Hoshi, Yasuhiro Ono, Toshihiro Fukazawa, Hidehisa Matsumura, Yuko Fujihara, Hiroyuki Ishiyama. Efficacy of initial conservative treatment options for temporomandibular disorders: A network meta-analysis of randomized clinical trials *Journal of Prosthodontic Research*. 2024.09;
2. Keiji Komatsu, Takanori Matsuura, James Cheng, Daisuke Kido, Wonhee Park, Takahiro Ogawa. Nanofeatured surfaces in dental implants: contemporary insights and impending challenges *International Journal of Implant Dentistry* . 2024.07; 10(10);

[Conference Activities & Talks]

1. Mei Harada, Sachi Umemori, Hiroshi Nitta, Jun Aida. The Association between Dental Visits and Chewing Ability - JAGES cross-sectional study -. 第 89 回口腔病学会学術大会 2024.12.07
2. Mei Harada, Sachi Umemori, Yusuke Matsuyama, Hiroshi Nitta, Jun Aida. Mediating Effect of Dental Prosthetics on Chewing Ability Recovery. 第 72 回国際歯科研究学会日本部会 (JADR) 総会・学術大会 2024.11.17
3. Kido Daisuke, Mizutani Koji, Nitta Hiroshi. A Case Study Management and Regeneration of Vertical Bone Resorption. American Academy of Periodontology, 110th Annual Meeting 2024.11.01 San Diego, CA
4. Shu Takemura, Koji Mizutani, Risako Mikami, Keita Nakagawa, Masahiro Hakariya, Eri Sakaniwa, Natsumi Saito, Hiromi Kominato, Daisuke Kido, Kohei Takeda, Akira Aoki, Takanori Iwata. Enhanced periodontal tissue healing following low-level Er:YAG laser irradiation. The American Academy of Periodontology's 110th Annual Meeting 2024.11 San Diego Convention Center, San Diego, USA
5. Hama Y, Futatsuya R, Matsuzaki M, Xiong L, Okada M, Noritake K, Sasaki Y, Kanazawa M. Screening of frailty, sarcopenia, and oral hypofunction using color-changeable chewing gum to evaluate masticatory performance. The 10th ASIAN CONFERENCE for FRAILTY AND SARCOPENIA 2024.10.11 Bangkok, Thailand
6. Matsuzaki M, Hama Y, Futatsuya R, Xiong L, Okada M, Noritake K, Sasaki Y, Kanazawa M. The relationship between frailty at baseline and the decline in oral function at one year follow-up. The 10th ASIAN CONFERENCE for FRAILTY AND SARCOPENIA 2024.10.11 Bangkok, Thailand
7. Xiong L, Hama Y, Futatsuya R, Matsuzaki M, Okada M, Noritake K, Sasaki Y, Kanazawa M. The relationship between oral function at baseline and onset of sarcopenia at one year follow-up. The 10th ASIAN CONFERENCE for FRAILTY AND SARCOPENIA 2024.10.11 Bangkok, Thailand
8. Futatsuya R, Hama Y, Matsuzaki M, Xiong L, Okada M, Noritake K, Sasaki Y, Kanazawa M. The association between dietary variety and oral function in older adults.. The 10th ASIAN CONFERENCE for FRAILTY AND SARCOPENIA 2024.10.10 Bangkok, Thailand
9. 関口 絢子, 礪波 健一, 曹 日丹, 梅森 幸, 則武加奈子, 須永 昌代, 木下 淳博, 新田 浩. スマートグラスを使用した遠隔指導の教育効果 - 概形印象採得 -. 第 43 回日本歯科医学教育学会学術大会 2024.09.07
10. Kumiko Yamaguchi, Chiharu Kawakami, Nobutoshi Nawa, Mitsuyuki Numasawa, Kanako Noritake, Janelle Moross. What Medical Students Should Learn for Medical-Dental Collaboration in a Super-aged Society. AMEE 2024 2024.08.29 The Virtual Conference
11. 則武加奈子, 中村麻衣子, 岡田英理子, 山口久美子, 新田浩, 平井伸英, 宮崎泰成. 東京医科歯科大学におけるダイバーシティ・インクルージョン推進に対する取り組みについて. 第 56 回日本医学教育学会学術大会 2024.08.10 東京
12. Fares Raafat Elsayed Mohamed Moustaf, Kenji Fueki, Akira Nishiyama, Hiroyuki Ishiyama. Relationship between TMD-related symptoms and personal computer use, psychosocial factors, and behavioral factors in Japanese working population.. 日本補綴歯科学会第 133 回学術大会 2024.07.07

1. Keisuke Miyazono, Hiroyuki Ishiyama, Akira Nishiyama, Kenji Fueki. Influences of pressure pain threshold and muscle stiffness in masticatory muscles by standardized continuous clenching. 89th Conference of the Stomatological Society, Japan 2024.12.06 Bunkyo-ku, Tokyo
2. Keisuke Miyazono, Hiroyuki Ishiyama, Akira Nishiyama. Influences of pressure pain threshold and muscle stiffness in masticatory muscles by standardized continuous clenching. The 29th Annual Conference of the Japanese Society for Orofacial Pain 2024.11.30 Chiyoda-ku, Tokyo
3. Liu Shaoyuan, Hiroyuki Ishiyama, Suvichaya Angkulmahasuk, Akira Nishiyama, Kenji Fueki. Effects in mandibular advancement device therapy for obstructive sleep apnea on temporomandibular disorders: A systematic review and meta-analysis. The 23rd Annual Meeting of the Japanese Academy of Dental Sleep Medicine 2024.11.02
4. Summaru of the Dentistry Education Model Core Curriculum Revised Edition Dissemination Project in FY2020. 2024.09.06
5. Kanako Noritake, Jun Tsuruta, Koji Mizutani, Keiko Kondo, Hitomi Suzuki, Naoko Adachi, Naoko Seki, Risako Mikami, Yuji Kabasawa, Arata Ebihara, Masayuki Hideshima, Hiroshi Nitta. Overview and Effectiveness of Interprofessional Education in clinical practicum at TMDU School of Dentistry. The 56th Annual Meeting of the Japan Society for Medical Education 2024.08.09 Tokyo
6. Suvichaya Angkulmahasuk, Akira Nishiyama, Hiroyuki Ishiyama. Establishment of new test conditions for non-functional masseter muscle activity during wakefulness. The 37th Annual Meeting of the Japanese Society for Temporomandibular Joint 2024.07.15 Tokushima City, Tokushima Prefecture, Japan
7. Hiroyuki Ishiyama, Akira Nishiyama, Kenji Fueki. Factors influencing QoL in TMD patients - an exploratory study.. The 133rd Annual Meeting of the Japan Prosthodontic Society 2024.07.07 Chiba City, Chiba Prefecture, Japan

[Social Contribution]

1. The Journal of Dental Education, peer reviewer, 2015.08.01 - Now
2. European Journal of Dental Education, peer reviewer, 2017.09.01 - Now

Psychosomatic Dentistry

Professor Akira Toyofuku
Junior Associate Professor Motoko Watanabe
Assistant Professor Yasuyuki Kimura
Hospital Staff Chihiro Takao
Hospital Staff Chizuko Maeda
Hospital Staff Risa Tominaga

Graduate Student Atsushi Ito
Graduate Student Chihiro Takao
Graduate Student Kiyokazu Iwawaki
Graduate Student Liu Zhenyan
Graduate Student Gayatri Nayanar
Graduate Student Chizuko Maeda

Lecturer (part-time) Haruhiko Motomura
Lecturer (part-time) Jiro Kurata
Lecturer (part-time) Takahiko Naganine

(1) Outline

Psychosomatic dentistry is the only one department in Japan, which research and develop new diagnosis and treatment methods for MUOS such as BMS, AO, PBS etc.

(2) Research

- 1) Study on pathophysiological mechanisms of oral psychosomatic disorders
- 2) Psychosomatic study on oro-facial medically and psychiatrically unexplained symptoms
- 3) Brain imaging of oral psychosomatic disorders
- 4) Psychopharmacological study on oral psychosomatic disorders

(3) Education

It is not uncommon to see the patients diagnosed with “Oral Psychosomatic Disorders”, so there is a growing need for proper treatment of the disorders from both sides of doctors and patients. It is, therefore, extremely important for dental students to instruct in psychosomatic dentistry. However, few Dental Universities in Japan are following this. At the same time, there’s a great deal of misunderstanding about psychosomatic dentistry, in spite of we have many years of consistent education. For example, “Your work is only hearing to complaints from patients”, “Patients with not otherwise specified mental illness is eventually referred to your clinic”, or “The mission of your clinic is to calm down your patients with unidentified dental and oral complaints”.

So, regarding undergraduate medical education, we focus on not only lessons from lectures and books but also practical experience through clinical training. We have comprehensive medical teaching for fifth and sixth-year students. Students can listen to patient’s complaints directly and deepen their understanding. Actually

they can see patients with dental psychosomatic disorders, and they know that these disorders are treatable. Moreover, they can learn negative effects of wrong ideas as a psychogenic disorder, and they can understand serious distress in patients and family members.

This practice is arduous effort, but in the future, it is hoped that efforts will be made to facilitate uniformed services for patients with dental psychosomatic disorders, enhance coping skills for refractory cases, and reduce trouble with patients by the graduates of our department who mastered psychosomatic dentistry.

It is important to have identity as a dentist on practice of psychosomatic dentistry. Therefore we have advanced strengthening of human resource development. In particular, we focus on cultivation of dentists who can be readily applied their knowledge of psychosomatic medicine to clinical practice. And we are working towards establishment of ‘psychosomatic dentistry’ introduced psychotherapy.

Also regarding education for graduate student, we focus on clinical practice for development of dentists who have great skill in psychosomatic dentistry.

(4) Clinical Services & Other Works

We take charge of “Psychosomatic Dentistry clinic” in Tokyo Medical and Dental University Hospital. This special clinic is for patients with oral psychosomatic disorders, such as glossodynia (burning mouth syndrome), atypical facial pain, atypical odontalgia, oral dysesthesia, occlusal discomfort(Phantom bite syndrome).

Main psychosomatic treatment is psychopharmacological one with SSRIs(Selective Serotonin Reuptake Inhibitors), SNRI(Serotonin-Noradrenaline Reuptake Inhibitor), SDAs(Serotonin-Dopamin antagonists) etc. And supportive psychotherapies are applied.

Intractable cases are increasing year by year, we take care of every patient and have good clinical courses about 70% of them.

We believe there are exactly “oral psychosomatic disorders”, and dentists should be in charge of treatment. Psychosis, as a matter of course, should be taken care by psychiatrists, so we discriminate them from oral psychosomatic disorders, and properly refer to psychiatry.

On the other hand, on “functional somatic symptoms secondary to psychiatry disorders”, which are refer to us from psychiatrists, we do our best in cooperation with psychiatrists.

We have about 600 new outpatients per year, and almost of them were referred from other specialists not only in dentistry but also internal medicine, otorhinolaryngology, dermatology, psychosomatic medicine, and psychiatry. They come from the Metropolitan area, of course, Osaka, Kyushu, Hokkaido and so on. We take fine-grained care and follow up; total number of patients is up to 10,000 per year.

We have a mission to meet the demand of these patients and their families, so better treatment outcome and increasing efficiency are required, and cooperation with other medical specialists is needed.

(5) Clinical Performances

Psychosomatic dentistry clinic is very unique, specialized for patients with MUOS. We have treated a large number of patients with various oral psychosomatic problems. With our unrivalled clinical experiences for MUOS, we offer our best clinical setting for the treatments of every MUOS.

(6) Publications

[Original Articles]

1. Takayuki Suga, Trang Thi Huyen Tu, Motoko Watanabe, Takahiko Nagamine, Akira Toyofuku. Low-dose amitriptyline: A potential therapeutic option for chronic pain in older people. *Br J Clin Pharmacol.* 2024.12;
2. Takayuki Suga, Chihiro Takao, Takahiko Nagamine, Akira Toyofuku. Investigating the Influence of Birth Month on the Incidence of Burning Mouth Syndrome. *Oral Dis.* 2024.12;
3. Atsushi Ito, Sushuang Yang, Eri Shinto, Atsushi Shinto, Akira Toyofuku, Jiro Kurata. Interhemispheric and Corticothalamic White-Matter Dysfunction Underlies Affective Morbidity and Impaired Pain Modulation in Chronic Pain. *Anesth Analg.* 2024.06;

4. Motoko Watanabe, Chihiro Takao, Chizuko Maeda, Gayatri Nayanar, Risa Tominaga, Yasuyuki Kimura, Trang Thi Huyen Tu, Takahiko Nagamine, Akira Toyofuku. The effective perospirone augmentation with clonazepam for treatment-resistant burning mouth syndrome: A case report. *Neuropsychopharmacol Rep.* 2024.03;
5. Motoko Watanabe, Trang Tu, Takahiko Nagamine, Akira Toyofuku. Goal Attainment Scaling in Patients With Burning Mouth Syndrome: A Real-World Clinical Study Protocol. *Cureus.* 2024.02; 16(2); e54392
6. Motoko Watanabe, Wataru Araki, Chihiro Takao, Chizuko Maeda, Risa Tominaga, Yasuyuki Kimura, Gayatri Nayanar, Trang Thi Huyen Tu, Takashi Asada, Akira Toyofuku. A case with burning mouth syndrome followed by dementia with Lewy bodies: a case report. *Front Psychiatry.* 2024.01; 14; 1329171
7. Takahiko Nagamine, Takeshi Watanabe, Akira Toyofuku. QTc Shortening on Electrocardiogram With Amitriptyline May Indicate No Effect on Pain Relief in Burning Mouth Syndrome. *Clin Neuropharmacol.* 2024.01;

[Misc]

1. Y Umezaki, T Naito, T T Huyen Tu, A Toyofuku. Burning mouth syndrome. *Br Dent J.* 2024.07; 237(2); 73
2. Akira Toyofuku, Hirofumi Matsuoka, Yoshihiro Abiko. Reappraising the psychosomatic approach in the study of "chronic orofacial pain": looking for the essential nature of these intractable conditions. *Front Pain Res (Lausanne).* 2024.05; 5; 1349847

[Conference Activities & Talks]

1. Gayatri NAYANAR, Akira TOYOFUKU. Prevalence of anti-CASPR2 autoantibodies in patients with somatic symptom disorder. 第81回口腔病学会学術大会 2024.12.07
2. 富永梨沙、渡邊素子、高尾千紘、前田智寿古、木村康之、豊福 明. デュロキセチン単剤療法が奏功した高齢男性患者の舌痛症の1例. 第39回日本歯科心身医学会総会・学術集会 2024.07.19 松本

Department of Infectious Diseases

Professor GU Yoshiaki
 Associate professor OKAMOTO Koh
 Associate professor / lecturer TAGASHIRA Yasuaki
 Assistant professor KURITA Takashi
 Assistant professor SATO Lubna
 Medical staff FUJII Yuna
 Specialist-training doctor NAGAHARA Yoshinori
 Project researcher AGATA Chikako
 Project researcher SAKAGUCHI Mikiyo
 Doctoral student HORIUCHI Kouji
 Master student OSAKA Hilary
 Technical assistant Do Dang An
 Secretary FUNADA Eriko

(1) Outline

The Department of Infectious Diseases is in charge of research and education with a focus on clinical infectious diseases. We are in charge of clinical practice of infectious diseases and infection prevention and control at Science Tokyo Hospital. We conduct epidemiological research on infectious diseases and other researches, as well as educational activities on infectious diseases in general.

In addition, as the core of "Platform Project for Multilayered Efforts to Conquer Infectious Disease Pandemics," the department plays a role in promoting infectious disease research and education at the university. Our department is responsible for the Division of Clinical Medicine of the Center for Infectious Diseases (TCIDEA), which was established in 2023.

(2) Research

We conduct clinical and epidemiological research on infectious diseases from various perspectives, with a focus on research on the proper use of antimicrobials and the control of hospital-acquired infections.

Among these, we are focusing on hospital epidemiology research related to antimicrobial resistance (AMR), which has become a major problem in Japan and worldwide, and research aimed at changing the behavior of healthcare workers and the general public by investigating their awareness of AMR.

In collaboration with the Tokyo Metropolitan Government, we are also conducting research on the response of medical institutions and public health to the COVID-19 pandemic.

(3) Education

We are committed to training the infectious disease specialists who will lead the future. Since infectious diseases are related to all aspects of healthcare, it is also important to increase the number of physicians who are trained in basic infectious disease treatment and infection prevention and control. Education for multiple professions is also important. We are committed to human resource development by providing education at various stages.

Pre-graduate education

We are in charge of lectures and practical training related to clinical infectious disease treatment and infection prevention and control, focusing on lectures for third-year medical students and clinical clerkship for five/six-year medical students. We devise ways for students to learn with interest the basics of clinical infectious diseases that all physicians and health care workers should learn.

Post-graduate education

We offer programs that match your previous experience and career plans, including initial residency , major residency, and fellowship to become a specialist.

Graduate Education

We aim to train professionals to tackle infectious diseases from multiple perspectives, with a focus on clinical infectious diseases and infectious disease epidemiology.

Topics include AMR control, hospital epidemiology, and control of hospital acquired infections.

Continuing Education

In all areas of clinical practice, you will be involved in the treatment of infectious diseases to a greater or lesser extent. We contribute to lifelong education by providing information on the diagnosis and treatment of infectious diseases.

We are also involved in education for pharmacists, nurses, clinical laboratory technicians, and other professionals.

(4) Lectures & Courses

The program aims to train professionals to tackle infectious diseases from multiple perspectives, with a focus on clinical infectious diseases and infectious disease epidemiology.

(5) Clinical Services & Other Works

We are in charge of the Department of Infectious Diseases and the Division of Infection Control and Prevention at Science Tokyo Hospital.

The Department of Infectious Diseases is a new department established in October 2021. Focusing on consultations from various departments, our department diagnoses and treats a variety of infectious diseases that occur mainly in inpatients. The department identifies the microorganisms that are causing symptoms of infections such as fever and other suspected infectious diseases, and selects the most appropriate treatment according to the microorganisms and the patient's condition.

The Division of Infection Control and Prevention is responsible for preventing infectious diseases that occur in the hospital, preventing their spread, and providing a safe environment for patients to receive medical care. We work as a multidisciplinary team in cooperation with all related departments.

We are working to promote the proper use of antimicrobial agents to prevent antimicrobial resistance (AMR), which has become a major problem in recent years. The Department of Infectious Diseases and the Department of Infection Control are working together to monitor the use of antimicrobials and to improve AMR control and treatment outcomes by optimizing the treatment of infectious diseases.

Outside of the university, we have a project with the Tokyo Metropolitan Government for the "Project for Strengthening the Capacity of Small and Medium-Sized Hospitals to Respond to Infectious Disease Health Crises in the Post-Coronary Era" as a three-year plan starting in FY2022. We are also involved in a variety of other activities, including academic conferences and public activities.

(6) Clinical Performances

The Department of Infectious Diseases provides clinical consultation services in response to consultations from various departments. It provides support to each department by dealing with various infectious diseases regardless of the organ, and contributes to the diagnosis and treatment of infectious diseases throughout the University Hospital. The Division of Infection Control and Prevention focuses on the prevention of infectious diseases. Through these activities, the department plays a role in supporting advanced medical care at the university hospital.

Outpatient services include medical care for infectious diseases, including HIV infection, and vaccination to prevent infectious diseases.

(7) Publications

[Original Articles]

1. Miwa, T; Okamoto, K; Nishizaki, Y; Tokuda, Y. The characteristics of postgraduate antimicrobial stewardship education resources: a nationwide survey in Japan JOURNAL OF HOSPITAL INFECTION. 2024.12; 154; 137-139
2. Toshiki Miwa, Koh Okamoto, Shotaro Ishikawa, Kazuhiko Ikeuchi, Shinya Yamamoto, Mahoko Ikeda, Shu Okugawa, Akihiko Ichida, Nobuhisa Akamatsu, Kiyoshi Hasegawa, Takeya Tsutsumi. The Effectiveness and Safety of the Short-Course Therapy in Liver Transplant Recipients With Uncomplicated Gram-Negative Bacteremia: A Retrospective Study. 2024.12; e14434
3. Yusuke Ota, Fei Chen, Isaac Prah, Samiratu Mahazu, Kimiyo Watanabe, Teruaki Kinoshita, Yoshiaki Gu, Yoko Nukui, Ryoichi Saito. Metatranscriptomic Analysis Reveals Actively Expressed Antimicrobial-Resistant Genes and Their Hosts in Hospital Wastewater. Antibiotics (Basel). 2024.11; 13(12); 1122
4. Tan, SSX; Phoompoung, P; Okamoto, K; Chayakulkeeree, M; Koh, XX; Tan, CK; Kong, SNM; Tan, TT; Chung, SJ; Tan, BH. Donor-derived infections-Insights from Singapore, Japan, and Thailand TRANSPLANT INFECTIOUS DISEASE. 2024.11; 26; e14370
5. Shinya Yamamoto, Tatsuya Kobayashi, Mahoko Ikeda, Yusuke Nomura, Takeru Morishige, Katsuhiro Makino, Hiroshi Ito, Marie Yamashita, Daisuke Jubishi, Yoshiaki Kanno, Koh Okamoto, Yoshimi Higurashi, Shu Okugawa, Kyoji Moriya, Haruki Kume, Takeya Tsutsumi. Carbon dioxide-dependent, extended-spectrum β -lactamase producing *Escherichia coli* bacteremia associated with pyelonephritis: A case-report. 2024.10;
6. Shinya Yamamoto, Koh Okamoto, Hiraku Kumamaru, Makoto Saito, Hiroshi Ito, Marie Yamashita, Yoshiaki Kanno, Mahoko Ikeda, Sohei Harada, Shu Okugawa, Mitsutoshi Kimura, Osamu Kinoshita, Minoru Ono, Takeya Tsutsumi, Kyoji Moriya. Clinical impact of the use of chronic suppressive antibiotics against recurrent ventricular assist device infections. 2024.10; 12(11); e0039824
7. Kohei Ukai, Koh Okamoto, Akinori Ichinose, Mariko Yoshida, Yoshimi Higurashi, Ryu Yoneda, Shuta Yamamoto, Takashi Asahara. Lacticaseibacillus paracasei Bacteremia Associated With Probiotic Use in a Child With Hypoganglionosis: Case Report and Literature Review. 2024.09;
8. Maho Adachi-Katayama, Koh Okamoto, Chihiro Konoeda. Surgical site infection due to *Mycobacterium fortuitum* in a lung transplant recipient. 2024.09; e14374
9. Horiuchi H, Watanabe A, Yaguchi T, Ban S, Otsuka T, Miyazaki H, Furuya R. Correction: Superficial abdominal surgical site infection caused by *Aspergillus welwitschiae*: a case report. BMC infectious diseases. 2024.09; 24(1); 1026
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13. Ota Y, Yasunaga K, Mahazu S, Prah I, Nagai S, Hayashi T, Suzuki M, Yoshida M, Hoshino Y, Akeda Y, Suzuki T, Gu Y, Saito R. Comparative evaluation of analytical pipelines for illumina short- and nanopore long-read 16S rRNA gene amplicon sequencing with mock microbial communities. *Journal of microbiological methods*. 2024.04; 221; 106929
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16. Kitaura Satoshi, Okamoto Koh. The effect of infectious diseases on lung transplantation in Japan. *J Thorac Dis*. 2024.02; 16(2); 1632-1644
17. Kawase Kyotaro, Okamoto Koh, Harada Sohei, Nomura Yusuke, Shimada Shogo, Komae Hyoe, Kuroda Ryohei, Ideyama Mana, Soma Katsura, Mizoguchi Miyuki, Higurashi Yoshimi, Ukai Kohei, Adachi-Katayama Maho, Miwa Toshiki, Wakimoto Yuji, Oyabu Tatsunori, Jubishi Daisuke, Hashimoto Hideki, Okugawa Shu, Ono Minoru, Doi Kent, Ushiku Tetsuo, Tsutsumi Takeya. A case of hypervirulent K1-ST23 *Klebsiella pneumoniae* endocarditis and papillary muscle rupture secondary to multiple site abscesses. *J Infect Chemother*. 2024.02; 30(2); 154-158
18. Zhuo C, Zheng B, Wattanakamolkul K, Nakayama Y, Cloutier M, Gauthier-Loiselle M, Feng J, Wu D, Neary MP, Geurtsen J, El Khoury AC, Gu Y. Impact of Invasive *Escherichia Coli* Disease on Clinical Outcomes and Medical Resource Utilization Among Asian Patients in the United States. *Infectious diseases and therapy*. 2024.01; 13(2); 313-328
19. Kanno Yoshiaki, Okamoto Koh, Shinohara Takayuki, Kinoshita Osamu, Hatano Masaru, Ikeda Mahoko, Harada Sohei, Okugawa Shu, Moriya Kyoji, Ono Minoru, Tsutsumi Takeya. Pre-Transplant Seroprevalence, Associated Factors, and Post-Transplant Incidence of *Toxoplasma gondii* Infection Among Heart Transplant Recipients in Japan. *Transplant Proc*. 2024.01; 56(1); 148-152
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1. Hiroshi Horiuchi, Akira Watanabe, Takashi Yaguchi, Sayaka Ban, Tsuyoshi Otsuka, Hiroshi Miyazaki, Ryosuke Furuya. Superficial abdominal surgical site infection caused by *Aspergillus welwitschiae*: a case report *BMC Infectious Diseases*. 2024.09; 24(1); 990

[Conference Activities & Talks]

1. Hiroshi Horiuchi, Yasuaki Tagashira, Asami Takizawa, Yoshiaki Gu. Multifaceted intervention for oral antimicrobial agents in the outpatient setting of a Japanese tertiary care center. *ID Week 2024* 2024.10.19
2. 古城 凱利, 名島 悠峰, 貞任 大地, 平間 千津子, 山川 理毅, 加藤 可那, 近藤 花織, 貞賀 泰孝, 酒井 知史, 加藤 千賀, 曾根 岳大, 島袋 将志, 大内 史彦, 稲井 一貴, 神宮寺 敦史, 新谷 直樹, 原口 京子, 遠矢 嵩, 清水 啓明, 小林 武, 奥山 美樹, 原田 結花, 関谷 紀貴, 高原 嘉祥, 内藤 裕, 比島 恒和, 土岐 典子. 同種造血幹細胞移植後早期の侵襲性真菌感染症に対する胸腔鏡下肺部分切除術. *日本血液学会学術集会* 2024.10.01
1. Yoshiaki Gu. AMR control and appropriate antimicrobial use in clinical settings. 2024.11.26
2. Yoshiaki Gu. Post Pandemic Priorities of Infectious Disease Surveillance in Japan. *Infectious Diseases Surveillance Alliance Forum (Taipei, Taiwan)* 2024.10.17

Department of Neuroanatomy and Cellular Neurobiology

Professor: TERADA Sumio
Lecturer : SAITO Kenta
Assistant Professor: KAWAGISHI Masahiko
Assistant Professor: SATO Keisuke
Graduate Student : HANAOKA Miho
Graduate Student : TERAMOTO Yuri
Graduate Student : ZAKIR Najima
Research Resident Doctor : NAKAI-KADOWAKI Nori
Affiliated Researcher: SUGIZAKI Ayana
Affiliated Researcher: IKETAKI Yoshinori

(1) Outline

Our research group uses both cell biological and biophysical methods to address problems in basic cellular morphology. Specifically, we are interested in the basic molecular mechanism of cytoskeletal dynamics and intercellular communication and have been gaining important insights through our work with methodologies ranging from transgenic animals to cutting-edge spectroscopies. Our active faculty members are engaged in the training of both graduate and medical students through various training programs, research seminars, and journal clubs, and lots of exciting collaborative research efforts with colleagues around the world are now in progress.

(2) Research

We are cell biologists and biophysicists who study how the dynamics of cytoskeletal proteins are regulated. We are also interested in the intracellular communications that support cellular functions, especially those of the nervous system. Visualization or live cell imaging is a key to approach our common research interests, and our work spans multiple disciplines or methodologies such as microscopies, spectroscopies, and probe developments. Our lab has focused in three major directions we are taking with several collaborators.

(1) By utilizing newly developed probe technique POLARIS for fluorescence polarization microscopy, we are now focusing on discovering previously unknown phenomena around cytoskeletal structures, and deciphering their functional significance.

We have been collaborating with Dr. Tomomi Tani, microscopist at the Marine Biological Laboratory at Woods Hole (now at the National Institute of Advanced Industrial Science and Technology) on this matter.

(2) We also try to establish effective probes to detect functional intracellular communication to find the logics of neuronal signal transductions.

(3) In addition to live cell imaging, we are interested in development of spectroscopic techniques such as fluorescent correlation spectroscopy and Raman spectroscopy.

Regarding Raman spectroscopy, we have a long-standing collaboration with Prof. Kazuhiko Misawa at Tokyo University of Agriculture and Technology.

By combining cutting edge microscopic and spectroscopic technologies with molecular genetics and modelling, we try to solve questions such as: How cytoskeletal dynamics are regulated? How the cell shape is controlled? How the function of the nervous system is maintained?

(3) Education

Department of neuroanatomy and cellular neurobiology takes charge of basic neuroscience education for medical undergraduate student (Lectures and Wet labs), especially from the morphological point of view.

For graduate school students, our group offers introductory courses on both optical and electron microscopy (Lectures and Wet labs), with close relation to molecular and cellular neurobiology.

(4) Publications

[Original Articles]

1. Richard Veale, Mayu Takahashi. Pathways for Naturalistic Looking Behavior in Primate II. Superior Colliculus Integrates Parallel Top-down and Bottom-up Inputs. *Neuroscience*. 2024.03; 545; 86-110
2. Mayu Takahashi, Yuriko Sugiuchi, Yoshikazu Shinoda. Brainstem neural circuits for triggering vertical saccades and fixation *Journal of Neuroscience*. 2024.01; 44(1); 1-15

[Conference Activities & Talks]

1. 安藤 貴弘, 高橋 真有. 外転神経核に投射する単一前庭核細胞の軸索投射様式. 第 47 回日本神経科学大会 2024.07.25 福岡
2. 榮田 大, 篠田 義一, 高橋 真有. コンタクトレンズを用いた三次元眼球運動解析法の開発. 第 47 回日本神経科学大会 2024.07.25 福岡
3. 清水 暁陽, 杉内 友理子, 篠田 義一, 高橋 真有. 上丘頭側部および尾側部への大脳皮質からの投射様式の解析. 第 47 回日本神経科学大会 2024.07.25 福岡
4. 高橋 真有. 随意性・反射性眼球運動の神経回路とその共通座標. 第 47 回日本神経科学大会 2024.07.24 福岡
5. 佐藤 啓介, 杉崎 綾奈, 山崎 結那, 鎌田 勝彦, 久野 玉雄, 桂 一茂, 千葉 和義, 白水 美香子, 寺田 純雄. 構造情報に基づく高汎用性 F-actin 配向プローブ POLArISact_omni の開発とヒトデ 卵母細胞アクチン動態解析への応用. 第 76 回 日本細胞生物学会大会 2024.07.18 茨城県つくば市
6. Mayu Takahashi. Neural circuits for triggering saccadic eye movements by inhibiting eye fixation circuits.. International Symposium on Brain Structure and Function 2024.07.01 Okazaki, Japan
1. Mariko Goto, Yohane Kan, Yuya Ishida, Keisuke Sato, Sumio Terada. Establishment of the method for fluorescence polarization imaging of actin dynamics during myoblast fusion. 2024.03.21
2. Minori Iida, Luna Kawahara, Keisuke Sato, Sumio Terada. Development of a simple and versatile labeling method for fluorescence polarization microscopy. 2024.03.21

Cellular Dynamics

Professor: Toshiro MOROISHI
Assistant Professor: Akihiro NITA

(1) Outline

In multicellular organisms, various types of cells interact with each other to maintain cellular community and tissue homeostasis. Our lab aims to understand the molecular mechanisms underlying the control of cellular dynamics and cell-cell communication. In particular, we focus on cellular dynamics during cancer progression and organogenesis, with the goal of elucidating the behavior of cellular communities that contribute to these processes.

(2) Research

Main Research Topics:

- Mechanisms underlying cancer development and progression, with the aim of developing new therapies.
- Mechanisms of mammalian organogenesis and their medical applications.

(3) Publications

[Original Articles]

1. Yumoto Shinsei, Horiguchi Haruki, Kadomatsu Tsuyoshi, Horino Taichi, Sato Michio, Terada Kazutoyo, Miyata Keishi, Moroishi Toshiro, Baba Hideo, Oike Yuichi. Host ANGPTL2 establishes an immunosuppressive tumor microenvironment and resistance to immune checkpoint therapy(タイトル和訳中) Cancer Science. 2024.12; 115(12); 3846-3858
2. Chanida Thinyakul, Yasuhisa Sakamoto, Mayuko Shimoda, Yanliang Liu, Suyanee Thongcho, Omnia Reda, Akihiro Nita, Romgase Sakamula, Somponnat Sampattavanich, Ayato Maeda, Paweenapon Chunthaboon, David Nduru, Mayumi Niimura, Yohei Kanamori, Peti Thuwaji, Keiichi I. Nakayama, Kun-Liang Guan, Yorifumi Satou, Chanitra Thuwaji, Toshiro Moroishi. Hippo pathway in cancer cells induces NCAM1+ α SMA+ fibroblasts to modulate tumor microenvironment Communications Biology. 2024.10; 7(1); 1343
3. Tomoya Yamashita, Haruki Horiguchi, Tsuyoshi Kadomatsu, Michio Sato, Toshiro Moroishi, Yuichi Oike. Immunotherapy-induced reprogramming of cancer-associated fibroblasts can promote tumor progression. Genes to cells : devoted to molecular & cellular mechanisms. 2024.10;
4. Yasuhisa Sakamoto, Akiyoshi Uezu, Koji Kikuchi, Jangmi Kang, Eiko Fujii, Toshiro Moroishi, Shiro Suetsugu, Hiroyuki Nakanishi. The Nedd4L ubiquitin ligase is activated by FCHO2-generated membrane curvature The EMBO Journal. 2024.10;
5. Shinsei Yumoto, Haruki Horiguchi, Tsuyoshi Kadomatsu, Taichi Horino, Michio Sato, Kazutoyo Terada, Keishi Miyata, Toshiro Moroishi, Hideo Baba, Yuichi Oike. Host ANGPTL2 establishes an immunosuppressive tumor microenvironment and resistance to immune checkpoint therapy. Cancer science. 2024.09;

6. Hao Li, Yohei Kanamori, Toshiro Moroishi. Cell attachment defines sensitivity to cold stress via the Hippo pathway Biochemical and Biophysical Research Communications. 2024.07; 730; 150373
7. Koki Murata, Kai Harayama, Mayuko Shimoda, Mayumi Niimura, Masahiro Wakao, Yasuo Suda, Toshiro Moroishi, Hiroyuki Shinchichi. Improvement of the Nuclease Resistance and Immunostimulatory Activity of CpG Oligodeoxynucleotides by Conjugation to Sugar-Immobilized Gold Nanoparticles Bioconjugate Chemistry. 2024.05; 35(6); 804-815
8. Akihiro Nita, Toshiro Moroishi. Hippo pathway in cell-cell communication: emerging roles in development and regeneration Inflammation and Regeneration. 2024.04; 44(1);
9. Nita Akihiro, Moroishi Toshiro. 細胞間情報伝達における Hippo 経路 発生と再生において判明しつつある役割 (Hippo pathway in cell-cell communication: emerging roles in development and regeneration) Inflammation and Regeneration. 2024.04; 44; s41232-024
10. Tumor stroma-derived ANGPTL2 potentiates immune checkpoint inhibitor efficacy. 2024.03;
1. Mayumi Niimura, Yasuhisa Sakamoto, Mayuko Shimoda, Narumi Harada, Ayato Maeda, Shiho Wada, Koki Murata, Saisai Liu, Haruka Ohara, Asuka Iwamoto, Yohei Kanamori, Akihiro Nita, Masahiro Wakao, Yasuo Suda, Hiroyuki Oshiumi, Tomoko Hayashi, Dennis Carson, Hiroyuki Shinchichi, Toshiro Moroishi. Harnessing an integrated glyco-nanovaccine technology for enhanced cancer immunotherapy 2024.11;

[Conference Activities & Talks]

1. 諸石 寿朗, Thinyakul Chanida, 柳 彦良, 森田 康之. Hippo 経路は力学シグナルを介して免疫抑制性の腫瘍微小環境を構築する (The Hippo pathway constructs an immunosuppressive tumor microenvironment through mechanical signaling). 日本癌学会総会記事 2024.09.01

Department of Neuropathology

Professor: Hitoshi Okazawa
 Project Lecturer/Part-time Lecturer: Haruhisa Inoue, Masaki Sone, Kyota Fujita
 Project Associate Professor: Hidenori Homma
 Lecturer: Hikari Tanaka
 Assistant Professor : Maiko Inotsume
 Specially Appointed Assistant Professor : Yuki Yoshioka
 Assistant Administrative Staff: Xuemei Zhang(∼2024.3), Shigemi Sato
 Secretary: Marie Tanaka
 Graduate Student : Huang Yong, Sumire Takayama

(1) Outline

The goals of our research are to elucidate molecular mechanisms of neurodegenerative disorders as well as of mental retardation, and to develop novel therapeutics for those intractable diseases. In neurodegeneration, we are now focusing on polyglutamine diseases including hereditary spinocerebellar degenerations and Huntington's disease. Knowledge from transcriptome and proteome analyses of the pathologies will lead to new types of molecular therapeutics. In reference to mental retardation, we are developing animal models and analyzing molecular pathologies of our original molecule PQBP1 whose mutations cause mental retardation with microcephaly. This line of research is also for developing new therapeutics of the common but intractable diseases.

(2) Research

[Outline]

Following studies have been intensively carried out in our laboratory with various techniques including molecular biology, cell biology, biochemistry, Drosophila models, and mice models.

- 1) Investigation of molecular pathologies of neurodegenerative disease.
- 2) Development of new therapies for neurodegeneration.
- 3) Development of new seed drug for mental retardation.
- 4) Investigation of molecular function of Oct3/4.

[This year's progress]

1. Dynamic molecular network analysis of iPSC-Purkinje cells differentiation delineates roles of ISG15 in SCA1 at the earliest stage

Better understanding of the earliest molecular pathologies of all neurodegenerative diseases is expected to improve human therapeutics. We investigated the earliest molecular pathology of spinocerebellar ataxia type 1 (SCA1), a rare familial neurodegenerative disease that primarily induces death and dysfunction of cerebellum Purkinje cells. Extensive prior studies have identified involvement of transcription or RNA-splicing factors in the molecular pathology of SCA1. However, the regulatory network of SCA1 pathology, especially central regulators of the earliest developmental stages and inflammatory events, remains incompletely understood. Here, we elucidated the earliest developmental pathology of SCA1 using originally developed dynamic molecular network analyses of sequentially acquired RNA-seq data during differentiation of SCA1 patient-derived induced

pluripotent stem cells (iPSCs) to Purkinje cells. Dynamic molecular network analysis implicated histone genes and cytokine-relevant immune response genes at the earliest stages of development and revealed relevance of ISG15 to the following degradation and accumulation of mutant ataxin-1 in Purkinje cells of SCA1 model mice and human patients.

We are living in the four-dimension (4D) world composed of space position (x, y, z) and time point. Molecular network in living cells, tissue, organ and organism is generally described in 2D while the reality is dynamically changed during time progression in 3D. Such a dynamic molecular network can be described with comprehensive omics data, especially by single cell RNA-seq or other single cell omics data in recent studies, while it remains difficult from which to extract the cause-result relationship and further prospect the future changes.

Naturally applying automatic intelligence (AI) to this issue is a promising idea whereas deep learning for such a huge molecular network demands an enormous size of observatory data. It is impossible for most laboratories in the world to obtain a necessary amount of data for their specific questions in biology. Therefore, we need some intermediate methods to overcome the difficulty.

Two years ago, my group has published a method named multi-dimensional vector analysis (MDV) previously to analyze dynamic molecular networks in Alzheimer's disease (AD) and frontotemporal lobar degeneration (FTLD), by which we could reveal the common pathological networks shared by two types of dementias. MDV results indicated that the cell signaling from HMGB1-TLR4 interaction led to PKC-MEK-MAPK/ERK activation and induces neurodegeneration.

Now, we proposed another method named as induction method-based analysis for dynamic molecular networks (iMAD) and investigated the temporal pathology of spinocerebellar ataxia type 1 (SCA1) with our original RNA-seq data from human SCA1 patient-derived iPS cells and with public available data base from mouse SCA1 models. The iMAD analysis of cell differentiation from iPSC to Purkinje cells and of the meta-analysis by combining mouse data both uncovered unexpectedly early changes of immune response-related genes originated from the histone genes at the iPSC stage. Such prenatal changes cause the postnatal increase of ISG15 which influences ubiquitination of the disease protein Ataxin-1 and brain inflammation at the early stage of adulthood. Our two methods would be available for revealing previously unknown molecular changes that might be more critical than previously known changes of cell, tissue, organ and organism in various kinds of disease fields. We are preparing a commercial basis to provide the support of these data analyses for a wide range of scientists and companies who are interested in this approach.

2. Unveiling the Molecular Mechanisms Linking Aging with Neurodegenerative Diseases

Aging is the prime cause of neurodegenerative diseases, such as Alzheimer's disease, Parkinson's disease, and amyotrophic lateral sclerosis. But what exactly increases the prevalence of these brain disorders as one grows older? The molecular forces linking aging, cellular senescence, and the onset of these neurodegenerative conditions are not well understood.

We have uncovered a crucial piece of this puzzle by focusing on the role of a single nucleolar protein.

We revisited polyglutamine binding protein 3 (PQBP3), a protein they had discovered themselves over 20 years ago. Through a comprehensive screening of normal proteins that bind to disease-causing proteins in polyglutamine diseases such as Huntington's, they identified several proteins in the PQBP family. After exploring the functions and pathological relevance of PQBP1 and PQBP5, we turned their attention to PQBP3. To shed light on the role of this protein, the researchers employed cellular senescence as a model to study aging. Senescence refers to a state in which a cell no longer undergoes division but remains alive and metabolically active. This state, which can be replicated in cell cultures, occurs naturally in our bodies and is typically observed in aging cells.

Through super-resolution fluorescence microscopic observations, the researchers observed something peculiar about the location of PQBP3. PQBP3 typically localizes around the periphery of the nucleolus within the nucleus, but during senescence, PQBP3 relocated from the nucleolus to the nucleoplasm or cytoplasm. This relocation of PQBP3 was accompanied by leakage of nuclear DNA into the cytoplasm. Most importantly, we then observed via electron microscopy that the nuclear membrane structure was destabilized in cells where PQBP3 had moved to the cytoplasm.

To shed light on this destabilization of the nuclear membrane, the researchers conducted a bioinformatics analysis using protein interaction databases. The results suggested that PQBP3 binds to a protein called proteasome activator complex subunit 3 or PSME3, which plays a key role in the degradation of other proteins. Upon further investigation, the team found that, under normal circumstances, a portion of PQBP3 moves from the nucleolus to the nuclear membrane and binds to PSME3, suppressing its degradation of Lamin B1, another protein found in the nuclear membrane. However, the rate of these changes declines in senescent cells and thus

Lamin B1 is degraded more rapidly, thereby failing to stabilize the nuclear membrane.

Finally, to link these findings to neurodegenerative disorders, the researchers conducted experiments in cell cultures and mouse models of spinocerebellar ataxia type 1 (SCA1), a polyglutamine disease. They found that PQBP3 was ‘captured’ by the so-called inclusion bodies, which are abnormal protein aggregates characteristic of SCA1. In turn, this lowered the levels of PQBP3 in the nucleolus, limiting its functionality and leading to the destabilization of the cellular membrane.

Taken together, the results of this study shed light on a possible common aspect of aging and neurodegenerative disorders. This newfound understanding of PQBP3 renders it a potential target for novel treatments since PQBP3 function loss can occur in both cellular senescence and neurodegeneration in brain neurons. Therefore, targeting PQBP3 theoretically makes it possible to improve both brain aging and neurodegeneration. However, in cells other than neurons, PQBP3 can be a risk factor for cancer, given that cellular senescence likely helps suppress cancer. PQBP3 may be a double-edged sword, as it is involved in a fundamental biological problem of contrasting cellular pathologies, namely cancer and neurodegeneration.

In summary, unraveling the connection between aging and neurodegeneration could pave the way for novel and effective therapies for these diseases.

(3) Education

As educational tasks, we have lecture and experiment classes of neuropathology for medical/dental graduate school program and medical school program. We also have general pathology and neuropathology classes for graduate school for health sciences, and clinical anatomical and therapeutic pathology classes for research students.

(4) Lectures & Courses

We provide students with opportunities to learn practical research techniques on neuropathology, especially neurodegenerative diseases.

(5) Publications

[Original Articles]

1. Homma H, Ngo KX, Yoshioka Y, Tanaka H, Inotsume M, Fujita K, Ando T, Okazawa H. PQBP3/NOL7 is an intrinsically disordered protein. *Biochem Biophys Res Commun.* 2024.12; 736; 150453
2. Tsumaki K, Bertens CJF, Nakayama M, Kato S, Jonao Y, Kuribayashi A, Sato K, Ishiyama S, Asakawa M, Aihara R, Yoshioka Y, Homma H, Tanaka H, Fujita K, Okazawa H, Sone M. Loss of function of VCP/TER94 causes neurodegeneration. *Dis Model Mech.* 2024.12; 17(12); dmm050359
3. Yoshioka Y, Huang Y, Jin X, Ngo KX, Kumaki T, Jin M, Toyoda S, Takayama S, Inotsume M, Fujita K, Homma H, Ando T, Tanaka H, Okazawa H. PQBP3 prevents senescence by suppressing PSME3-mediated proteasomal Lamin B1 degradation. *EMBO J.* 2024.09; 43(18); 3968-3999
4. Homma H, Yoshioka Y, Fujita K, Shirai S, Hama Y, Komano H, Saito Y, Yabe I, Okano H, Sasaki H, Tanaka H, Okazawa H. Dynamic molecular network analysis of iPSC-Purkinje cells differentiation delineates roles of ISG15 in SCA1 at the earliest stage. *Commun Biol.* 2024.04; 7(1); 413

[Misc]

1. Homma H, Tanaka H, Fujita K, Okazawa H. Necrosis Links Neurodegeneration and Neuroinflammation in Neurodegenerative Disease. *Int J Mol Sci.* 2024.03; 25(7); 3636

[Conference Activities & Talks]

1. Hitoshi Okazawa. Neuroimmune induction by tau via PQBP1-cGAS-STING pathway. 22nd Surugadai International Symposium Program 2024.11.21 Akio Suzuki Memorial Hall Institute of Science Tokyo(Tokyo)

2. Hitoshi Okazawa. New mechanisms of toxicity from inside and outside of cells. 65th Annual Meeting of the Japanese Society of Neurology 2024.06.01 Tokyo International Forum(Tokyo)
3. Hitoshi Okazawa. DEVELOPMENT OF ANTI-HMGB1 ANTIBODY FOR DEMENTIAS. ADPD2024 2024.03.08 LisbonCongressCentre(Lisbon, Portugal)

[Patents]

1. Diagnosis methods, diagnostic agents, and therapeutic agents against alzheimer's disease and frontotemporal lobar degeneration, and screening methods for these agents, Patent Number : EP 3088898
2. ANTIBODIES AGAINST HMGB1, AND COMPOSITION COMPRISING SAME FOR TREATING OR PREVENTING ALZHEIMER'S DISEASE, Patent Number : EP 3502248

Department of Ophthalmology and Visual Science

Professor; Kyoko Ohno-Matsui

Associate Professor; Takeshi Yoshida

Junior Associate Professor; Koju Kamoi, Shintaro Horie

Assistant Professor; Kengo Uramoto, Hiroyuki Takahashi, Tomonari Takahashi, Keigo Sugisawa

(1) Outline

Our department was established in 1944. Prof. Jin Ohtsuka initiated research on myopia in 1946, and Emeritus Prof. Takashi Tokoro established high myopia clinic in 1974 as the world only clinic specific to pathologic myopia. To date, clinical practice as well as basic research on myopia have continuously been performed in our department. Uveitis clinic was established by Emeritus Prof. Manabu Mochizuki in 1988. Since Prof. Kyoko Ohno-Matsui was appointed to a professorship in our department, clinical practice and basic research on wide variety of fields such as glaucoma, cataract, diabetic retinopathy, vitreoretinal disorder, and macular diseases in addition to myopia and uveitis have been actively performed.

(2) Research

In research, the department is highly active in joint research with basic research departments as well as international joint research with overseas laboratories and ophthalmological facilities. The findings from our research have been published in *The Lancet*, the *Journal of Clinical Investigation*, and other leading journals. As ophthalmologists, we endeavor from the perspective of clinical scientists to continue our research for elucidation of pathologies in view of the true nature of the diseases, establishment of new molecular-targeted therapies based on this elucidation, and their utilization in ophthalmological treatment and care.

(3) Education

Undergraduate education of ophthalmology is composed of 1) classes on histology and physiology of the eye, and on diagnosis and treatment of ocular disorders, 2) combination block in which clinical examination is trained, and the diagnostic process is actively learned through group discussion using case series, 3) pre-clerkship and clerkship in which the medical students practically learn the major ocular disorders by seeing the patients and discussing in the conference.

After the initial residency of the first two years, the residency in ophthalmology is programmed for four years according to the educational program on diploma of ophthalmology by Japanese ophthalmological society. The graduate students are expected to be academic doctors who develop and perform highly-qualified ophthalmologists, as well as become scientists who can perform basic research focusing on their clinical interest.

(4) Lectures & Courses

Main objective of ophthalmology and visual science in the graduate course is to obtain the highly-advanced knowledge in the diagnosis and the treatment of various ocular disorders and to perform the basic research based on clinical experience.

(5) Clinical Services & Other Works

Clinical practice is organized by the general ophthalmology clinic as well as the several subspecialty clinics. When the patients visited our department, they are screened in the general clinic, and then the final decision of the diagnosis and treatment is made in cooperation with each subspecialty clinic. Subspecialty clinics include high myopia clinic, uveitis clinic, glaucoma clinic, vitreoretinal disorder clinic, diabetic retinopathy clinic, neuro-ophthalmology clinic, and medical retina clinic. Approximately, 1,300 surgeries are performed per year (e.g., cataract surgery, vitreoretinal surgery, glaucoma surgery, strabismus surgery).

(6) Clinical Performances

In clinical medicine, the department is characterized by the following: 1) its provision of the best medical care in Japan for diabetic retinopathy, retinal detachment, glaucoma, cataract, and other disorders that lead to blindness; 2) its unparalleled expertise in the treatment of conditions such as high myopia, refractory uveitis, and macular disease, which attracts both Japanese and international patients; 3) its numerous registered surgeons known for their preeminent techniques in vitreoretinal, glaucoma, and other refractory disease surgeries; and 4) its established record in neuro-ophthalmology, palpebral and lacrimal-duct surgery, and other fields that cannot be handled at most other facilities. We hope to further these capabilities in order to enable provision of the best and most advanced medical care to patients from Japan and around the world.

(7) Publications

[Original Articles]

1. Bo Qian, Bin Sheng, Hao Chen, Xiangning Wang, Tingyao Li, Yixiao Jin, Zhouyu Guan, Zehua Jiang, Yilan Wu, Jinyuan Wang, Tingli Chen, Zhengrui Guo, Xiang Chen, Dawei Yang, Junlin Hou, Rui Feng, Fan Xiao, Yihao Li, Mostafa El Habib Daho, Li Lu, Ye Ding, Di Liu, Bo Yang, Wenhui Zhu, Yalin Wang, Hyeonmin Kim, Hyeonseob Nam, Huayu Li, Wei-Chi Wu, Qiang Wu, Rongping Dai, Huating Li, Marcus Ang, Daniel Shu Wei Ting, Carol Y Cheung, Xiaofei Wang, Ching-Yu Cheng, Gavin Siew Wei Tan, Kyoko Ohno-Matsui, Jost B Jonas, Yingfeng Zheng, Yih-Chung Tham, Tien Yin Wong, Ya Xing Wang. A Competition for the Diagnosis of Myopic Maculopathy by Artificial Intelligence Algorithms. *JAMA Ophthalmol.* 2024.11; 142(11); 1006-1015
2. Yasuda, S; Yoshida, T; Suzuki, Y; Sugahara, Y; Lee, JFK; Kamoi, K; Horie, S; Takase, H; Ohno-Matsui, K. Retromode Infrared Scanning Laser Ophthalmoscopy in Vogt-Koyanagi-Harada Disease GRAEFES ARCHIVE FOR CLINICAL AND EXPERIMENTAL OPHTHALMOLOGY. 2024.11;
3. Kazuya Morino, Masahiro Miyake, Masao Nagasaki, Takahisa Kawaguchi, Shogo Numa, Yuki Mori, Shota Yasukura, Masahiro Akada, Shin-Ya Nakao, Ai Nakata, Hiroki Hashimoto, Ryoko Otokozawa, Koju Kamoi, Hiroyuki Takahashi, Yasuharu Tabara, Fumihiko Matsuda, Kyoko Ohno-Matsui, Akitaka Tsujikawa, . Genome-wide Meta-analysis for Myopic Macular Neovascularization Identified a Novel Susceptibility Locus and Revealed a Shared Genetic Susceptibility with Age-Related Macular Degeneration. *Ophthalmol Retina.* 2024.11;
4. Shymaa K Hady, Shiqi Xie, Taiju Ito, Kengo Uramoto, Koju Kamoi, Kyoko Ohno-Matsui. Morphology and incidence of drusen-like deposits in peripheral retina of eyes with high myopia. *Eye (Lond).* 2024.11;
5. Tomonari Takahashi, Koju Kamoi, Kyoko Ohno-Matsui. Retinopathy After Epiretinal Membrane Peeling. *JAMA Ophthalmol.* 2024.11; 142(11); e244290
6. Koju Kamoi, Kaoru Uchimar, Yasuhito Nannya, Arinobu Tojo, Toshiki Watanabe, Kyoko Ohno-Matsui. Sexual transmission of HTLV-1 resulting in uveitis with short-term latency and low proviral load. *J Med Virol.* 2024.10; 96(10); e70000

7. Yuan Zong, Koju Kamoi, Miki Miyagaki, Jing Zhang , Mingming Yang, Yaru Zou, Kyoko Ohno-Matsui. Applications of Biological Therapy for Latent Infections: Benefits and Risks *Int J Mol Sci.* 2024.08; 25(17); 9184
8. Kangjie Kong, Jingwen Jiang, Peiyuan Wang, Yunhe Song, Fengbin Lin, Fei Li, Xinbo Gao, Xiaoyi Liu, Ling Jin, Zhenyu Wang, Yuhong Liu, Meiling Chen, Kyoko Ohno-Matsui, Jost B Jonas, Shida Chen, Xiulan Zhang, . Progression Patterns and Risk Factors of Axial Elongation in Young Adults With Nonpathologic High Myopia: Three-Year Large Longitudinal Cohort Follow-Up. *Am J Ophthalmol.* 2024.08; 267; 293-303
9. Shintaro Horie, Yudai Suzuki, Takeshi Yoshida, Kyoko Ohno-Matsui. Blue Wavelength of Scanning Laser Ophthalmoscope Potentially Detects Arteriosclerotic Lesions in Diabetic Retinopathy. *Diagnostics (Basel).* 2024.07; 14(13);
10. Jingwen Jiang, Tingting Lin, Fengbin Lin, Kangjie Kong, Peiyuan Wang, Yunhe Song, Fengqi Zhou, Zhenyu Wang, Ling Jin, Yuhong Liu, Xinbo Gao, Jinmei Chen, Meiling Chen, Dennis S C Lam, Jost B Jonas, Shida Chen, Xiulan Zhang, Glaucoma Suspects with High Myopia Study Group. Effect of intraocular pressure reduction on progressive high myopia (PHM study): study protocol of a randomised controlled trial. *BMJ Open.* 2024.06; 14(6); e084068
11. Jing Zhang, Koju Kamoi, Yuan Zong, Mingming Yang, Yaru Zou, Kyoko Ohno-Matsui. Evaluating tocilizumab safety and immunomodulatory effects under ocular HTLV-1 infection in vitro. *Int Immunopharmacol.* 2024.06; 137; 112460
12. Tetsuya Muto, Masaaki Sakamoto, Shigeki Machida, Shinichiro Imaizumi, Yoshinobu Hamada, Koju Kamoi. Case Report: Branch retinal vein occlusion following COVID-19 vaccination and SARS-CoV-2 infection while taking oral contraceptives F1000Research. 2024.05; 13; 240
13. Takuhei Nomura, Takeshi Yoshida, Taiju Ito, Kyoko Ohno-Matsui. Temporal Protrusion of the Optic Disc Implicated in Central Visual Field Abnormalities in High Myopia: Two Case Reports. *Case Rep Ophthalmol.* 2024.04; 15(1); 335-342
14. Shih-Wen Wang, Tae Igarashi-Yokoi, Shiho Mochida, Kaoru Fujinami, Kyoko Ohno-Matsui. PREVALENCE AND CLINICAL FEATURES OF RADIAL FUNDUS AUTOFLUORESCENCE IN HIGH MYOPIC WOMEN. *Retina.* 2024.03; 44(3); 446-454
15. Hongshuang Lu, Changyu Chen, Jianping Xiong, Yining Wang, Ziye Wang, Muka Moriyama, Koju Kamoi, Kengo Uramoto, Tomonari Takahashi, Takeshi Yoshida, Kyoko Ohno-Matsui. LONGITUDINAL CHANGES OF POSTERIOR VORTEX VEINS IN HIGHLY MYOPIC EYES DETERMINED BY RETROSPECTIVE ANALYSES OF INDOCYANINE GREEN ANGIOGRAMS. *Retina.* 2024.03; 44(3); 438-445
16. Kyoko Ohno-Matsui, Tae Igarashi-Yokoi, Takeshi Azuma, Keigo Sugisawa, Jianping Xiong, Tomonari Takahashi, Kengo Uramoto, Koju Kamoi, Michiaki Okamoto, Suchandra Banerjee, Masahiro Yamanari. Polarization-Sensitive OCT Imaging of Scleral Abnormalities in Eyes With High Myopia and Dome-Shaped Macula. *JAMA Ophthalmol.* 2024.03;
17. Mingming Yang, Koju Kamoi, Yuan Zong, Jing Zhang, Yaru Zou, Kyoko Ohno-Matsui. Ripasudil as a Potential Therapeutic Agent in Treating Secondary Glaucoma in HTLV-1-Uveitis: An In Vitro Analysis. *Int J Mol Sci.* 2024.03; 25(6);
18. HONGSHUANG LU, MD, CHANGYU CHEN, MD, JIANPING XIONG, MD, YINING WANG, MD, ZIYE WANG, MD, MUKA MORIYAMA, MD, KOJU KAMOI, MD, PHD, KENGO URAMOTO, MD, TOMONARI TAKAHASHI, MD, TAKESHI YOSHIDA, MD, PHD, KYOKO OHNO-MATSUI, MD, PHD. LONGITUDINAL CHANGES OF POSTERIOR VORTEX VEINS IN HIGHLY MYOPIC EYES DETERMINED BY RETROSPECTIVE ANALYSES OF INDOCYANINE GREEN ANGIOGRAMS *Retina.* 2024.03; 44(3); 438-445
19. Koju Kamoi, Kyoko Ohno-Matsui. Long Vax in the Eye: Long Post-COVID Vaccination Syndrome Presenting with Frosted Branch Angiitis. *Diseases.* 2024.02; 12(2);
20. Ran Liu, Meng Xuan, De-Cai Wang, Ou Xiao, Xin-Xing Guo, Jian Zhang, Wei Wang, Monica Jong, Padmaja Sankaridurg, Kyoko Ohno-Matsui, Qiu-Xia Yin, Ming-Guang He, Zhi-Xi Li. Using choroidal thickness to detect myopic macular degeneration. *Int J Ophthalmol.* 2024.02; 17(2); 317-323

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22. Hiroyuki Takahashi, Kengo Uramoto, Kyoko Ohno-Matsui. NEODYMIUM-DOPED YTTRIUM ALUMINUM GARNET LASER ABLATION OF INTERNAL LIMITING MEMBRANE TO TREAT MYOPIC MACULAR RETINOSCHISIS: CASE SERIES. *Retin Cases Brief Rep.* 2024.01; 18(1); 24-28
23. Izumi Hashimoto, Hiroshi Takase, Satoru Kase, Yuko Iwasaki, Daisuke Kobayashi, Kyoko Ohno-Matsui. CLINICOPATHOLOGICAL ANALYSIS OF SECONDARY RETINAL VASOPROLIFERATIVE TUMOR/REACTIVE RETINAL ASTROCYTIC TUMOR SUCCESSFULLY TREATED BY ENDORESECTION. *Retin Cases Brief Rep.* 2024.01; 18(1); 106-111
24. Hitomi Saito, Takashi Ueta, Makoto Araie, Nobuko Enomoto, Mitsuki Kambayashi, Hiroshi Murata, Tsutomu Kikawa, Kazuhisa Sugiyama, Tomomi Higashide, Atsuya Miki, Aiko Iwase, Goji Tomita, Toru Nakazawa, Makoto Aihara, Kyoko Ohno-Matsui, Tae-Woo Kim, Christopher Kai Shun Leung, Linda M Zangwill, Robert N Weinreb. Association of Bergmeister Papilla and Deep Optic Nerve Head Structures With Prelaminar Schisis of Normal and Glaucomatous Eyes. *Am J Ophthalmol.* 2024.01; 257; 91-102
25. Kyoko Ohno-Matsui. Insights Into Childhood Myopic Maculopathy. *JAMA Ophthalmol.* 2024.01;
26. Changyu Chen, Ziye Wang, Shiqi Xie, Hongshuang Lu, Yining Wang, Jianping Xiong, Noriko Nakao, Tae Igarashi-Yokoi, Takeshi Yoshida, Kengo Uramoto, Tomonari Takahashi, Keigo Sugisawa, Koju Kamoi, Kyoko Ohno-Matsui. Characteristics and Prevalence of Staphyloma Edges at Different Ages in Highly Myopic Eyes. *Invest Ophthalmol Vis Sci.* 2024.01; 65(1); 32
27. Changyu Chen, Ziye Wang, Shiqi Xie, Hongshuang Lu, Yining Wang, Jianping Xiong, Noriko Nakao, Tae Igarashi-Yokoi, Takeshi Yoshida, Kengo Uramoto, Tomonari Takahashi, Keigo Sugisawa, Koju Kamoi, and Kyoko Ohno-Matsui. Characteristics and Prevalence of Staphyloma Edges at Different Ages in Highly Myopic Eyes Investigative Ophthalmology & Visual Science. 2024.01; 65(1); 32
28. Tetsuya Muto, Masaaki Sakamoto, Shinichiro Imaizumi, Koju Kamoi. Reactivation of previously controlled Vogt-Koyanagi-Harada disease more than 46 years following COVID-19 vaccination: a case study. *J Int Med Res.* 2024.01; 52(1); 3000605231221081
29. Mark A Bullimore, Ian G Morgan, Kyoko Ohno-Matsui, Seang-Mei Saw. As Far as the Eye Can See: Importance of Myopia as a Pressing Public Health Need. *Ophthalmol Sci.* 2024; 4(1); 100438
30. Yifan Zhang, Jiaqing Zhang, Aixia Jin, Xuhua Tan, Kyoko Ohno-Matsui, Xiaotong Han, Lixia Luo, Yizhi Liu. Interocular difference in crystalline lens morphology in children and adolescents with unilateral high myopia. *Asia Pac J Ophthalmol (Phila).* 2024; 13(1); 100001
31. Keigo Sugisawa, Hiroyuki Takahashi, Masahiro Yamanari, Michiaki Okamoto, Tae Igarashi-Yokoi, Takeshi Azuma, Takayuki Miki, Hongshuang Lu, Yijin Wu, Jianping Xiong, Kyoko Ohno-Matsui. Visualization of the scleral structure changes at various stages of eyes with myopic maculopathy using polarization-sensitive OCT. *Asia Pac J Ophthalmol (Phila).* 2024; 13(6); 100117

[Books etc]

1. Kyoko Ohno-Matsui. Optical Coherence Tomography Angiography of the Eye SECOND EDITION. Kugler Publications, 2024.01 (ISBN : 978-90-6299-295-9)

[Misc]

1. Miki Miyagaki, Yuan Zong, Mingming Yang, Jing Zhang, Yaru Zou, Kyoko Ohno-Matsui, Koju Kamoi. Biology, Clinical Manifestations, Diagnostics, and Therapy. *Pathogens.* 2024.10; 13(10); 898
2. Yuan Zong, Miki Miyagaki, Mingming Yang, Jing Zhang, Yaru Zou, Kyoko Ohno-Matsui, Koju Kamoi. Ophthalmic Use of Targeted Biologics in the Management of Intraocular Diseases: Current and Emerging Therapies. *Antibodies (Basel).* 2024.10; 13(4); 86

3. Jing Zhang, Koju Kamoi, Yuan Zong, Mingming Yang, Yaru Zou, Miki Miyagaki, Kyoko Ohno-Matsui. Cytomegalovirus Retinitis: Clinical Manifestations, Diagnosis and Treatment. *Viruses*. 2024.09; 16(9); 1427
4. Yuan Zong, Koju Kamoi, Miki Miyagaki, Jing Zhang, Mingming Yang, Yaru Zou, Kyoko Ohno-Matsui. Applications of Biological Therapy for Latent Infections: Benefits and Risks. *Int J Mol Sci*. 2024.08; 25(17); 9184
5. Helena M A Feenstra, Elon H C van Dijk, Chui Ming Gemmy Cheung, Kyoko Ohno-Matsui, Timothy Y Y Lai, Hideki Koizumi, Michael Larsen, Giuseppe Querques, Susan M Downes, Suzanne Yzer, Mark P Breazzano, Yousif Subhi, Ramin Tadayoni, Siegfried G Priglinger, Laurenz J B Pauleikhoff, Clemens A K Lange, Anat Loewenstein, Rosalie M H Diederer, Reinier O Schlingemann, Carel B Hoyng, Jay K Chhablani, Frank G Holz, Sobha Sivaprasad, Andrew J Lotery, Lawrence A Yannuzzi, K Bailey Freund, Camiel J F Boon. Central serous chorioretinopathy: An evidence-based treatment guideline. *Prog Retin Eye Res*. 2024.07; 101236
6. Yaru Zou, Koju Kamoi, Yuan Zong, Jing Zhang, Mingming Yang, Kyoko Ohno-Matsui. Vaccines and the Eye: Current Understanding of the Molecular and Immunological Effects of Vaccination on the Eye. *Int J Mol Sci*. 2024.04; 25(9); 4755
7. Xiulan Zhang, Jingwen Jiang, Kangjie Kong, Fei Li, Shida Chen, Peiyuan Wang, Yunhe Song, Fengbin Lin, Timothy P H Lin, Linda M Zangwill, Kyoko Ohno-Matsui, Jost B Jonas, Robert N Weinreb, Dennis S C Lam, . Optic neuropathy in high myopia: Glaucoma or high myopia or both? *Prog Retin Eye Res*. 2024.01; 99; 101246
8. Kangjie Kong, Xiaoyi Liu, Zige Fang, Jingwen Jiang, Jiaxuan Jiang, Deming Wang, Zefeng Yang, Fengqi Zhou, Evan M Chen, Jill Liang, Yunhe Song, Fengbin Lin, Kyoko Ohno-Matsui, Jost B Jonas, Ying Han, Fei Li, Xiulan Zhang, . Axial elongation in nonpathologic high myopia: Ocular structural changes and glaucoma diagnostic challenges. *Asia Pac J Ophthalmol (Phila)*. 2024; 13(6); 100123

[Conference Activities & Talks]

1. Ohno-Matsui K. Pathologic Myopia. Beijing Eye Research Institute Distinguished Lecture 2024.12.09 Beijing, China
2. Ohno-Matsui K. Scleral imaging of Pathologic Myopia. APVRS2024 2024.11.22 Singapore
3. Yaru Zou, Koju Kamoi, Yuan Zong, Jing Zhang, Mingming Yang, Miki Miyagaki, Kyoko Ohno-Matsui. 東京における高齢者の HTLV-1 ぶどう膜炎の疫学. 第 10 回 日本 HTLV-1 学会学術集会 2024.11.09 東京都千代田区 (一橋講堂)
4. Yang M, Kamoi K, Zong Y, Zhang J, Zou Y, Miyagaki M, Ohno-Matsui K. Co-infection and Systematic Disease in Ophthalmic Patients with Retroviral Infection. 第 10 回 日本 HTLV-1 学会学術集会 2024.11.09
5. Wang Z, Chen C, Wu Y, Lu H, Wang Y, Xiong J, Tanaka T, Nagata Y, Ohno-Matsui K.. 全エクソームシーケンシングを用いた病的近視における後部ぶどう腫の遺伝子解析. 第 8 回日本近視網膜研究会 2024.11.09 web
6. Yang M, Kamoi K, Zong Y, Zhang J, Zou Y, Miyagaki M, Ohno-Matsui K.. Co-infection and Systematic Disease in Ophthalmic Patients with Retroviral Infection.. 第 10 回日本 HTLV-1 学会学術講演会 2024.11.08
7. Zou Y, Kamoi K, Zong Y, Zhang J, Yang M, Miyagaki M, Ohno Matsui K. 東京における高齢者の HTLV-1 ぶどう膜炎の疫学. . 第 10 回日本 HTLV-1 学会学術講演会 2024.11.08
8. Ohno-Matsui K. Insights into pathologic myopia: Unraveling the enigma of posterior staphyloma. 2024 Form and Function in Ocular Disease Symposium 2024.11.02 Halifax, Canada
9. Ohno-Matsui K. Pathologic myopia. Asia Pacific Myopia Symposium 2024.10.27 Seoul, Korea
10. Ohno-Matsui K. Polarization-Sensitive Imaging of Myopia. AAO 2024 2024.10.20
11. Ohno-Matsui K. Complications of Pathologic Myopia. AAO 2024 2024.10.20
12. Ohno-Matsui K. Polarized-Sensitive OCT to Visualize the Course of Posterior Scleral Collagen Fibers in Various Pathologies. AAO 2024 2024.10.19 Chicago, USA

13. Ohno-Matsui K. Polarization-Sensitive OCT of Sclera in Myopes and Dome-Shaped Macula. 2024 TMS Annual Meeting 2024.09.28 台湾、台北
14. Ohno-Matsui K. Scleral changes of high myopia viewed by OCT. ヨーロッパ網膜学会 (EURETINA) 2024.09.22 Barcelona, Spain
15. Ohno-Matsui K. Choroid and RPE in high myopia. ヨーロッパ網膜学会 (EURETINA) 2024.09.22 Barcelona, Spain
16. Ohno-Matsui K. Pathologic Myopia: New Horizons through Cutting-Edge Imaging Technologies. ヨーロッパ網膜学会 (EURETINA) 2024.09.19 Barcelona, Spain
17. Ohno-Matsui K. Multimodal Imaging in pathologic myopia. ヨーロッパ網膜学会 (EURETINA) 2024.09.19 Barcelona, Spain
18. Ohno-Matsui K. Brien Holden Award Lecture Pathologic Myopia. 第 22 回国際コンタクトレンズ学会 2024.08.19 Halifax, Canada
19. Nakao N, Igarashi-Yokoi T, Takahashi H, Xie S, Shinohara K, Ohno-Matsui K. Quantitative Evaluations of Posterior Staphylomas in Highly Myopic Eyes by Ultra-Widefield Optical Coherence Tomography. 第 38 回東京医科歯科大学眼科学教室同門会集談会プログラム 2024.07.15 東京都文京区 (東京医科歯科大学、web)
20. Two types of staphyloma edges and their progression. 2024.05.19
21. Polarization-sensitive optical coherence tomography im aging of scleral ridge. 2024.05.19
22. A deep learning model to screen posterior staphylomas in high myopia. 2024.05.19
23. Changyu Chen, Hongshuang Lu, Jianping Xiong, Yining Wang, Ziyi Wang, Yijin Wu, Noriko Nakao, Keigo Sugisawa, Hiroyuki Takahashi, Tae Igarashi-Yokoi, Koju Kamoi, Kyoko Ohno-Matsui. Two types of staphyloma edges and their progression. 第 6 回日本近視学会総会 2024.05.18 東京都千代田区 (ステーションコンファレンス東京)
24. ZIYE WANG. Observations of Scleral fibers in Eyes with High Myopia andDome-ShapedMacula. The 6th Annual Meeting of Japan Myopia Society 2024.05.18
25. Colocalization of posterior vortex vein exit and short PCA entry. 2024.05.18
26. Yuto Shiotani, Takeshi Yoshida, Takuhei Nomura, Taiju Itou, Sota Yoshimoto, Motohisa Ohno, Shintaro Yasuda, Keigo Sugisawa, Yuka Onishi, Kyoko Ohno-Matsui. Short term surgical outcomes of iStent Inject W Implantation in open angle glaucoma eyes with high myopia. ARVO 2024 Annual Meeting 2024.05.05 Seattle, USA
27. Masahiro Yamanari, Tae Igarashi, Takeshi Azuma, Keigo Sugisawa, Jianping Xiong, Tomonari Takahashi, Kengo Uramoto, Koju Kamoi, Kyoko Ohno-Matsui. Visiblity of the sclera in highly myopic eyes measured by polarization-sensitive optical coherence tomography. ARVO 2024 Annual Meeting 2024.05.05 Seattle, USA
28. Hiroyuki Takahashi, Yunchan Hwang, Jungeun Won, Muhammad U. Jamil, Antonio Yaghy, Michelle C. Liang, Caroline B. Bauman, Andre J. Witkin, Kyoko Ohno-Matsui, Jay S. Duker, James G. Fujimoto, Nadia K. Waheed. Blood flow speed of retinal microaneurysms in eyes with diabetic retinopathy quantified by high speed OCTA using variable interscan time analysis. ARVO Imaging in the Eye Conference 2024.05.04 Seattle, USA
29. Complex hemodynamics of posterior vortex veins in highly myopic eyes. 2024.04.20
30. The risk factor for staphyloma development in high myopia. 2024.04.19
31. Chen Changyu, Lu Hongshuang, Xie Shiqi, Wang Yining, Wang Ziyi, Xiong Jianping, Wu Yijin, 五十嵐多恵, 中尾 紀子, 吉田 武史, 鴨居 功樹, 大野 京子. 強度近視におけるぶどう腫発生の危険因子 (The Risk Factor for Staphyloma Development in High Myopia). 日本眼科学会雑誌 2024.03.01
32. Kyoko Ohno-Matsui. Artificial intelligence in diagnosing and managing eyes with high myopia and pathologic myopia (Symposium implementing ocular imaging technologies into clinical practice). 39th APAO 2024.02.23 Bali, Indonesia

33. Kyoko Ohno-Matsui. Posterior staphyloma (Symposium pathologic myopia and its consequences). 39th APAO 2024.02.22 Bali, Indonesia
34. Kyoko Ohno-Matsui, Tae Igarashi-Yokoi, Masahiro Yamanari. Polarization-sensitive imaging of scleral abnormalities in myopia and dome-shaped macula. The Macula Society 47th Meeting 2024.02.08 Palm Springs, USA
35. Yaru Zou, Koju Kamoi, Yuan Zong, Jing Zhang, Mingming Yang, and Kyoko Ohno-Matsui. In vitro Evaluation of the Effects of Nicotine for the Eye Under HTLV-1 Infection Status. 第 16 回 CBIR/ONSA/大学院セミナー共催 若手インスパイアシンポジウム 2024.02.08
36. Ohno-Matsui K. Pathologic Myopia. 1st Symposium in Commemoration of the Founding of Korean Myopia Society 2024.01.27 Soul, Korea
37. Ohno-Matsui K. Richard Fan Distinguished Lecture Paradigm Shifts in Myopia Management from Kids to Elderly. 37TH Singapore-Malaysia Joint Meeting in Ophthalmology 2024.01.20 Singapore
38. Ohno-Matsui K. New treatment in MMD Shifting Perspectives: Exploring New Paradigms in Myopia Management. 37TH Singapore-Malaysia Joint Meeting in Ophthalmology 2024.01.19 Singapore
39. Ohno-Matsui K. Long-Term Changes of Posterior Vortex Veins in Highly Myopic Eyes. 48th Atlantic Coast Retina Club (ACRC) 2024.01.06 New York, USA
40. Ohno-Matsui K. ACRC Case Presentations Graves' Disease and Blurry Vision. 48th Atlantic Coast Retina Club (ACRC) 2024.01.05 New York, USA

[Awards & Honors]

1. 2024 Richard Fan distinguished lecture award, Singapore Ophthalmological Society, 2024.01
2. The Power List 2024, The Ophthalmologist, 2024.04
3. Brien Holden Lecture, International Society for Contact Lens Research, 2024.08
4. EURETINA lecture, European Society of Retina Specialists, 2024.09
5. Beijing Eye Institute Distinguished Lecture, Tsinghua University, 2024.12

Otorhinolaryngology

Professor: Takeshi Tsutsumi

Associate Professor: Yoshiyuki Kawashima

Junior Associate Professor: Taku Ito, Keiji Honda

Assistant Professor: Ayako Nishio, Takamori Takeda, Ayako Maruyama, Natsuki Aoki

Hospital Staff: Yoshimaru Mizoguchi

Graduate Student: Ayako Maruyama, Natsuki Aoki, Tomoki Ooka, Kaori Mori, Yoshimaru Mizoguchi

(1) Research

- 1) Deafness gene analysis
- 2) Neurophysiological study of hearing
- 3) Histoanatomical study of ear, nose, throat, head, and neck
- 4) Eye movement analysis in patients with dizziness
- 5) Clinical study of treatment and prognosis in patients with allergic rhinitis, acute and chronic sinusitis, and benign tumors
- 6) Treatment of tinnitus
- 7) Treatment using endoscope
- 8) Biomarker of external ear canal carcinoma

(2) Lectures & Courses

Pre-graduate clinical education

Clinical systematic lecture covers anatomy, a general idea of diseases, their pathological conditions and treatments in the field of otorhinolaryngology. Clinical clerkship I (general diagnostic training) provides instruction in the diagnosis and testing techniques of the otorhinolaryngological field; clinical clerkship II (clinical training) provides detailed explanations of disease mechanisms, training in the performance of examinations, and clinical responsibilities involving both inpatient and outpatient care. Clinical clerkship III provides advanced training beyond the scope of clinical clerkship II. In particular, students develop an advanced understanding of otorhinolaryngological diseases by conducting outpatient procedures (including taking histories, visual inspection, and palpation), and gaining practical experience in assessment and diagnosis of patients' conditions. Furthermore, in the clinical clerkship III, students also attend a "micro-conference" on teaching. Finally, students are assigned to patients throughout their treatment, consistently dealing with the same individuals before, during, and after surgery; this allows the students to become familiar with the course of clinical care.

(3) Clinical Performances

Otorhinolaryngology clinic provides full examinations and treatment for diseases in ear, nose, throat, head, and neck, including dizziness, sudden deafness, facial palsy, infectious disease and benign as well as malignant disease in the otorhinolaryngeal area. We have performed the first implementation of bone anchored hearing aid implant in Japan and since then we have experienced many patients for this surgery. We also have performed surgery for patients with malignant disease as well as skull base lesions in collaboration with the Department of

the Head and Neck Surgery. Our outpatient clinic includes general ear, nose and throat clinic as well as allergy, sinusitis, dizziness, otitis media, tumor, deafness, and tinnitus clinic.

(4) Publications

[Original Articles]

1. Ito T, Fujikawa T, Takeda T, Mizoguchi Y, Okubo K, Onogi S, Nakajima Y, Tsutsumi T.. Integration of augmented reality in temporal bone and skull base surgeries. *Sensors*. 2024.11; 24; 7063
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3. Aoki Natsuki, Yamazaki Ayame, Honda Keiji, Tsutsumi Takeshi. Ocular torsion induced by Coriolis stimulation(タイトル和訳中) *Auris·Nasus·Larynx*. 2024.08; 51(4); 738-746
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11. Takeda T, Tajino J, Merfeld DM.. Frequency dependence of human thresholds: both perceptual and vestibuloocular reflex thresholds. *J Neurophysiol*. 2024.01; 131; 1143-1155
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[Conference Activities & Talks]

1. Mohri Kaori, Fujikawa Taro, Wasano Koichiro, Sawada Mitsutaka, Kawashima Yoshiyuki, Ito Taku, Tsutsumi Takeshi. 炎症性腸疾患患者における難聴の予後因子 (Prognostic Factors of Hearing Loss in Patients with Inflammatory Bowel Diseases). 日本耳鼻咽喉科頭頸部外科学会会報 2024.04.01
2. Mohri Kaori, Fujikawa Taro, Wasano Koichiro, Sawada Mitsutaka, Kawashima Yoshiyuki, Ito Taku, Tsutsumi Takeshi. 炎症性腸疾患患者における難聴の予後因子 (Prognostic Factors of Hearing Loss in Patients with Inflammatory Bowel Diseases). 日本耳鼻咽喉科頭頸部外科学会会報 2024.04.01

Department of Psychiatry and Behavioral Sciences

Professor, Chair

Hidehiko TAKAHASHI

Professor (forensic psychiatry)

Takayuki OKADA

Associate Professor

Genichi SUGIHARA

Associate Professor (liaison psychiatry and psycho-oncology)

Takashi TAKEUCHI

Associate Professor (Health Administration Center)

Kumiko ANDO

Associate Professor (tenure track)

Hiroki SHIWAKU

Associate Professor (specially appointed; joint research: cyber psychiatry)

Daisuke JITOKU

Junior Associate Professor

Junya FUJINO, Shunsuke TAKAGI

Junior Associate Professor (carrier up)

Miho MIYAJIMA

Assistant Professor

Takehiro TAMURA, Hironobu NAKAMURA, Yoshionori SASAKI, Yuuki SHIDEI, Takashi MARUO

Assistant Professor (specially appointed; joint research: cyber psychiatry)

Nanase KOBAYASHI

Assistant Professor (specially appointed)

Takehisa HANDA

Senior Resident

Reina MORITA, Haruka NISHIOKA, Keita KANAZAWA, Kyoshiro ISHIDA, Koki ONDA,

Takumi YAWATA, Koichi TABATA

Resident

Koki ONDA, Kosei KAINUMA, Yosuke MATSUNO, Kotoe ISOBE, Mariko IMADA, Sakura MURATA,

Tomohiro MORI, Yukari NARITA, Kyoshiro ISHIDA, Yuki TAKAHASHI, Keigo NAKATANI,

Tsutomu KAWAMURA, Masaki YOKOTA, Kento NAKAYAMA, Yuto YAKUSHIJIN, Woong-Seo GU,

Soma URUSHIDANI, Daiki TSUCHIYA, Kaori IWAMI, Masato WATANABE, Shuhei HAMAKI,

Ryosuke IKEDA, Kanako KURIHARA, Tomomasa IBUKI, Naoya SUGAWARA

Clinical Psychologist

Kazunori MURAKAMI, Ryoko MOCHIMATSU, Ayako KUSANO, Aki HATTORI, Sayuri YAMAZAKI,

Hiotomi SATO, Anna KIKUCHI, Haruka SUZUKI, Koji AOYAMA, Yoko KOMINE, Hina ISHIDA,

Azusa NAKASHIMA, Chihaya SAKURADA

Psychiatric Social Worker

Yoshifumi KANEKO, Akinori MONTA, Mai KUDO, Masae NAKANISHI, Noriko NUMAGUCHI

Occupational Therapist

Yui SATO

Project Researcher

Jongyun PARK, Rieko KUBO, Kazuaki AKAMATSU

Graduate Students (Doctoral Course)

Masaki OHYA, Hironobu NAKAMURA, Marino KAWAMOTO, Nanase KOBAYASHI,

Kazushige HIRAKAWA,

Takao KANAI, Yuuki SHIDEI, Mariko SUNAHARA, Kouichi TABATA, Takashi MARUO, Kentaro NAGAO,

Shiori NOGUCHI, Yoritsugu IIDA, Chenyu QIAN, Masaaki SHIMIZU, Masanori ICHIHASHI,

Yukiko MOTOKAWA, Saori TOYODA, Yukiaki KOIZUMI, Shoko OKUZUMI, Ryuta GOSHIMA,

Yusei YAMAGUCHI, Yuki YAMAMOTO, Mao OTAKE, Mitsuhiro UEDA, Shuhei ABE, Akiho NISHIMURA,

Yu KURIHARA, Seiya SAITO, Shintaro WATANABE, Ruofei JI, Anping SONG, Adila ABULIZI, Sufang TANG,

Yui YAN, Ikuko ARAKAWA, Takehiro IBARAKI, Marika OKAMURA, Wataru NAKAGAWA, Saiko KUBO,

Sayaka OZAKA, Hiroyuki TANAKA, Yukari BANDO, Hitomi MATSUI

(1) Outline

The theme of our research is to investigate the pathogenesis of psychiatric disorders such as schizophrenia, mood disorders, and addiction based on brain science, to develop objective diagnostic methods and novel treatments and establish psychosocial therapeutic approaches based on objective and scientific techniques and evidence. Our investigation focuses on the pathophysiology of psychiatric disorders using functional magnetic resonance imaging, nuclear medicine, and other modalities. We are also performing research to investigate the role of neurofeedback as a therapeutic strategy for mental disorders. Brain imaging studies are the most interesting and well-skilled lesion. Our study involves processing a large volume of brain data using machine learning and computational psychiatry to explore prospects for new discoveries and to predict pathological conditions through modeling. We are exploring neurofeedback as a novel therapeutic approach for psychiatric diseases and the role of artificial intelligence (AI) and computational psychiatry. Moreover, we are actively designing studies that can establish evidence-based approaches to address issues observed in routine clinical practice.

(2) Research

1) Studies in biological psychiatry

(i) Molecular and cellular studies to clarify the etiology and conditions of neuropsychiatric diseases We have performed translational and reverse translational research together with molecular, cellular, and behavioral analyses using animal models and clinical samples of DNA, serum, cerebrospinal fluid, and postmortem brain tissue obtained from patients with psychiatric disorders.

(ii) Study of sleep stages and behavior in neuropsychiatric diseases

Using an automatic analysis device (polysomnography), a study is being performed to investigate sleep stages and behavior in patients with various psychiatric disorders.

(iii) Neuroimaging in psychiatric disorders

We are actively incorporating AI technology in our research on brain structure and function and molecular imaging using magnetic resonance imaging and positron emission tomography to elucidate the pathogenesis of mental disorders, identify subtypes, and predict treatment response.

(iv) We are performing an observational study to retrospectively analyze information regarding electroconvulsive therapy (ECT). These data are submitted as performance reports from multi-institutional “ECT Training Facilities” accredited by the Japanese Society of General Hospital Psychiatry. Despite its long history in psychiatric clinical practice, the actual implementation of ECT in daily clinical practice remains unclear. This study will clarify the status of ECT in real-world Japanese medical facilities.

2) Psychopathological studies

Based on a psychotherapeutic approach, we are performing psychological studies of neuropsychiatric diseases with regard to phenomenology, anthropology, and linguistics. Other research activities include a review of fundamental psychiatric concepts and a basic study to establish a diagnostic classification of psychiatric disorders, which are important issues currently being widely recognized in clinical practice. In addition to studies on endogenous psychosis observed in schizophrenia and bipolar disorder, we are involved in psychoanalytical studies to better understand and develop psychotherapeutic modalities for neurosis and borderline personality disorder, which have gained increasing attention in recent times.

3) Research on liaison psychiatry and psycho-oncology

(i) Liaison psychiatry

In collaboration with dental hospitals, we are involved in research on the prevention of postoperative delirium. We are also performing research on delirium prevention in patients admitted to the physical department. We intend to perform research on perinatal mental health in the future.

(ii) Psycho-oncology

The concept of cancer disease is an important factor in the process by which a child accepts and adapts to cancer in his/her family. Therefore, we are analyzing textbooks used in elementary and junior high schools that could affect the development of the concept of cancer. Based on these data, from the perspective of psycho-oncology, we are attempting to prepare user-friendly home-based educational materials for parents to complement educational material available at school. We will verify the effects of these tools once they are operational.

4) Forensic psychiatry research

Our research includes projects for the development of forensic psychiatric evaluation methodology, risk

assessment and management in forensic settings, and an investigation of the associations and mechanisms of criminal behavior. Our research encompasses a wide range of topics including the development of a method to assess the capacity to act for appraisal in the adult guardianship system.

5) Research on cyber-psychiatry

Research on behavioral addictions such as gaming disorder and smartphone/internet dependency is being conducted in collaboration with KDDI Corporation and KDDI Research, Inc. For patients with behavioral addictions like gaming disorder and smartphone/internet dependency, we are conducting behavioral analysis based on log apps, comparing behavioral logs with medical information to advance the understanding of the pathophysiology of behavioral addictions. Furthermore, based on these insights, we are advancing clinical research aimed at the practical application as diagnostic and treatment support apps for patients with gaming disorder.

(3) Education

Following the 2-year period of mandatory clinical training, during the second term of training, they will acquire knowledge and clinical experience necessary for neuropsychiatrists and will undergo practical training at affiliated medical facilities to qualify as psychiatrists. Undergraduate education, which emphasizes clinical clerkship training after a systematic series of lecture courses and seminar-based classes, is designed to develop students' problem-solving skills and improve their motivation to learn neuropsychiatry, with support from external facilities.

(4) Lectures & Courses

During the first term (two years) of postgraduate training, residents will learn basic laboratory procedures and diagnostic techniques, psychotherapy and drug treatment, laws and regulations related to clinical practice and will acquire other general knowledge, all of which are essential for a comprehensive understanding of the biopsychosocial approaches to neuropsychiatric diseases.

(5) Clinical Services & Other Works

Clinical practice

Among all new outpatients who visit our department, based on the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10), approximately 30% are diagnosed with "mood disorders" (F3), followed by "neurotic, stress-related, and somatoform disorders" (F4) and "schizophrenia, schizophrenic and paranoid disorders" (F2).

We are also actively involved in consultation and liaison psychiatry for inpatients from other departments. Patients with senile dementia, child and adolescent psychiatric disorders, substance, dependence, and neurosis, necessitating intensive psychotherapy are often referred to related and advanced facilities for specialized treatment. This facility is the psychiatric department of a general hospital and is involved with university education and training; therefore, most inpatients are diagnosed as F2, followed by F4 and F3 categories per ICD-10 codes. We also provide care and treatment for patients with sleep rhythm and neurological disorders, including epilepsy and senile dementia. In addition to drug treatment, we have introduced and provided modified ECT for inpatients and individual and group psychotherapy for patients admitted to our psychiatric ward, clinic, and day care center in close collaboration with rehabilitation facilities in the community. The day care team consists of a physician and two nurses, as well as a psychosocial worker or clinical psychologist. Day care (partial hospitalization) is a transitional element between inpatient and outpatient care and is indicated in a wide range of psychiatric disorders, such as schizophrenia, depression, bipolar disorder, adjustment disorder, and personality disorders.

Each member has its own aim, and the team provides care utilizing different types of frameworks. Our day care team places emphasis on the potentiality of the group and in our opinion, the collective efforts of the group could contribute to the therapeutic effect. This experience promotes good communication skills in patients and readaptation to social situations and social reintegration become easier.

(6) Clinical Performances

Per our policy, patients with schizophrenia are treated with clozapine, which is approved for the treatment of refractory schizophrenia. Following effective coordination with the Dental Hospital, we currently treat patients with oral pain or dysesthesia; this collaboration is a characteristic of our university. Our faculty includes board-certified specialists to treat patients who present with sleep disorders and epilepsy. In 2014, we introduced a psychoeducational program for patients with bipolar disorder, which focuses on relapse prevention. Additionally, we ensure close cooperation with the staff for an increasing number of liaison activities implemented for delirium prevention (particularly in surgical wards), interventions for patients with suicide attempts in the emergency room, and mental support for peripartum patients.

(7) Publications**[Original Articles]**

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15. Comprehensive evaluation of pipelines for diagnostic biomarkers of major depressive disorder using multi-site resting-state fMRI datasets 2024.03;
16. Amano, K; Koshimoto, S; Arakawa, S; Oyamada, S; Ishiki, H; Morita, T; Takeuchi, T; Satomi, E; Mori, N. Factors associated with multimodal care practices for cancer cachexia among registered dietitians SUPPORTIVE CARE IN CANCER. 2024.02; 32(4); 213
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1. Takashi Takeuchi. What can we do as JSJHP? *Japanese Journal of General Hospital Psychiatry*. 2024.05; 36(2); 121-123
1. Okito Yamashita, Ayumu Yamashita, Yuji Takahara, Yuki Sakai, Yasumasa Okamoto, Go Okada, Masahiro Takamura, Motoaki Nakamura, Takashi Itahashi, Takashi Hanakawa, Hiroki Togo, Yujiro Yoshihara, Toshiya Murai, Tomohisa Okada, Jin Narumoto, Hidehiko Takahashi, Haruto Takagishi, Koichi Hosomi, Kiyoto Kasai, Naohiro Okada, Osamu Abe, Hiroshi Imamizu, Takuya Hayashi, Shinsuke Koike, Saori C. Tanaka, Mitsuo Kawato. Computational Mechanisms of Neuroimaging Biomarkers Uncovered by Multicenter Resting-State fMRI Connectivity Variation Profile 2024.04;
2. Takahiko Kawashima, Ayumu Yamashita, Yujiro Yoshihara, Yuko Kobayashi, Naohiro Okada, Kiyoto Kasai, Ming-Chyi Huang, Akira Sawa, Junichiro Yoshimoto, Okito Yamashita, Toshiya Murai, Jun Miyata, Mitsuo Kawato, Hidehiko Takahashi. Generalisable functional imaging classifiers of schizophrenia have multifunctionality as trait, state, and staging biomarkers 2024.01;

[Misc]

1. Takashi Takeuchi. Psychiatric pharmacotherapy in patients with renal failure and dialysis. *Japanese Journal of Clinical Psychopharmacology*. 2024.08; 27(8); 841-847
2. Takashi Takeuchi. Perinatal psychiatric disorders Collaboration between psychiatry and obstetrics *Journal of Clinical and Experimental Medicine*. 2024.02; 288(7); 594-595
3. Takashi Takeuchi. Women's Life Cycle and Mental Illness *CLINICAL PSYCHIATRY*. 2024.01; 66(1); 32-36

[Conference Activities & Talks]

1. Mao Otake , Kana Himuro, Chiyo Koya, Masako Watanabe , Miho Miyajima. A Wearable In-ear EEG for Epilepsy Monitoring. AES 2024 Annual Meeting 2024.12
2. Shogo Mito, Miho Miyajima, Hirofumi Tomioka, Hitomi Sato, Takashi Takeuchi, Hitoshi Muto, Yuji Kabasawa, Hiroyuki Harada, Kana Eguchi, Shoto Kato, Manabu Kano. Delirium Prediction Based On Preoperative Electrocardiogram and Electroencephalogram. APSIPA ASC 2024 2024.12 Macau, China

Department of Neurosurgery

Professor: Taketoshi Maehara
Associate Professor: Yoji Tanaka
Associate Professor (Medical Welfare and Liaison Services Center): Kaoru Tamura
Junior Associate Professor: Motoki Inaji, Yoshihisa Kawano
Junior Associate Professor (Career Track): Shoko Hara
Assistant Professor : Kazuhide Shimizu, Daisu Abe
Specially Appointed Assistant Professor: Akihito Sato
Senior Resident: Asumi Orihara, Toshihiko Hayashi, Asuka Fujino, Yusuke Miwa
Resident: Shotaro Amemiya, Midori Shiraishi, Yusuke Kobayashi,
Yu Nishizawa
Graduate Student: Satoshi Kaneko, Tadahiro Ishiwada, Kei Ito,
Masae Kuroha, Naoki Taira, Toshihiro Yamamura, Yukika Arai,
Tadahiro Yamauchi, Kana Sawada, Takamaro Takei,
Yudanardi Ridwan Rusydi Muhammad

(1) Publications

[Original Articles]

1. Taira N, Hara S, Namba A, Tanaka Y, Maehara T. Spatial coefficient of variation of arterial spin labeling magnetic resonance imaging can predict decreased cerebrovascular reactivity measured by acetazolamide challenge single-photon emission tomography. *Neuroradiology*. 2024.10; 66(10); 1693-1703
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3. Matsuo K, Aihara H, Suehiro E, Shiomi N, Yatsushige H, Hirota S, Hasegawa S, Karibe H, Miyata A, Kawakita K, Haji K, Yokobori S, Inaji M, Maeda T, Onuki T, Oshio K, Komoribayashi N, Suzuki M. Time-Dependent Association of Preinjury Anticoagulation on Traumatic Brain Injury-Induced Coagulopathy: A Retrospective, Multicenter Cohort Study. *Neurosurgery*. 2024.10;
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6. Kei Ito, Shoko Hara, Motoki Inaji, Junshi Cho, Masanori Murakami, Tetsuya Yamada, Tadashi Nariai, Taketoshi Maehara. Routine screening serum tests to detect underlying thyroid and autoimmune diseases in patients with moyamoya disease. *Clin Neurol Neurosurg*. 2024.08; 243; 108403

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8. Shuheng Wen, Yohsuke Makino, Motoki Inaji, Nobutaka Arai, Kana Unuma. Importance of repeated computed tomography on pediatric traumatic acute posterior fossa subdural hematoma: A case study. *Leg Med (Tokyo)*. 2024.06; 70; 102466
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11. Fujii M, Yokoyama K, Tanaka Y, Kobayashi D, Tateishi U. A Rare Case of Sphenoid Sinus Hemangioma With Intracellular and Cavernous Sinus Extension. *Cureus*. 2024.05; 16(5); e61034
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Department of Endovascular Surgery

Professor: Kazutaka Sumita
Junior Associate Professor: Sakyo Hirai
Assistant Professor: Kyohei Fujita, Satoru Takahashi
Clinical Fellow: Yuki Kinoshita, Kim Bongguk
Graduate student: Shoko Fujii, Hirotaka Sagawa, Hikaru Wakabayashi

(1) Outline

There are various attracting subjects in the field of clinical or basic research. It is essential to acquire the sufficient knowledge and insight into the pathological conditions as well as normal functions of the vascular system, which will directly benefit for the improvement of clinical results. Main educational purpose of Endovascular Surgery in the graduate course is to provide physicians/students opportunity to acquire the proper technique as well as the broad knowledge, and to nurture the mind of exploration.

(2) Research

Our experimental research program is objected to elucidate unsolved questions derived from daily clinical experience. To treat vascular diseases of central nervous system, facial and head-neck lesions, we need to understand detailed vascular anatomy, accurate function of these organs and exact pathophysiology of each disease. Our essential research target is the hemodynamics in the vascular diseases of these lesions. Especially we are interested in the integration of the fluid engineering technology into the endovascular field in an effort to open a new frontier of surgical treatment.

(3) Education

Course objects of Endovascular Surgery in the graduate course is to acquire the proper technique as well as the basic knowledge of neuroendovascular surgery.

(4) Lectures & Courses

Main educational purpose of Endovascular Surgery in the graduate course is to provide students the proper technique as well as the basic knowledge of neuroendovascular surgery.

(5) Clinical Services & Other Works

Our major clinical and extracurricular activities are as follows. 1. Endovascular surgery for diseases of central nervous system, facial and head-neck lesions.
2. Analysis of cerebrovascular diseases using computational fluid dynamics (CFD).
3. Development of integrated training system for the endovascular surgery.

(6) Clinical Performances

Endovascular Surgery is a clinical department dealing with various vascular diseases of central nervous system, spinal cord, facial and head-neck lesions including tumors, congenital malformation, and functional disorders. Cognitive and Behavioral Medicine.

(7) Publications

[Original Articles]

1. Shoko Fujii, Kyohei Fujita, Mariko Ishikawa, Keigo Shigeta, Yuki Aizawa, Masataka Yoshimura, Shin Hirota, Kei Ito, Yoshikazu Yoshino, Kenji Yamada, Satoru Takahashi, Hirotaka Sagawa, Yuki Kinoshita, Yusuke Kobayashi, Sakyo Hirai, Kazutaka Sumita. Postoperative Time-of-Flight Magnetic Resonance Angiography Classification is a Predictor of Postoperative Recanalization of Unruptured Cerebral Aneurysms. *World Neurosurg.* 2024.12; 194; 123496
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NCNP Brain Physiology and Pathology

1. Staffs

Collaborative Professor	Mikio HOSHINO
Collaborative Professor	Tadafumi HASHIMOTO
Collaborative Professor	Noritaka ICHINOHE
Collaborative Professor	Yoshitsugu AOKI
Collaborative Associate Professor	Yuichi YAMASHITA
Collaborative Associate Professor	Akiko Uyeda

(1) Research

1) **Investigation of the molecular machinery underlying brain development.**

(Mikio Hoshino; Department of Biochemistry and Cellular Biology, National Institute of Neuroscience, NCNP)

We are investigating molecular machinery underlying nervous system development, especially focusing on neuron-subtype specification, nervous system regionalization and neuronal migration. We are also interested in human diseases/disorders caused by disorganized development of the nervous system. This year, we found that DSCAM, which is associated with Down syndrome psychiatric symptoms, schizophrenia, and autism spectrum disorders, promotes the retrieval of excess glutamate at the synaptic cleft for proper synaptic development and function (Nat Commune 2024). In addition, it was found that the ASD-causative gene, *AUTS2*, is involved in the production of upper-layer neurons in the cerebral cortex, and that loss of *AUTS2* gene function of the *AUTS2* causes microcephaly due to a decrease in upper-layer neurons (EMBO J, 44(5), 1354-1378, 2025).

2) **Investigation of the pathomechanism of neurodegenerative disorders.**

(Tadafumi Hashimoto, Department of Degenerative Neurological Diseases, National Institute of Neuroscience, NCNP)

In Alzheimer's disease (AD) and frontotemporal lobar degeneration (FTLD), aggregation and deposition of the pathogenic proteins in the brain are thought to cause progressive neurodegeneration. However, the detailed molecular mechanism is still unclear, and this remains a major obstacle to the development of disease-modifying therapies for dementia. We study the pathogenic proteins of AD and FTLD, such as A β , tau, TDP-43 or FUS, and elucidate the molecular mechanisms by which these proteins aggregate, accumulate, and exhibit neurodegeneration using patient brains, mouse or

Drosophila models. *APOE* ϵ 4 is a strong genetic risk factor for the development of Alzheimer's disease. This year, we clarified that the rare variant of *APOE* gene, Christchurch mutation (R136S), which has been recently identified as protective allele against the onset of AD, inhibited neuron-to-neuron propagation of tau protein (Murakami et al, 2024, J Neurosci). This finding sheds light on the impact of apoE on the onset of Alzheimer's disease. Additionally, we have developed new research models tackling the latest challenges in AD onset and treatment, including a novelCAA model using A β seed injection technique, an A β pathology-dependent tau pathology model, and an A β immunotherapy mouse model.

3) **Autism research using a primate model marmoset**

(Noritaka Ichinohe, Department of Ultrastructural Research, National Institute of Neuroscience, NCNP)

Autism is a developmental disorder characterized by social impairments and insistence on sameness. While autism has traditionally been studied using rodent models, no effective treatments have been developed to date. The New World monkey *Callithrix jacchus* (marmoset) is evolutionarily closer to humans and possesses advanced social behavior and a well-developed prefrontal cortex, making it a promising model for autism research. We have developed an autism model in marmosets by administering valproic acid (VPA) to pregnant mothers and are conducting studies to elucidate the pathophysiology of autism and develop potential treatments. Specifically, we employ a multi-faceted approach combining molecular and cellular biological techniques, systems neuroscience methods (such as electrophysiology and structural MRI), and behavioral analyses to investigate the autism model in marmosets.

In 2024, from the perspective of synaptic plasticity, we reported abnormalities in projection-specific synaptic remodeling in the autism model marmosets and the modulatory effects of oxytocin (Noguchi et al., 2024, Communications Biology). Using two-photon microscopy for live imaging, we discovered increased dendritic spine turnover, excessive synapse formation dynamics in local axons, and the suppression of spine clustering by oxytocin in VPA-exposed marmosets. These findings suggest that oxytocin may be a promising therapeutic target for autism.

Additionally, we analyzed abnormalities in predictive coding in autism model marmosets using high-density electrocorticography (ECoG) and identified the occurrence of erroneous predictions across different hierarchical levels of the brain, along with their neural underpinnings (Chao et al., 2024, Communications Biology). Using a local-global auditory oddball paradigm, our study demonstrated an increase in

prediction errors in autism model marmosets, revealing a coexistence of sensory hypersensitivity and instability in prediction. These findings suggest that the diverse symptoms of autism may be explained by errors in predictive coding at different hierarchical levels of the brain.

4) Development of Oligonucleotide-Based Therapies and Disease Modelling for Duchenne Muscular Dystrophy (Yoshitsugu Aoki, Director, Department of Molecular Therapy, National, National Institute of Neuroscience, NCNP)

Duchenne muscular dystrophy (DMD) is classified as an intractable disease resulting from mutations in the DMD gene. Our department has successfully developed the first domestically produced nucleic acid drug for DMD, Viltolarsen, which employs exon 53 skipping therapy and possesses the potential to treat approximately 8% of DMD patients. This drug received early conditional approval in March 2020. In addition, we are advancing the development of Brogidirsen, which is recognized as the world's first nucleic acid drug utilizing exon 44 skipping, targeting approximately 6% of DMD patients (Mol Ther Nucleic Acids. 2023;34:102034; Cell Rep Med. 2025 Jan 21;6(1):101901). We have initiated patient recruitment for a Phase 2 global clinical trial. Furthermore, we have reported that dystrophin replacement therapy using mRNA-based drugs may ameliorate symptoms of autism spectrum disorder (ASD), which is observed in approximately 30% of DMD cases. This therapy has been shown to normalize the excitatory/inhibitory (E/I) balance in the amygdala of mouse models (Prog Neurobiol. 2022;216:102288; Nat Commun. 2025 Feb 3;16(1):1298).

Traditionally, predicting antisense oligonucleotide (ASO) sequences for exon-skipping therapies necessitated considerable time and effort. To address this challenge, we developed a machine-learning model to predict exon-skipping efficiency. This model has been publicly released for the first time in the world as part of the eSkip-Finder initiative (Nucleic Acids Res. 2021;49:W193-W198). This research facilitates the rapid design of ASO sequences not only for DMD but also for a range of neuromuscular diseases. Recently, we have employed urine-derived cells obtained from DMD patients (Sci Rep. 2024;14:2329) to create three-dimensional muscle and brain tissue models (organoids) that replicate the disease pathology. These models are being utilized to assess the efficacy of novel therapies, including exon-skipping methods.

These research advancements are anticipated to serve as a critical foundation for precision medicine aimed at addressing neuromuscular diseases. We are strongly committed to advancing research to develop effective treatments for these diseases.

5) Computational approach for psychiatric disorders

(Yuchi Yamashita, Department of Information Medicine, National, National Institute of Neuroscience, NCNP)

The use of mathematical modeling and data science techniques to elucidate mental disorders has emerged as the active and dynamic research field known as computational psychiatry. In our laboratory, we pursue advancements through both theoretical and data-driven research approaches. The theoretical approach emphasizes understanding the brain's information processing mechanisms grounded in computational theories, whereas the data-driven approach leverages clinical and neurophysiological data associated with mental disorders.

In 2024, our theoretical research included a study on the emergence of information representation and arithmetic computation abilities through multimodal learning (Noda et al., *Front. Neurosci.*, 2024), and the development of a pathological model exploring interoception and disordered eating behaviors in depression via homeostatic reinforcement learning (Uchida et al., *Front. Hum. Neurosci.*, 2024). Our data-driven research comprised the development of an AI model aimed at predicting the progression of mild cognitive impairment in elderly individuals using brain imaging data, with potential implications for enhancing clinical trial efficiency for anti-dementia medications (Wang et al., *Transl. Psychiatry*, 2024). Additionally, we advanced the creation of virtual schizophrenia brain images utilizing generative AI technologies (Yamaguchi et al., *Front. Psychiatry*, 2024).

6) Molecular mechanism of central nervous system regeneration

(Akiko Uyeda, Department of Molecular Pharmacology National Institute of Neuroscience, NCNP)

We have been investigating the mechanisms of pathogenesis of central nervous system (CNS) diseases and therapeutic target molecules. Damage to CNS, such as in stroke, traumatic brain injury, neurovegetative diseases, and spinal cord injury (SCI), leads to severe neurological dysfunction due to neuronal cell death and axonal degeneration. Although neurons have the potential to undergo dynamic differentiation and

development processes in early life, their ability to regenerate after injury is very low in adults. Our department has elucidated the molecular mechanisms that regulate injury and repair in the CNS through screening using primary cultured brain cells, comprehensive gene expression analysis, and functional evaluation in rodent models. This year, we identified a novel role of Synaptotagmin 4, a well-characterized regulator of synaptic function, in neurite elongation. In a mouse model of spinal cord injury, Syt4 contributed to the recovery of motor function by promoting the formation of compensatory neural circuits (Higuchi et al. J Neurosci., 2024). We also revealed a molecular mechanism that promotes astrocytic proliferation and is important for the formation of glial scars during SCI (Quan et al., J Neuroinflammation, 2025). In addition, a comprehensive gene expression analysis focusing on cerebral vascular endothelial cells in a mouse model of Alzheimer's disease (AD) revealed that many humoral factors elevated in pathological conditions, and it contributed to cognitive deficits in AD (Hirabayashi et al., J Pharmacol Sci., 2025). These studies have established a basis of the search for therapeutic target molecules and are expected to contribute to the development of therapies for CNS diseases.

(2) Education

The nervous system is a very fine and complex organ to elicit the higher brain function and its malfunction causes a variety of neurological and psychiatric disorders in humans. In this course, students learn the structure, development and function of the normal nervous and muscle systems as well as pathology of developmental disorders, psychiatric disorders, neurological diseases and muscle diseases. Students also study the latest progress of advanced remedy for neuromuscular diseases.

(3) Publications

[Original Articles]

1. Iijima K, Komatsu K, Miyashita S, Suyama K, Murayama K, Hashizume K, Tabe NK, Miyata H, Iwasaki M, Taya S, Hoshino M. Transcriptional features of low-grade neuroepithelial tumors with the BRAF V600E mutation associated with epileptogenicity. **Genes Cells**. 29(3):192-206, 2024
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9. Hata, J., Nakae, K., Tsukada, H., Woodward, A., Haga, Y., Iida, M., Uematsu, A., Seki, F., Ichinohe N, Gong, R., Kaneko, T., Yoshimaru, D., Watakabe, A., Abe, H., Tani, T., Hamda, H. T., Gutierrez, C. E., Skibbe, H., Maeda, M., Papazian, F., ... Okano, H. (2023). Multi-modal brain magnetic resonance imaging database covering marmosets with a wide age range. *Scientific data*, 10(1), 221. <https://doi.org/10.1038/s41597-023-02121-2>
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[Review Articles • Books]

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2. [Aoki Y*](#). Allele-specific CRISPR-Cas9 editing inactivates a single-nucleotide variant associated with collagen VI muscular dystrophy. *Mol Ther Nucleic Acids.* 2024 Sep 25;35(4):102330. doi: 10.1016/j.omtn.2024.102330. PMID: 39380711; PMCID: PMC11460449.
3. Vaillend C, [Aoki Y*](#), Mercuri E, Hendriksen J, Totorou K, Goyenvallé A, Muntoni F. Duchenne muscular dystrophy: recent insights in brain related comorbidities. *Nat Commun.* 2025 Feb 3;16(1):1298. doi: 10.1038/s41467-025-56644-w. PMID: 39900900; PMCID: PMC11790952.
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6. Motohashi N, Minegishi K, Imamura M, [Aoki Y](#). Techniques for Injury, Cell Transplantation, and Histological Analysis in Skeletal Muscle. *Methods Mol Biol.* 2023;2640:193-205.
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8. [Aoki Y](#). Mr. Takashi Onaka Memorial Oration: I. Updates on solutions to DMD. *J Stem Cells Regen Med.* 2023 Apr 30;19(1):19-21

Department of Material-based Neuroscience

Professor: Itsuki Ajioka

Administrative Assistant: Masako Nishijima

Graduate Student (Ph.D.): Zhuge Lujie

(1) Outline

Neuroscience has made significant advancements by integrating molecular biology techniques. In recent years, there has been a growing trend toward incorporating methodologies from material sciences, such as supramolecular chemistry and computational physics, to deepen our understanding of diseases and develop new treatments. Our research pioneers the interdisciplinary fusion of neuroscience and material science to achieve fundamental breakthroughs in understanding the pathology of neurological disorders and innovating therapeutic strategies. Additionally, we promote industry-academia collaborations to facilitate the seamless transition from research to industrial applications.

(2) Research

Our laboratory focuses on 3 primary research projects: Molecular Assembly Medicine, Optogenetic Medicine, Behavioral Analysis Technology Development.

Molecular Assembly Medicine

This project is based on JigSAP, an 11-amino acid peptide (Yaguchi et al., Nat Commun, 2021), and aims to develop therapeutic drugs for ischemic stroke and spinal cord injury, while also exploring new applications in vaccine development.

For ischemic stroke treatment, we have advanced medical applications through collaborative research with Professor Sumita, the Department of Endovascular Surgery, while also investigating the mechanisms of brain regeneration. Furthermore, in collaboration with Professor Muraoka from Tokyo University of Agriculture and Technology, we have developed modified JigSAP variants optimized for local cell transplantation and organoid culture, which led to patent applications.

Optogenetic Medicine

Through a collaboration with Professor Yanai from the University of Tokyo, we have successfully achieved the world's first in vivo optogenetic control utilizing photon upconversion technology, which converts long-wavelength light into short-wavelength light (Uji et al., Adv Mater, 2024). This advancement leverages molecular upconversion technology for deep-tissue optogenetics.

Behavioral Analysis Technology Development

Supported by the Tokyo Tech-TMDU Matching Fund, we have collaborated with Professor Maeda from the Department of Mechanical Engineering to develop a novel behavioral analysis algorithm (Yokokawa et al., Proc IEEE ICMA, 2024). By applying functional analysis, we have developed techniques for quantifying behavioral abnormalities in mice models of ischemic stroke and neurodegenerative diseases. This research

aims to revolutionize behavioral testing paradigms in neurological drug discovery.

(3) Education

As the coordinator for the graduate lecture "Introduction to Medical Neurosciences," I was responsible for organizing and delivering lectures.

(4) Lectures & Courses

Our educational approach focuses on training researchers capable of conducting interdisciplinary studies by engaging in collaborative research with students from mechanical engineering and chemistry disciplines at other universities. Additionally, we provide hands-on training in molecular biology, cell biology, and neuroanatomy to cultivate expertise in these fundamental areas.

(5) Publications

[Original Articles]

1. Uji M, Kondo J, Hara-Miyauchi C, Akimoto S, Haruki R, Sasaki Y, Kimizuka N, Ajioka I, Yanai N. In Vivo Optogenetics Based on Heavy Metal-Free Photon Upconversion Nanoparticles. *Advanced materials* (Deerfield Beach, Fla.). 2024.11; 36(46); e2405509
2. Yokokawa R, Hara-Miyauchi C, Ajioka I, Maeda S. Mouse Pose Estimation Using Synthetic Dataset Replicating Experimental Environments 2024 Proc. IEEE ICMA. 2024;

Molecular Virology

Professor : Yuta SHIROGANE
 Lecturer: Takaya HAYASHI
 Assistant Professor: Sayaka SUKEGAWA
 Research technician: Kazue GOTO
 Research technician: Misako ICHIJIMA
 Medical Technologist : Yoshio INAGAKI

(1) Outline

Epidemics of infectious diseases caused by pathogenic microorganisms such as bacteria and viruses have long had a significant impact on the human community. However, we must not forget that no matter how difficult the situation we have suffered, mankind has solved the problems of infectious diseases one by one by working with science, deepening our understanding of pathogens, developing public health, and developing antibiotics, antiviral drugs, and vaccines.

By focusing on the important research theme of elucidating the molecular basis of viral pathogenesis, this department will contribute to the accumulation of knowledge that will serve as a basis for discussion on how human society should deal with infectious diseases. Specifically, we are working on various pathogenic envelope viruses. We will also work on the development of antiviral drugs and vaccines and apply them to the control of viral infections. In addition, we believe it is our mission to train the next generation of virologists in this process.

(2) Research

We are advancing the elucidation of the molecular mechanisms governing virus evolution and pathogenicity using an interdisciplinary approach.

[Research Theme 1] Study of the Membrane Fusion Control Mechanisms of Envelope Viruses

Through our previous research, we have clarified that the host and viral factors controlling membrane fusion, which is essential for the replication of envelope viruses, are closely linked to the mechanisms of pathogenicity. Many envelope viruses are human pathogens, but many of their membrane fusion control mechanisms remain unexplored. Led by Professor Shirogane, we are currently engaged in research on the fusion control of viruses that cause significant harm to humans, such as the measles virus, mumps virus, Hendra virus, and Nipah virus.

[Research Theme 2] Study of Human Immunodeficiency Virus (HIV)

Led by Assistant Professor Sukegawa, we are working to elucidate the mechanisms of pathogenicity of human immunodeficiency virus (HIV).

[Research Theme 3] Collaborative Research with the Ghana-based Institution

Led by Lecturer Hayashi, we are collaborating with the Noguchi Memorial Institute for Medical Research in Ghana on research regarding the epidemiology of dengue virus.

(3) Education

We are engaged in the lectures and practices on the basic aspects of infections for the 2nd year medical students. Students are also accepted in the Project Semester Program. Graduate course students carry out research on virology in the laboratory and join seminars and progress meetings.

(4) Lectures & Courses

Students can learn the structure, replication, function and genetics of micro-organisms as well as the host-pathogen interactions based on the front-line molecular and microbiological sciences.

(5) Publications

[Original Articles]

1. Ota Y, Yasunaga K, Mahazu S, Prah I, Nagai S, Hayashi T, Suzuki M, Yoshida M, Hoshino Y, Akeda Y, Suzuki T, Gu Y, Saito R. Comparative evaluation of analytical pipelines for illumina short- and nanopore long-read 16S rRNA gene amplicon sequencing with mock microbial communities. *Journal of microbiological methods*. 2024.04; 221; 106929
2. Rosa Mallorson, Eri Miyagi, Sandra Kao, Sayaka Sukegawa, Hideki Saito, Helena Fabryova, Luciana Morellatto Ruggieri, Sonia Mediouni, Susana T Valente, Klaus Strebel. Transcriptional regulation of the HIV-1 inhibitory factor human mannose receptor 1 by the myeloid-specific transcription factor PU.1. *Journal of virology*. 2024.01;
3. Mahazu S, Prah I, Ota Y, Hayashi T, Suzuki M, Yoshida M, Hoshino Y, Akeda Y, Suzuki T, Ishino T, Ablordey AS, Saito R. Colistin Resistance Mediated by Mcr-3-Related Phosphoethanolamine Transferase Genes in *Aeromonas* Species Isolated from Aquatic Environments in Avaga and Pakro Communities in the Eastern Region of Ghana. *Infection and drug resistance*. 2024; 17; 3011-3023

[Conference Activities & Talks]

1. Haruki Kitamura, Sayaka Sukegawa, Klaus Strebel.. PU.1 inhibition and HIV-1 reactivation: A novel approach to the eradication of HIV-1 latently infected non-T cell reservoirs.. 11th Edition Reservoirs&Eradication Strategies Workshop. 2024.12.10 Florida
2. 平居優一, 竹本竜一, 柳雄介, 白銀勇太. 麻疹ウイルス SSPE 分離株の融合タンパク質に見られる蓄積変異は CADM1/2 非依存的な膜融合を可能にする. 第 71 回日本ウイルス学会・学術集会 2024.11.05
3. 白銀勇太, 平居優一, 柳雄介, 竹本竜一. 神経細胞の融合を促進する麻疹ウイルスのヘマグルチニンの変異. 第 71 回日本ウイルス学会・学術集会 2024.11.04
4. Yuta Shirogane. Intrahost Evolution of Measles Virus: A Pathway to Fatal Brain Disease . The 22nd Awaji International Forum on Infection and Immunity 2024.09.17 Kyoto, Japan
5. Haruki Kitamura, Helena Fabryova, Sandra Kao, Eri Miyagi, Luciana M Ruggieri, Hideki Saito, Sayaka Sukegawa, Klaus Strebel . INDUCTION OF HIV-1 REACTIVATION BY PHARMACOLOGICAL PU.1 INHIBITION IN HIV-1 LATENTLY INFECTED CELL . Cold spring Harbor Retroviruses meeting 2024.05.19
6. Ichiro Osawa, Yuichiro Hara, Sayaka Sukegawa, Naoaki Mizuno, Nobuyuki Nosaka, Susumu Kirimura, Iichiroh Onishi, Hiromitsu Nakauchi, Hiroaki Takeuchi, Masao Takata, Kenji Wakabayashi. Accurate Assessment of Respiratory Physiology is Essential for Preclinical Drug Development in a Mouse Model of COVID-19-Induced ARDS. ATS International conference 2024.05

Pediatrics and Developmental Biology

Professor: Masatoshi TAKAGI (Sep 2024~)

Associate Professor: Kenichi KASHIMADA (~Sep 2024)

Senior Assistant Professor: Masaki SHIMIZU, Takeshi ISODA

Assistant Professor: Tomoko MIZUNO, Kei TAKASAWA, Manabu SUGIE, Kengo MORIYAMA, Yohei YAMAGUCHI, Kazuyuki ITO, Satoshi MIYAMOTO, Yuko AKUTSU, Hitoshi IRABU, Satoshi NAGAHARA

Specially Appointed Assistant Professor: Tomoya KANEDA

Graduate Students: Takahiro TOMODA, Makito SAKURAI, Mika OKUTSU, Toru KANAMORI, Eriko ADACHI, Shuya KANEKO, Shizuka KIRINO, Dan TOMOMASA, Shizuka KATSUZAKI, Hisae NAKATANI, Asami SHIMBO, Shiori EGUCHI, Analia Gisela Yogi, Haruki YAMANO, Riski MUHAIMIN, Yui NAMIKAWA, Yumie TAMURA, Yoko SAITO, Teruyoshi SHIMOYAMA, Taisuke YAMAUCHI, Maho HATANO, Yohei NISHIYAMA, Toshiki YANAGISAWA

Department of Child Health and Development

Professor: Hirokazu KANEGANE

Senior Assistant Professor: Akihiro HOSHINO

Department of Pediatrics, Neonatal and Maternal Medicine

Professor: Masatoshi TAKAGI (Aug 2024)

Senior Assistant Professor: Taku ISHII

Assistant Professor: Yuko HAYASHI

Department of Lifecourse Clinical Immunology

Professor: Masaaki MORI

(1) Outline

Our department is providing advanced medical service for infants, children, adolescents and young adults. The specialties cover most pediatric diseases, including hematology-oncology, immunology, cardiology, neurology, endocrinology, metabolism, nephrology, rheumatology, neonatology, and allergy. On the other hand, our scientific and academic activities encompass a wide spectrum, from basic to clinical research. By focusing on innovative strategies for clarifying pathogenesis, diagnostic tests, and therapeutic interventions, we are looking at comprehensive resolution of the child's health problems, improving their future.

(2) Research

Our research covers many specialties of pediatric diseases, and the research spans from bench to bedside. Our current main projects are

1. Identification of responsible genes for inborn errors of immunity (IEI).
2. Development of therapeutic approach for IEI
3. Development of innovative techniques for ex vivo cell therapy after hematopoietic stem cell transplantation.
4. Multicenter Registry for pediatric Pulmonary arterial hypertension (PAH) (Congenital Heart Disease related PAH (JACPHR) and Idiopathic/heritable PAH (JAPHR))

5. Multicenter Registry study on Kawasaki Disease with coronary artery aneurysm
6. Basic study on the profile changes of umbilical cord blood and umbilical cord-derived mesenchymal stem cells in various intrauterine environments
7. Investigation of profile changes in stem cells from human exfoliated deciduous teeth (SHED) in children with cerebral palsy due to periventricular leukomalacia
8. Elucidating the molecular mechanisms of gonadal development
9. Molecular pathology of congenital adrenal diseases and disorder of sex development
10. Establishment of a patient registry, treatment markers, and a simple genetic test method for 21-hydroxylase deficiency
11. Establishment of novel diagnostic and therapeutic strategies for congenital hyperinsulinism
12. Molecular pathology of syndrome of congenital insulin resistance
13. Study of autoimmunity in Opsoclonus Myoclonus Syndrom
14. Development of gene therapy for Ataxia Telangiectasia
15. Study of molecular biology in systemic vascular stenosis
16. Genetic background of leukemia development
17. Study using single cell sequencing analysis in pediatric leukemia
18. Development of novel CAR-NK cell therapy for child cancer
19. 3D genome structure and molecular mechanism in leukemia
20. Mechanistic insight into activation of super-enhancer in T cell commitment
21. Genetic analysis and development of therapeutic approach for epilepsy syndrome
22. Clarifying immunological profiles of the patients with autoimmune diseases
23. Developing a methodology for the diagnosis of cytokine storm syndrome by exploiting a novel biomarker
24. Development of newborn screening for treatable childhood diseases including spinal muscular atrophy
25. Kinetic and functional analysis of novel T and B cell subsets in patients with autoimmune disease
26. Research in pathophysiology and prognostic predictor of nephritis /nephrotic syndrome
27. Molecular mechanisms and pathology of kidney disease with IEI or hereditary kidney disease

We are collaborating with Medical Research Institute at TMDU, Tokyo University, Institute of Medical Science, Hiroshima University, University of Queensland (Prof. Peter Koopman), Erasmus University (Prof. Jacques van Dongen), National Research Institute for Child Health and Development, RIKEN Center for Integrative Medical Science, Kazusa DNA Research Institute, Tokyo Metropolitan Institute for Medical Science, Juntendo University, Kyoto University, Tokyo University and many other laboratories.

● Hematology/Oncology/Immunology Group (Basic Research) Immunology

We have explored inborn error of immunity (IEI) candidate genes using the whole-exome analysis (WES) method using next-generation sequencers and have identified several candidate mutations. Molecular characterization of these candidates has also been conducted parallelly. Also, we are working with domestic researchers to analyze the pathogenesis of IEI and to develop therapeutic methods. We reported the outcomes of hematopoietic cell transplantation for inborn errors of immunity (IEI) using Alemtuzumab in Japan (Miyamoto, Kanegane). We also reported the characteristics of nephritis in X-linked agammaglobulinemia (Kanamori, Kanegane).. A phase II clinical trial is underway to evaluate the efficacy and safety of sirolimus in the treatment of lymphoid enlargement, enteritis, and cytopenia associated with patients with IEI (Isoda). As adoptive immunotherapy to promote immunological reconstitution after transplantation, we have developed virus-specific T cell therapy for refractory viral infections and are pursuing the clinical trial (Kamiya and Morio).

● Cardiology Group

< Basic Research >

We are struggling to elucidate the mechanism of pulmonary arterial hypertension. We are conducting functional analysis of patients with BMP9 gene mutations to elucidate the mechanism of TGF- β /BMP signaling. We are also conducting research into the possibility of hedgehog signal inhibitors as a treatment for pulmonary hypertension. (Sakurai and Yamaguchi)

< Clinical Research >

We are conducting research such as time series analysis of pediatric cardiovascular disease using a nationwide database and prediction of pulmonary-systemic blood flow ratio from images in pediatric heart disease using AI (Ishii, Shimoyama). As multicenter collaborative research, we are participating in a multicenter prospective case registration study of pulmonary hypertension with congenital heart disease (principal researcher), a case registration study of idiopathic/hereditary pulmonary arterial hypertension in children (research participant),

a registry study of Kawasaki disease patients with coronary artery aneurysms (research participant), and a nationwide survey of the clinical characteristics of congenital portosystemic shunts (research participant).

● Neurology Group

< Basic research >

We are investigating the pathogenesis of opsoclonus-myoclonus syndrome (OMS) associated with neuroblastoma, developing viral vector-based gene therapy for ataxia-telangiectasia (AT), studying the pathogenesis of moyamoya-associated disease. We are also investigating the function of astrocytes using transgenic mice, and conducting the pathological analysis of *Mycoplasma pneumoniae* encephalitis (collaborative project with Hiroshi Sakuma, Tokyo Metropolitan Institute of Medical Science).

< Clinical research >

“Genetic analysis and development of therapeutic approach for epilepsy syndrome” (collaboration with Showa University)

“Research for rare epilepsy syndrome” (collaboration with Institute of Epilepsy and Neurological Disorders)

“Systematic measurement and functional analysis of autoantibody in immunologic neurological diseases” (collaboration with Tokyo Metropolitan Institute of Medical Science)

“Evaluation of adrenocortical function in the patients with West syndrome treated with ACTH therapy”

“Development of newborn screening for treatable childhood diseases including spinal muscular atrophy”

“Establishment of quantitative evaluation of pediatric cerebellum-dependent motor learning through prism adaptation and the application to central nervous system diseases”

● Endocrinology – Metabolism Group

Molecular mechanisms of gonadal development

Our current research focuses on elucidating the molecular mechanisms of sex determination and gonadal development, especially in the aspect of the transcriptional network of sex determination and gonadal development. The study will lead to the development of a novel approach to diagnosis and a therapeutic approach to differences in sex development. Another target is to identify the precise functions of transcription factors, such as NR5A1 (SF1), FOXL2, and SOX9, in gonadal development.

Molecular analysis of pathological mechanisms in congenital adrenal hyperplasia (CAH), including developing a novel methodology for analyzing the responsible gene, CYP21A2.

One of our major tasks is supervising the CAH neonatal mass screening in Tokyo. Currently, large number of CAH patients we treat, and clarifying the clinical details and we are focusing on clarifying the long term prognosis of the disease. In addition to adrenal insufficiency and androgen excess, metabolic syndrome during adulthood is reported to be another major concern of CAH. The precise pathophysiology is not known. We are establishing a registry system of 21-OHD patients to develop a novel approach for preventing comorbidities in adulthood.

Establishment of Novel Therapeutic and Diagnostic Strategies for Congenital Hyperinsulinism (CHI)

We are conducting collaborative research with Department of Diagnostic Radiology and Nuclear Medicine to establish imaging diagnostic methods for severe CHI. We will be engaged in both basic and clinical research to elucidate the genetic pathophysiology of CHI and to establish novel therapeutic strategies.

● Rheumatology group

We are establishing an evidence based guideline of pediatric rheumatoid diseases including juvenile idiopathic arthritis: JIA. Developing a novel database system, CoNinJa (Children’s version of National Database of Rheumatic Diseases by iR-net in Japan), clarifying immunological profiles of the patients with autoimmune diseases, developing a methodology for the diagnosis of cytokine storm syndrome by exploiting a novel biomarker, and Kinetic and functional analysis of novel T and B cell subsets in patients with autoimmune disease are other our current projects. In addition, in joint research with the department of rheumatology, we are analyzing the current status and effectiveness of treatment for childhood and adult onset of collagen disease.

● Neonatology group

We will compare and analyze the gene expression profiles of mesenchymal stem cells collected from umbilical cords and dental pulp to elucidate their relationship with disease establishment and to accumulate basic data for cell therapy.

We will collect umbilical cord-derived mesenchymal stem cells with various background factors, such as intrauterine infection and fetal growth restriction, and examine the relationship between profile changes and disease establishment.

As basic data for exploring the possibility of dental pulp stem cell therapy for periventricular leukomalacia, a complication of preterm infants, we are collecting stem cells from human exfoliated deciduous teeth of children with cerebral palsy due to periventricular leukomalacia and analyzing their profile.

● Allergy Group

Some members of our group are conducting epidemiological studies on allergic diseases in collaboration with related institutions. Also, we are participating in research activities in practice at facilities outside the university for registry building and elucidation of pathological conditions for severe, difficult-to-treat allergic diseases.

● Nephrology Group

Research in pathophysiology and prognostic predictor of nephritis /nephrotic syndrome

A multicentre study with associated hospitals is underway to identify disease pathogenesis and pathogenic factors by analysing patient epidemiological data, peripheral blood cell fraction analysis and serum, urinary protein and miRNA profiling.

Searching for biomarkers associated with the severity, response to treatment and long-term prognosis of idiopathic nephritis and idiopathic nephrotic syndrome, aiming to construct disease models and elucidate the molecular basis of the disease using organoids.

(3) Education

Block Lecture

The systematic lecture was performed for M4 students. One third of the lectures “were performed using an active-learning” style. Although one frame of active-learning alone cannot cover the whole area of pediatrics, we believe that the active learning is very useful because it can enhance students’ application skills.

Project semester

This provides the opportunities of basic research for the 4th grade students for half a year. Every year, a few students are committed to the research of our department and presented at a scientific meeting.

Pre-clinical clerkship (PCC).

We proposed 6 programs providing the opportunities to learn the logical skills of clinical practice. After the curriculum, The students undertake the examination of clinical practice, i.e., OSCE , CBT.

Clinical clerkship (CC)

In clinical clerkship (CC) for 5th-year medical students in pediatrics , each student spent two weeks in one of the two groups (hematology, immunology, cardiology, neurology, Endocrinology-metabolism, nephrology, Rheumatology, neonatology).

Lectures were given to all students six times in two weeks selected from a lot of topics such as diagnostics, congenital heart disease, neonates, infusion, EEG, endocrinology, leukemia, immunodeficiency infections, and the role of the Child Life Specialist in pediatrics, and student conferences were held on Tuesday, Wednesday, and Thursday for further understanding of the clinical practice program.

Four 6th-year medical students were accepted for clinical training in pediatrics, and they joined a practice for two weeks in a medical group of their choice as an advanced program.

In terms of post-graduate education, at least one month of basic clinical education was provided to the first and second year of clinical residents at on-campus. For the second semester clinical residents at the university, we provided a wide range of more specialized clinical education to prepare them to become pediatric specialists.

(4) Lectures & Courses

Primary care of pediatrics covers a wide spectrum of health care and clinical problems in children, and all pediatricians should be well trained in those subjects. Further, Tokyo Medical and Dental University is one of

the top ranked national medical universities in Japan, and achieving cutting edge research is another social responsibility. For students, we provide educational programs to learn primary pediatric care, management of the diseases in every organ during neonatal period childhood, and basic science. For residents, our educational program is mainly focused on producing physician scientists who possess the skills of pediatrics for primary care, of physician specialist and of basic researcher.

(5) Clinical Services & Other Works

● Hematology/Oncology/Immunology Group

Treating children with inborn errors of immunity, hematological malignancies, hematological disorders, and malignant solid tumors.

Collaboration with other professional facilities including St. Luke's International Hospital and Juntendo University Hospital. Joint clinical conference and trainee exchange program are regularly held in the collaborating system.

Medical care

By collaborating with national co-operative clinical research group, such as the Tokyo Children's Cancer Study Group (TCCSG) and Japanese Children's Cancer Study Group (JCCG), we offer our patients opportunities to participate in the latest clinical trials, contributing to establishment of both standard and novel therapies for childhood cancers and other non-malignant diseases.

In FY2024, we performed HCT for 8 cases (Unrelated bone marrow: 6 cases, Related bone marrow: 2 cases, Unrelated cord blood: 1 case, Related cord blood: 1 case, Related haploidentical: 1 case). In addition, Two HCTs were performed in collaboration with the hematology department.

Our experience of HCT exceeds 230 cases including more than 100 cases with primary immunodeficiency diseases, so far.

Clinical trial

Clinical trials led by the pediatric department of Tokyo Medical and Dental University are ongoing.

“Phase 2 study of the efficacy and safety of sirolimus in patients with primary immunodeficiency”

“Cell therapy for treatment-resistant viral infections after hematopoietic cell transplantation using antigen-specific T cells against multiple viruses generated from blood donors with at least half-matched HLA”

Clinical trial (Phase I/II) as a GCTP-compliant regenerative medicine technology based on the Law for Ensuring the Safety of Regenerative Medicine.

● Cardiology Group

We provide medical care in a wide range of pediatric cardiovascular diseases. Especially, our department is one of the major center hospitals providing medical care of pediatric pulmonary hypertension.

In 2023, the number of inpatients was 137. Cardiac catheterizations were performed in 63 patients and cardiac surgery was performed in 23 patients (open-heart surgery).

● Neurology Group

We provide medical care for a wide range of pediatric neurological diseases.

In particular, collaborating with the department of neurosurgery, we run an epilepsy center, providing advanced medical care for pediatric patients with intractable epilepsy.

The medical services in our department are long-term video EEG monitoring, high magnetic field MRI/PET, ACTH therapy, ketogenic diet, vagus nerve stimulation and surgical operation, such as focal brain resection and callosotomy. We also provide nucleic acid drug and gene therapy for patients with spinal muscular atrophy, and plasma exchange and molecular targeted drugs in addition to conventional immunomodulatory therapy for autoimmune neurological disorders. We focus on diagnosis, genetic analysis, and treatment for rare neurological diseases.

● Endocrinology- Metabolism Group

We provide comprehensive diagnostic and treatment services for children with disorders of endocrinology and

metabolism, including diabetes, such as disorders of growth, pubertal development, Ca/P metabolism. (including skeletal dysplasia), gonadal development and adrenal cortex function. We are especially focusing on providing advanced medical services for core facilities dedicated to congenital adrenal hyperplasia (CAH) and disorders of sex development (DSD) and congenital hyperinsulinism. Our institute is one of the DSD central facilities approved by the Japanese Society for Pediatric Endocrinology (JSPE). For social contribution, we supervise the neonatal screening system for CAH in Tokyo metropolitan city and peer support group of type 1 diabetes, “Tokyo Wakamatsu-kai”

● Nephrology Group

Nephrology Group provides diagnosis and treatment for patients with various kidney diseases. We perform kidney biopsy (30/year) and imaging examination. Percutaneous needle renal biopsy under general anaesthesia is performed in patients with nephritis and nephrotic syndrome in infancy, in collaboration with anaesthetists.

Last year, seven percutaneous needle renal biopsies under general anaesthesia were performed. No major complications occurred and the procedure was performed safely.

We performed peritoneal dialysis for infants and provided acute hemodialysis for children who developed acute kidney injury. Also patients with tubulointerstitial nephritis and renal disease complicated by uveitis are treated.

● Rheumatology group

We treat children with rheumatic diseases, undiagnosed cases such as fever of unknown origin, and autoinflammatory syndrome represented by periodic fever. The emphasis is on the issues and challenges of transitional care in adulthood for pediatric rheumatic diseases.

● Neonatology group

Collaborating with other medical departments or special care groups in pediatrics, we are treating preterm infants (≥ 27 weeks gestation, birth weight ≥ 800 g), neonates with complications and babies born from mothers with complication.

● Allergy Group

At the pediatric division of the University's Center for Advanced Allergic Diseases and related facilities, we provide accurate diagnosis, standard treatment, and advanced medicine for allergic diseases. In the community, we support the social life of children with allergic diseases by conducting educational activities.

(6) Clinical Performances

● Hematology-Oncology/ Immunology Group

Hematology-Oncology/ Immunology Group provides diagnosis, treatment and pathological analysis of hematological malignancies and inborn errors of immunity. We perform hematopoietic stem cell transplantation for refractory diseases. Specifically, we treat the largest number of primary immunodeficiency disease patients in Japan. We participate in multi-center cooperative clinical research to establish both standard and novel therapies for childhood cancers, and also participate in the approval of industry-based clinical trials for drugs (such as anticancer drugs).

● Cardiology Group

Cardiology group performs diagnosis, evaluation of treatment and decision of treatment strategy for pediatric pulmonary hypertension patients. We actively treat severe idiopathic/hereditary pulmonary arterial hypertension (IPAH/HPAH) patients by upfront combination therapy (uCT) with two or three kinds of disease targeted drugs including continuous venous infusion of epoprostenol. We made considerable achievements of treatment in severe IPAH/HPAH patients with epoprostenol/treprostinil.

● Neurology Group

Neurology group provides specialized diagnostic approaches and medical care for neurological disorders such as intractable epilepsy, cerebellar ataxia, immune-mediated neurological diseases, spinal muscular atrophy, involuntary movement, perinatal brain damage, nervous system infections, acute encephalopathy/encephalitis, and neurodegenerative disease.

● Endocrinology- Metabolism Group

The leader of our endocrinology group is a supervisor of congenital adrenal hyperplasia (CAH) newborn screening in Tokyo. We treat substantial number of CAH (21-OHD) patients and performed couples of clinical studies. We also focus on differences in sex development (DSD) and long-term follow-up for childhood cancer survivors (CSS). We are organizing a Type 1 DM patients' association (Wakamatsu-kai) and have a summer camp for diabetic children every year.

● Nephrology Group

We treat various pediatric kidney diseases, such as congenital nephrotic syndrome, refractory nephrotic syndrome, IgA nephropathy, Henoch-Schönlein purpura nephritis and tubulointerstitial nephritis with or without uveitis, etc. Chronic kidney disease management and dialysis treatment for children with acute renal failure. Acute hemodialysis and plasma exchange therapy for acute renal failure associated with hematological disease and collagen diseases, as well as autoimmune encephalitis, are also provided. Needle kidney biopsy performed to more than 30 patients for infants and over children. We cooperate in school urinalysis to prevent exacerbations

of renal disease, we

● Rheumatology group

Clinically, our target is not only pediatric rheumatic disease, but also inflammatory diseases such as periodic fever, fever of unknown origin, and repeated arthritis affecting multiple joints. We are also actively involved in the expansion and standardization of treatment indications through participation in clinical trials and formulation of guidelines.

● Neonatology Group

Our NICU provides intensive care for preterm infants and critically ill newborns. As a designated perinatal medical center in Tokyo, we accept maternal and neonatal transfer from various areas in Tokyo and contribute to perinatal medicine in Tokyo.

● Allergy Group

We focus on clinical care of severe and complicated allergic diseases such as food allergy-induced anaphylaxis, food-dependent exercise-induced anaphylaxis, food protein-induced enterocolitis syndrome and oral allergy syndrome induced by cross-reactivity between food, inhalant and contact allergens. We extensively perform food challenge tests not only for correct diagnosis of food allergy but for preparation of oral immunotherapy in cooperation with the affiliated hospitals. We introduce new biological medicines to the long-term management for severe persistent asthma patients.

(7) Publications

[Original Articles]

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62. Kazuaki Matsumoto, Kazuki Okuyama, Tom Sidwell, Motoi Yamashita, Takaho Endo, Naoko Satoh-Takayama, Hiroshi Ohno, Tomohiro Morio, Ellen V Rothenberg, Ichiro Taniuchi. A Bcl11b N797K variant isolated from an immunodeficient patient inhibits early thymocyte development in mice. *Front Immunol.* 2024; 15; 1363704
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[Books etc]

1. Hirokazu Kanegane, Satoshi Miyamoto, Akira Nishimura, Nao Yoshida. *Comprehensive Hematology and Stem Cell Research.* Elsevier, 2024.09 (ISBN : 978-0443157172)
2. Hirokazu Kanegane. *Lymphoproliferative Syndrome 2 (LPFS2).* SpringerLink, 2024.09

[Misc]

1. Ayami Ohya, Dan Tomomasa, Fumiaki Sakura, Takaki Asano, Atsuko Arisaka, Takumi Akashi, Menno C van Zelm, Tomohiro Morio, Satoshi Okada, Hirokazu Kanegane. A case of primary ciliary dyskinesia with DRC1 deletion and literature review: Additional evidence on the founder effect. *Pediatr Int.* 2024.12; 66(1); e15808

2. Konishi Risa, Ichimura Yuki, Tanaka Ryota, Miyahara Hanako, Okune Mari, Miyamoto Masahide, Hara Monami, Iwabuchi Atsushi, Takada Hidetoshi, Nakagishi Yasuo, Mizuta Mao, Kaneko Shuya, Shimizu Masaki, Morio Tomohiro, Nishino Ichizo, Nomura Toshifumi, Okiyama Naoko. Possible correlation between serum interleukin-8 levels and the activity of myositis in anti-NXP2 antibody-positive dermatomyositis(タイトル和訳中) Immunological Medicine. 2024.06; 47(2); 100-105
3. Qin Zhao, Qian Zhao, Xuemei Tang, Yunfei An, Zhiyong Zhang, Dan Tomomasa, Atsushi Hijikata, Xi Yang, Hirokazu Kanegane, Xiaodong Zhao. Atypical familial hemophagocytic lymphohistiocytosis type 3 in children: A report of cases and literature review. *Pediatr Allergy Immunol.* 2024.05; 35(5); e14136
4. Masaki Shimizu. Clinical Features of Cytokine Storm Syndrome. *Adv Exp Med Biol.* 2024; 1448; 33-42

[Conference Activities & Talks]

1. Kei Takasawa. Management of Congenital Adrenal Hyperplasia (CAH) during adolescence and transition to adult care. APPES-ISPAAE Joint Meeting 2024 (The 13th Biennial Scientific Meeting of APPES, co-organised by the Asia Pacific Pediatric Endocrine Society (APPES) and Indian Society for Pediatric and Adolescent Endocrinology (ISPAAE)) 2024.10.01 New Delhi, India
2. Masaki Shimizu. Clinical significance of serum cytokine profiles and cytokine-targeted therapy in systemic juvenile idiopathic arthritis and macrophage activation syndrome. The 11th International Forum of Pediatric Rheumatology and Immunology 2024.12.20 Beijing, China
3. Hirokazu Kanegane. Challenges faced in managing antibody deficiencies and application of SCIG. APAAACI 2024 2024.12.11 Kuala Lumpur
4. Masaki Shimizu. Clinical significance of serum IL-18 levels for diagnosis & monitoring of disease activity in SJIA & MAS. NextGen Therapies in SJIA, Still's & MAS 2024.11.13 Washington DC, USA
5. Morio T. What Clinicians Can Learn from Inborn Errors of Immunity. 12th Singapore Paediatric and Perinatal Annual Congress 2024 (SiPPAC) 2024.11.09 Singapore
6. Hirokazu Kanegane. Allogeneic hematopoietic cell transplantation rescue monogenic IBD. Translational Gastroenterology and Liver unit Seminar 2024.10.22 Oxford
7. Yui Namikawa, Riski Muhaimin, Dan Tomomasa, Akira Nishimura, Eiichi Ishii, Daisuke Tomizawa, Takako Miyamura, Takeshi Isoda, Masatoshi Takagi. Analysis of Three-Dimensional Genome Structure of KM2TA-Rearranged Infant ALL. 56th Annual Congress of the International Society of Paediatric Oncology 2024.10.19 Hawaii
8. Hirokazu Kanegane. APSID's 10—Year History and Future Prospects.. ESID 2024 2024.10.17 Marseille
9. Yui Namikawa, Riski Muhaimin, Dan Tomomasa, Akira Nishimura, Eiichi Ishii, Daisuke Tomizawa, Takako Miyamura, Takeshi Isoda, Masatoshi Takagi. Nuclear Structure of KMT2A-Rearranged Infant ALL. 第 83 回日本癌学会学術総会 2024.09.19 福岡
10. Masaki Shmizu, Shuya Kaneko, Asami Shimbo, Maho Hatano, Futaba Miyaoka, Yuko Hayashi, Hitoshi Irabu, Yuko Akutsu, Keiji Akamine, Masaaki Mori. Successful treatment with anifrolumab for refractory cutaneous lesions in pediatric systemic lupus erythematosus. APLAR2024 2024.08.22 Singapore, Singapore
11. Kaneko S; Shimbo A; Hatano M; Irabu H; Shimizu M. Clinical significance of serum cytokine profiling for differentiation of underlying diseases of cytokine storm syndrome. APLAR2024 2024.08.22 Singapore, Singapore
12. Yuko Hayashi, Maho Hatano, Shuya Kaneko, Asami Shimbo, Hitoshi Irabu, Yuko Akutsu, Masaki Shimizu, Masaaki Mori. Clinical outcomes after SARS-CoV-2 infection and vaccination in patients with pediatric rheumatic diseases. 26th Asia-Pacific League of Associations for Rheumatology Congress 2024.08.21 シンガポール
13. Satoshi Miyamoto, Kevin Y. Urayama, Akira Nishimura, Setsuo Ota, Riski Muhaimin, Yui Namikawa, Miho Koizumi, Yuki Arakawa, Katsuyoshi Koh, Yuki Yuza, Daisuke Hasegawa, Yuichi Taneyama, Yasuishi Noguchi, Masakatsu Yanagimachi, Takeshi Inukai, Hiroyuki Takahashi, Dai Keino, Daisuke Toyama, Junko Takita, Daisuke Tomizawa, Kazutoshi Koike, Koichi Moriwaki, Yuya Sato, Junya Fujimura,

- Daisuke Morita, Yujin Sekinaka, Kozue Nakamura, Kazuo Sakashita, Hiroaki Goto, Takeshi Isoda, Kosuke Imai, Hirokazu Kanegane, Tomohiro Morio, Atsushi Manabe, Hiroaki Honda, Masatoshi Takagi. Germline Variants of Transcription Factors Involved in B-Cell Development Associate with B=ALL and Immunodeficiency. The 14th JSH International Symposium 2024 2024.07.13 Hokkaido,Japan
14. Dan Tomomasa, Takahiro Kamiya, Fumiko Honda-Ozaki, Kosuke Noma, Hisako Nakamaki, Atsushi Hijikata, Morito Kurata, Takashi Abe, Tomohiro Morio, Satoshi Okada, Takehiko Mori, Hirokazu Kanegane. Familial B-cell Lymphoma and Lymphopenia Underlie a Novel Germline RAC2 Variant. The 14th JSH International Symposium 2024 2024.07.13 Hokkaido,Japan
 15. Satoshi Miyamoto, Daiki Niizato, Yohei Nishiyama, Yuya Sasaki, Keisuke Tanaka, Akihiro Hoshino, Takahiro Kamiya, Takeshi Isoda, Masatoshi Takagi, Shohei Azumi, Kenichi Sakamoto, Kenji Kishimoto, Katsutsugu Umeda, Kenichiro Watanabe, Tatsuo Ichinohe, Takehiko Mori, Tomohiro Morio, Hirokazu Kanegane. Allogeneic hematopoietic cell transplantation with alemtuzumab in patients with XIAP deficiency. The 14th JSH International Symposium 2024 2024.07.13 Hokkaido,Japan
 16. Satoshi Miyamoto, Kevin Y. Urayama, Akira Nishimura, Setsuo Ota, Riski Muhaimin, Yui Namikawa, Miho Koizumi, Yuki Arakawa, Katsuyoshi Koh, Yuki Yuza, Daisuke Hasegawa, Yuichi Taneyama, Yasushi Noguchi, Masakatsu Yanagimachi, Takeshi Inukai, Hiroyuki Takahashi, Dai Keino, Daisuke Toyama, Junko Takita, Daisuke Tomizawa, Kazutoshi Koike, Koichi Moriwaki, Yuya Sato, Junya Fujimura, Daisuke Morita, Yujin Sekinaka, Kozue Nakamura, Kazuo Sakashita, Hiroaki Goto, Takeshi Isoda, Kosuke Imai, Hirokazu Kanegane, Tomohiro Morio, Atsushi Manabe, Hiroaki Honda, Masatoshi Takagi. Germline variants of transcription factors involved in B-cell development associate with B-ALL and immunodeficiency. The 14th JSH International Symposium 2024 in Hakodate 2024.07.13 Hakodate, Japan
 17. Satoshi Miyamoto, Masatoshi Takagi, Tsuyoshi Osawa, Masabumi Sibuya, Tomohiro Morio, Rika Tsuchida. BMP4 exerts anti-neoplastic effect to neuroblastoma via MYCN downregulation.. SIOP Asia 2024 2024.06.24 Kanagawa
 18. Hoshino A. Pathophysiology and recent topics in EBV-LPD. 16th Congress of Asia continental branch of International Society of Paediatric Oncology 2024.06.24 Kanagawa,Japan
 19. Shuya Kaneko, Maho Hatano, Asami Shimbo, Hitoshi Irabu, Masaki Shimizu, Tomohiro Morio. Pathogenic role of inflammasome activation and interleukin-1 β overproduction in Kawasaki disease. The 3rd International Symposium of Clinical Immunology 2024.05.17 Hakodate, Japan
 20. Hirokazu Kanegane. Ten-year prospective for the region (APSID role). IPOPI 5th Regional Asian PID Meeting 2024.03.25 Tokyo
 21. Satoshi Miyamoto. Recent Advances in Allogeneic Hematopoietic Cell Transplantation for Japanese Patients with Inborn Errors of Immunity. The 7th Annual Scientific Meeting of JSIAD/ The 5th Asia-Pacific Society for Immunodeficiency (APSID) Congress 2024.03.24 Tokyo, Japan
 22. Satoshi Miyamoto, Daiki Niizato, Yohei Nishiyama, Yuya Sasaki, Keisuke Tanaka, Akihiro Hoshino, Takahiro Kamiya, Takeshi Isoda, Shohei Azumi, Kenichi Sakamoto, Kenji Kishimoto, Katsutsugu Umeda, Kenichiro Watanabe, Tatsuo Ichinohe, Takehiko Mori, Tomohiro Morio, Hirokazu Kanegane. Allogeneic Hematopoietic Cell Transplantation with Alemtuzumab in patients with XIAP deficiency. The 7th Annual Scientific Meeting of JSIAD/ The 5th Asia-Pacific Society for Immunodeficiency (APSID) Congress 2024.03.22 Tokyo, Japan
 23. Satoshi Miyamoto, Akira Nishimura, Setsuo Ota, Miho Koizumi, Takeshi Isoda, Kosuke Imai, Hirokazu Kanegane, Tomohiro Morio, Hiroaki Honda, Masatoshi Takagi. Heterozygous PAX5 germline variant in common variable immunodeficiency patient with pediatric B-cell acute lymphoblastic leukemia. The 7th Annual Scientific Meeting of JSIAD/ The 5th Asia-Pacific Society for Immunodeficiency (APSID) Congress 2024.03.22 Tokyo, Japan
1. Differentiation of 21OHD and PORD by Androstenedione/Cortisol ratio. 2024.10.12
 2. Serum 11-oxygenated androgens in two brothers with nonclassical 21-hydroxylase deficiency. 2024.10.11
 3. Verification of the retest criteria as the second-tier test for congenital adrenal hyperplasia screening by LC-MS/MS in Tokyo, Japan. 2024.10.11

4. Growth curve of type 1b diabetes mellitus with subacute onset course due to abnormal insulin. 2024.10.11
5. A case of type A insulin resistance syndrome diagnosed with school-age acanthosis nigricans. 2024.10.10
6. Hyperphagia-associated score increases with age and is positively associated with body mass index in adults with Prader-Willi syndrome. 2024.10.10
7. A case of hyaluronidase 2 deficiency diagnosed as a result of growth disturbance. 2024.10.10
8. CASE REPORT:Growth course of Gitelman syndrome complicated by growth hormone deficiency short stature. 2024.10.10
9. A girl of precocious puberty caused by hypothalamic hamartoma. 2024.10.10
10. A case of obstructed hemivagina ipsilateral renal anomaly(OHVIRA) syndrome,incidentally diagnosed during an examination of central precocious puberty. 2024.10.10
11. Chronic Mucocutaneous Candidiasis complicated by acquired hypothyroidism without anti-thyroid autoantibodies:A case report. 2024.10.10
12. Verification of the retest criteria as the second-tier test for congenital adrenal hyperplasia screening by LC-MS/MS in Tokyo,Japan.. 2024.08.23
13. The outcomes of expanded newborn screening in Tokyo following the introduction of an out-of-pocket payment program.. 2024.08.23
14. Satoshi Miyamoto. Outcome of Allogenic Hematopoietic Cell Transplantation for Inborn Errors of Immunity in Japan. The 46th Annual Meeting of JSTCT 2024 2024.03.21 Tokyo, Japan

[Awards & Honors]

1. JSTCT Working Group Research Award, Japanese Society for Transplantation and Cellular Therapy, 2024.03

Department of Dermatology

Professor: Naoko OKIYAMA

Associate Professor: Takeshi NAMIKI

Head of medical office: Hana TAKESHITA

Assistant Professor: Tadatsune IIDA, Atsushi ODA, Masanobu FUNAZUMI

Senior Resident: Misaki KAWAKAMI, Eri NAGAYAMA, Maiko FUJITA, Rikako WAKAMATSU

Resident: Erii SUZUKI, Sena TANAKA

Adjunct Doctor: Yuuki ICHIMURA, Risa KONISHI,

Tomoko FUJIMOTO, Makiko NISHIDA, Minako INAZAWA

Ph. D. student: Taku NAMATAME, Chie UCHIDA, Yu Lei

Master's student: Wong Yangzhi

Technical Assistant: Chiyako MIYAGISHI

Staff Assistant: Misa MIWA, Masae SAKATA, Mayuko HAYASHI, Sachiko MIZUK

(1) Outline

Dermatology is a department of medical science which educates students to make a diagnosis and treatment for skin diseases. Main objective of Dermatology in the graduate course is to provide students opportunity to study advanced Immunodermatology, physiology, pathology and allergology, and also to study making diagnosis of skin diseases and operation techniques. Students are also taught on skin oncology (melanoma, angiosarcoma) and its related laboratory technology depending on their research project.

Dermatology clinic provides an advanced treatment for skin diseases; skin tumors, infectious diseases, skin allergy, collagen diseases and psoriasis. Recently, we established the gene therapies (STAT6 decoy ODN) for severe atopic dermatitis in the clinic.

(2) Publications

[Original Articles]

1. Yuki Ichimura, Risa Konishi, Tadatsune Iida, Miwako Shobo, Ryota Tanaka, Noriko Kubota, Hisako Kayama, Kiyoshi Takeda, Toshifumi Nomura, Manabu Fujimoto, Naoko Okiyama. Autoimmunity against melanoma differentiation-associated gene 5 induces interstitial lung disease mimicking dermatomyositis in mice Proceedings of the National Academy of Sciences of the United States of America. 2024.04; 121(16); e2313070121
2. Naoko Okiyama, Risa Konishi, Yuki Ichimura. Murine models of idiopathic inflammatory myopathies The Journal of Dermatology. 2024.07; 51(7); 914-919
3. Fukushima K, Yoshida T, Yamazaki H, Takamatsu N, Nagai T, Osaki Y, Harada M, Nishino I, Okiyama N, Sugie K, Izumi Y.. Anti-NXP2 Antibody-positive Juvenile Dermatomyositis with Characteristic Fascial Thickening on Muscle Ultrasound and Improvement with Immunotherapy. Internal Medicine. 2024.06; 63(12); 1813-1817
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[Misc]

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[Conference Activities & Talks]

1. Naoko Okiyama. A New Era of Atopic Dermatitis Toward an Era in which True Long-Term Remission Can Be Maintained . The 49th Annual Meeting of the Japanese Society for Investigative Dermatology 2024.12.07
2. Endo Karin, Ichimura Yuki, Matsui Takashi, Konishi Risa, Iida Tadatsune, Namiki Takeshi, Okiyama Naoko. Apoptotic and necroptotic keratinocytes contribute to fibrosis in chronic graft-versus-host disease via the production of TGF- β . 日本研究皮膚科学会年次学術大会・総会プログラム 2024.12.01

3. 関根 正喜, 三浦 圭子, 並木 剛, 沖山 奈緒子, 大橋 健一. メラノーマにおけるcGAS-STING-TBK1 の発現と深達度の関連 (Association of cGAS-STING-TBK1 expression and depth in melanoma). 日本病理学会会誌 2024.10.01
4. Naoko Okiyama, Yuki Ichimura, Risa Konishi, Manabu Fujimoto. Autoimmunity against melanoma differentiation-associated gene 5 (MDA5) induces interstitial lung disease mimicking dermatomyositis in mice. the 22nd Annual Meeting of Asian Oceanian Myology Center and the 10th Annual Meeting of Japan Muscle Society (AOMC-JMS 2024) 2024.09.13
5. Namiki Takeshi, Nojima Kohei, Hayashi Masahiro, Tanemura Atsushi, Suzuki Tamio, Ishikawa Masashi, Yamazaki Naoya, Katayama Ichiro, Sasaki Yoshiyuki, Okiyama Naoko. 活性化 Akt 発現は acral melanoma 再発の予後因子である (Activated Akt expression has the prognostic value for relapse in acral melanomas). 日本皮膚科学会雑誌 2024.05.01
6. Ichimura Yuki, Okiyama Naoko. 炎症性筋疾患 (2) メラノーマ分化関連遺伝子 5 誘発肺線維症マウスモデルにおいて I 型インターフェロンが果たしている重要な役割 (Inflammatory myopathies 2 Type I interferon may play an essential role in murine melanoma differentiation associated gene 5 induced lung fibrosis model). 日本リウマチ学会総会・学術集会プログラム・抄録集 2024.03.01
7. Naoko Okiyama. Is Dermatomyositis-associated Panniculitis a Form of Panniculitis or Vasculitis?. 2024.12.21
8. Naoko Okiyama. Differences in Histopathological Findings by Autoantibody Subtypes in Dermatomyositis. The 88th Annual Meeting of the Tokyo Division of the Japanese Dermatological Association 2024.11.17
9. Naoko Okiyama. Pathophysiological Insights Gained from Novel Murine Models of Dermatomyositis. 2024.10.18
10. Naoko Okiyama. Aiming for Long-Term Remission Maintenance in Atopic Dermatitis. The 75th Annual Meeting of the Central Division of JDA 2024.10.12
11. Naoko Okiyama. Strategy for Differentiating the Use of Anti-Inflammatory Topical Agents in the Treatment of Atopic Dermatitis. The 88th Annual Meeting of the Eastern Division of JDA 2024.09.15
12. Naoko Okiyama. Advances in the Treatment of Collagen Disease-Associated Skin Symptoms Based on Pathophysiology. The 76th Annual Meeting of the Western Division of JDA 2024.09.07
13. Naoko Okiyama. IgA Vasculitis and Cutaneous Arteritis as Seen by Dermatologists. The 123rd Annual Meeting of the Japanese Dermatological Association 2024.06.09
14. Naoko Okiyama. Establishment and Pathological Analysis of a Disease Model Animal Based on Dermatomyositis-Specific Autoimmunity. The 68th Annual General Assembly and Scientific Meeting of the Japan College of Rheumatology 2024.04.21

NCCHD Child Health and Development

Collaborative Professor	Akutsu, Hidenori
Collaborative Professor	Onodera, Masashi
Collaborative Professor	Fukami, Maki
Collaborative Professor	Nakabayashi, Kazuhiko
Collaborative Professor	Takada, Shuji
Collaborative Professor	Matsumoto, Kenji

(1) Research

1) Exploring molecular mechanism for acquisition of zygote totipotency, epigenetic reprogramming and pluripotency in stem cells Application studies for reproductive medicine and regenerative medicine

(Akutsu, Hidenori; Center for Regenerative Medicine, National Institute for Child Health and Development)

Exploring molecular mechanism for acquisition of zygote totipotency, epigenetic reprogramming and pluripotency in stem cells. Application studies for reproductive medicine and regenerative medicine.

2) Studying for cellular model in human severe disease by advancing flow cytometry

(Onodera, Masashi; Dept. of Human Genetics, National Institute for Child Health and Development)

We aim to identify causative genes for child intractable hereditary diseases and analyze their functions to develop new gene-based therapeutic options. We also establish iPS cells from peripheral blood or skin fibroblasts obtained from patients with intractable hereditary diseases such as primary immunodeficiencies and congenital metabolic disorders.

3) Elucidation of genetic abnormality in congenital severe metabolic diseases using advanced genetic analysis

(Fukami, Maki; Dept. of Molecular Endocrinology, National Institute for Child Health and Development)

Our objective is to clarify the molecular basis of congenital endocrine-related disorders and apply our findings to new innovations in clinical medicine. We investigate the molecular basis of single gene disorders, epigenetic/inprinting disorders, and

multifactorial disorder.

4) Elucidating for molecular mechanism of perinatal abnormality using system biology (Nakabayashi, Kazuhiko; Dept. of Maternal-Fetal Biology, National Institute for Child Health and Development)

We aim to clarify mechanisms underlying abnormalities in fetal development and placentation, and/or perinatal diseases with developmental defects. To identify the underlying mechanisms of perinatal diseases, we take advantage of post-genomic technologies and investigate etiologies using an integrated genomic and epigenomic approach.

5) Identification of target molecules in severe diseases and establishment of disease model mice by studying molecular mechanisms of genomic imprinting, gametogenesis and sexual differentiation

(Takada, Shuji; Dept. of Systems Biomedicine, National Institute for Child Health and Development)

Our aim is to reveal the molecular mechanisms underlying embryonic development, cell differentiation and tissue formation and apply our findings to understand the causes of developmental diseases.

6) Elucidation for allergic disease mechanism and target molecules using molecular biology and 'omics' technology

(Matsumoto, Kenji; Dept. of Allergy and Clinical Immunology, National Institute for Child Health and Development)

Our mission is to clarify the precise pathogenic mechanisms of various immunological and allergic diseases, such as Kawasaki disease, various allergic diseases, allogeneic immune tolerance, congenital viral infections and severe infectious diseases. To achieve this, we employ various experimental approaches, including epidemiology, clinical and basic research. Our ultimate aim is to develop better means of preventing, diagnosing and treating allergic and immunological and infectious diseases based on our research findings and cumulative knowledge.

(2) Education

The goal of this course is to learn the developmental process of human life from the viewpoints of latest molecular biology and genetics. Medical science for child health and

development is the study to comprehensively grasp various health problems related to “human life cycle” to begin with the fertilization and to continue to the next generation through generation and development. Students of this course are required to understand a role and a function of medical care for child health and development, to acquire ability to handle such health problems and support relevant person with specialized theory and technique.

(3) Publications

[Original Articles]

1. Tsukamoto M, Kawasaki T, Vemuri MC, Umezawa A, Akutsu H*. A passage-free, simplified, and scalable novel method for iPSC generation in three-dimensional culture. *Regen Ther*. 2024 Mar 10;27:39-47.
2. Miyakawa K, Machida M, Kawasaki T, Kakizaki M, Kimura Y, Sugiyama M, Hasegawa H, Umezawa A, Akutsu H*, Ryo A*. Replication efficiency of SARS-CoV-2 Omicron subvariants BA.2.75, BA.5, and XBB.1 in human mini-gut organoids. *Cell Mol Gastroenterol Hepatol*. 2024 Mar 15:S2352-345X(24)00055-9.
3. Aoi T, Asaka I, Akutsu H, Ito Y, Kataoka K, Kanda Y, Kojima H, Sekino Y, Suemori H, Nakagawa M, Nakamura K, Nakamura Y, Fujii M, Furue M, Yamazaki D; Japanese Working Group for Consideration of Good Cell Culture Practice. Secondary Publication: Proposal for Points of Consideration for Pluripotent Stem Cell Culture. *In Vitro Cell Dev Biol Anim*. 2024 Mar 12.
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7. Tsukamoto M, Kawasaki T, Umezawa A and Akutsu H. “Alternative Method for Obtaining Human-Induced Pluripotent Stem Cell Lines and Three-Dimensional Growth: A Simplified, Passage-Free Approach that Minimizes Labor” *Bio-protocol* 2024; 14(19): e5081.
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9. Miyamoto Y, Torii T, Terao M, Takada S, Tanoue A, Katoh H, Yamauchi J: Rnd2 differentially regulates oligodendrocyte myelination at different developmental periods. *Molecular Biology of the Cell*. 32(8):769-787 (2021).

10. Kinoshita S, Kojima K, Ohnishi E, Takayama Y, Kikuchi H, Takada S, Nakabayashi K, Kawai T, Hata K. (2024) Loss of NSD2 causes dysregulation of synaptic genes and altered H3K36 dimethylation in mice. *Frontiers in Genetics*, 15:1308234.
11. Kawai T, Kinoshita S, Takayama Y, Onishi E, Kamura H, Kojima K, Kikuchi H, Terao M, Sugawara T, Migita O, Kagami M, Yamaguchi Y, Wakui K, Ohashi H, Shimizu K, Mizuno S, Okamoto N, Fukushima Y, Takada F, Kosaki K, Takada S, Akutsu H, Ura K, Nakabayashi K, Hata K. (2024). Loss-of-function in NSD2 causes DNA methylation signature similar to that in Wolf-Hirschhorn syndrome. *Genetics in Medicine Open*, 2:101838.
12. Shindo M, Terao M, Takada S, Ichinose M, Matsuzaka E, Yokoi T, Azuma N, Mizuno S, Tsumura H. (2024). Establishment and visual analysis of CBA/J-Pde6bY347Y/Y347X and C3H/HeJ-Pde6bY347Y/Y347X mice. *Experimental Animals*, 73(2):203-210.
13. Yoshida T, Yokoi T, Tanaka T, Matsuzaka E, Saida Y, Nishina S, Takada S, Shimizu S, Azuma N. (2024). Modeling of retina and optic nerve ischemia-reperfusion injury through hypoxia-reoxygenation in human induced pluripotent stem cell-derived retinal ganglion cells. *Cells*, 13(2):130.
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[Review Articles]

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[Conference Activities & Talks]

1. The 21st International Federation of Associations of Anatomists (IFAA), Symposium speaker & session chairperson “Stem Cell-Derived Intestinal Avatars: Unveiling Mechanisms of Gastrointestinal Disorders”, Hidenori Akutsu, Gwangju, Korea.

Department of Human Pathology

Professor: Kenichi OHASHI

Junior Associate Professor: Kouhei YAMAMOTO

Assistant Professor: Kurara YAMAMOTO, Yuki KATO

Technician: Asuka FURUKAWA

Graduate Students:

(Doctoral Program) Keiko MIURA, Kazuhiro TAMURA, Chiina HATA,

Shu KATO, Daiki YAFUSO, Ryota MIYATA, Kazuma ITO

(Master's Program) Rinka MIYASHIRO, Minako TAKAGI, Minaka MASUDA

Secretary: Miho IWAMITSU

(1) Outline

Pathology is the studies in which one theorizes and understands disease, as the language implies disease (pathos hardship) + theory (logos logic). Later, as research subjects that caused diseases were subdivided and research methods advanced, bacteriology (microbiology), parasitology (medical zoology), immunology, and molecular biology became independent from the category of pathology. In recent years, academic fields have been restructured beyond the framework of conventional academic fields, and there is a tendency for them to be further subdivided according to purposes, research subjects, and research methods. At present, pathology, based on morphology, is the study of understanding and organizing the causes of diseases (etiology), the formation of lesions (histogenesis), and disease status (pathogenesis). In the recent pathology, the fields of experimental pathology, in which hypotheses are experimentally proven using laboratory animals and cultured cells, and the fields of surgical pathology and diagnostic pathology, which are closely related to the clinical medicine, tend to be separated, and the number of pathologists engaged in the latter, which deals with human tissues, is increasing.

In the field of Human Pathology of TMDU, we aim to train pathologists who can accurately make pathological diagnosis of various human diseases, and at the same time, to develop pathologists who have a research mind capable of carrying out research that leads to improvement of pathological diagnosis, with the aim of elucidating the etiology, histogenesis and mechanism of human diseases.

(2) Research

About human cancer:

There are three main purposes.

(1) Carcinogenesis and histogenesis of cancers: For the understanding of G-I tract cancers, such as esophageal cancers, gastric cancers, colorectal cancers, and colitic cancers, and lung cancers, premalignant lesions will be clarified by histopathological analyses, clinicopathological analyses, and genetic analyses, and the process and molecular basis of carcinogenesis from premalignant lesions will be clarified.

(2) Objective diagnosis of pathological diagnosis related to cancer: Cancer originating from any organ is difficult to differentiate from benign tumors originating from that organ, and there are also borderline tumors of benign and malignant tumors. In addition, many of the pathological findings with clinical significance are based on subjective judgment, and the objectivity, reproducibility, and agreement rate among observers of the findings are problematic. In pathological diagnosis, it is important to apply computer, AI, and image analysis technology, and establishment of new pathological diagnosis which integrates genome information and various marker expression

information of which the advance is remarkable recently is required.

(3) Malignant tumor progression and mechanism of metastasis: In human esophageal cancer, gastric cancer, colorectal cancer, and lung cancer, early cancer is often found, and reduced operations and treatments such as endoscopic resection are often performed. However, there are some high-grade cases showing metastasis from the early stage, and it is necessary to diagnose them in the early stage and select an appropriate therapy. In the process of invasion of early cancers, it is important to clarify the pathological findings related to metastasis and recurrence and to clarify the molecular basis closely related to them. By establishing markers that can be applied to pathological diagnosis, more accurate pathological diagnosis will become possible.

About chronic inflammatory diseases:

To clarify the etiology and origin of a chronic inflammatory disease of unknown origin by thoroughly analyzing the lesion site from a pathological standpoint. In addition, markers useful for diagnosis will be developed and applied to actual pathological diagnosis.

1) The possibility that intracellular latent infection in the deep organ of *Propionibacterium acnes* and rapid activation of autophagy and induction of Th1 immune response with the endogenous activation are causes of granuloma formation is studied on the sarcoidosis from the immunopathology viewpoint. Acne infection has been reported to be associated with diseases other than sarcoidosis, and its relationship to other diseases is also being studied.

2) Regarding the pathogenetic mechanism of chronic gastritis caused by infection of *Helicobacter pylori* on the surface of gastric mucosa, we found that *Helicobacter pylori* invades the lamina propria and translocates to regional lymph nodes of the stomach due to injury of the surface epithelium of the mucosa. Therefore, we investigated the possibility that *Helicobacter pylori* contributes to chronic inflammation of the gastric mucosa by directly stimulating immunocompetent cells in the mucosa and chronically stimulates the immune system in the paracortical region after influx to the lymph nodes. It is also known that the risk of developing gastric cancer varies depending on the structure of *Helicobacter pylori*. We are also developing test kits that can clarify the relationship between the structure of *H. pylori* and the risk of carcinogenesis and evaluate the risk of carcinogenesis by *H. pylori*.

3) Characteristic pathological findings observed in inflammatory colitis such as ulcerative colitis and Crohn's disease are analyzed, and their occurrence mechanism and significance are verified. In addition, evaluation of the activity of inflammation using biopsy materials and expression of molecular markers are studied.

4) Diagnosis of the type of systemic amyloidosis is very important for deciding the treatment plan of patients, but useful antibodies for diagnosis are not sufficiently available. Research is being conducted on the development and application of diagnostic antibodies that can improve the accuracy of pathological diagnosis.

(3) Education

In the graduate school doctoral program, the acquisition of the pathology medical specialist qualification is also made to be a goal with the doctor degree acquisition. First of all, training in autopsy, biopsy tissue diagnosis, rapid tissue diagnosis, tissue diagnosis of surgical specimens, etc., will be conducted, and training in the department of Diagnostic Pathology, TMDU hospital, as well as in the department of pathological diagnosis of the related hospitals will be conducted, with the aim of forming the basis for a "pathologist". During the training, participants will participate in various conferences or meetings in joint with clinical departments to announce pathological diagnoses, identify current problems in each clinical field, and discuss or collaborate with clinicians. While forming a basis as a pathologist, we will conduct research using clinicopathological, immunohistologic, and molecular pathological methods on issues directly related to the causes, diagnosis, and treatment of human diseases. The results will be published in academic meetings and academic journals in Japan and overseas.

(4) Lectures & Courses

What society calls for in medical care is proper diagnosis and treatment. Therefore, in the field of Human Pathology, the aim is to study the etiology, histogenesis, diagnosis, and treatment of human diseases with a strong awareness of problems and deep thought, while focusing on the study of clinical pathology, including histopathological diagnosis of autopsy, biopsy and surgically resected specimens. The results of the research should not only deepen the understanding of diseases, but also be useful for medical care and pathological diagnosis.

(5) Clinical Services & Other Works

As a general rule, all graduate students with a medical doctor's license are concurrently engaged in the Diagnostic Pathology department, TMDU hospital, where they are trained in pathological diagnosis and autopsy, with the aim of acquiring a qualification as a pathology specialist. In addition, staff and graduate students are working as part-time physicians at affiliated hospitals of TMDU in Tokyo, Kanagawa, Saitama, Chiba, and Ibaraki prefectures, which play a central role in supporting local medical care, to support pathological diagnosis and conduct joint research. In the field of Human Pathology, we hope to contribute to community medicine and society by improving the accuracy of pathological diagnosis. We are also actively cooperating in various academic activities, such as lecture presentations and conference participation in local hospitals. We also actively participate in and cooperate with the activities of various academic societies, including the Japanese Society of Pathology. In particular, we are involved in the management of the Japanese Society of Pathology and play a core role. Staff members also participate in and cooperate with various committees of ministries and agencies, including the Ministry of Health, Labour and Welfare.

(6) Clinical Performances

After the Meiji Era, the department of Human Pathology in medical faculty belonged under the basic medical sciences; however, Pathology in the existing hospitals is essentially the clinical medicine. Diagnosis of patients in each clinical department is done by taking the biopsy of diseased tissues or collecting the cell samples by either endoscope or surgery. Then, the lesions are analyzed with the microscope, and pathological diagnosis is reported to the clinical departments. The samples of organs and tissues taken from the surgery are used to study the spread of the lesion and its characteristics, and also to examine the adequacy of surgery. It is also used to determine future treatment policy. During the course of patients' treatments, sample tissues are taken periodically and are analyzed pathologically to see therapeutic effect. If a patient has unfortunately joined the majority, morbid anatomy is done by the pathologists along with the patient's attending physician. They study the resulting effects of laboratory findings and choice of treatment, and improve the future diagnosis and treatments. The department of Human Pathology and Surgical Pathology technically work as one although they are separated in this university's organizational structure. Human Pathology does not directly work with the patients; however, it is involved directly with the diagnosis as well as the treatments. Strong cooperation between clinicians and pathologists is essential for the best practice, and is required for the university hospital as an "advanced treatment hospital." Therefore, doctors of Human Pathology study, research and practice pathology to be the great pathologists so-called the "doctor of doctors.

(7) Publications

[Original Articles]

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42. Sakano M, Tomita Y, Kanazawa T, Ishibashi S, Ikeda M, Oshita H, Hananoi Y, Kato Y, Yamamoto K, Furukawa A, Kinoshita M, Haruki S, Tokunaga M, Kinugasa Y, Kurata M, Kitagawa M, Ohashi K, Yamamoto K. Prognostic significance and therapeutic potential of guanosine triphosphate cyclohydrolase 1 in esophageal squamous cell carcinoma: clinical implications of ferroptosis and lipid peroxidation regulation. *Frontiers in oncology*. 2024; 14; 1459940
43. Sugimoto H, Sawa N, Ikuma D, Oba Y, Mizuno H, Sekine A, Yamanouchi M, Hasegawa E, Suwabe T, Wada T, Kono K, Kinowaki K, Ohashi K, Honda K, Kanetsuna Y, Joh K, Yamaguchi Y, Ubara Y. Significant response to tocilizumab in a case of immune deposits-related membranoproliferative glomerulonephritis and tubulointerstitial nephritis complicated by multicentric Castleman's disease. *Clinical nephrology. Case studies*. 2024; 12; 73-82

Department of Physiology and Cell Biology

Professor: Yoshikazu Isomura
 Associate professor: Riichiro Hira
 Assistant professor: Alain Rios
 Assistant professor: Masanori Kawabata
 Project Assistant professor: Kyohei Fujita
 Assistant Professor(ex-Pharmacology and Neurobiology) Hironao Saegusa
 Career up Assoc. Prof.(ex-Systems Neurophysiology)Yoshiko Izawa

(1) Outline

One of the major goals of the Department of Physiology and Cell Biology is to elucidate the basic principles of the brain networks that are responsible for behavioral expression in rodents. Our neurophysiological research focuses mainly on the neural networks of the cerebral cortex, hippocampus, basal ganglia and thalamus that regulate particular behavioral tasks in rats; this research utilizes multichannel electrode-based multineuronal recording technology, Two-photon imaging of neural activity, optogenetics involving genetically modified animals and adeno-associated virus vectors, and theoretical analysis technologies.

(2) Research

Research Agenda – What do we want to know?

In the sensory, association and motor cortices in the cerebral cortex, the excitatory pyramidal cells and inhibitory interneurons form an intracortical circuit. These brain areas, which play important roles in appropriate behavioral expression, are connected with each other and form the interareal circuit that consists of complex intercortical and subcortical connections through the hippocampus, striatum, substantia nigra and thalamus.

In the 20th century, the spike (unit) activity of single neurons in the brain that are related to behavior was actively studied using the single-unit recording technique. From a technical point of view, however, it was extremely difficult to investigate neuron subtypes and axonal connections by this method. Therefore, we developed a new experimental technique and used it to initiate a study of the basic principles whereby neural networks, particularly those in the cerebral cortex, encode behavioral information.

Research Techniques – How do we find answers?

1. Operant Learning Task

With the conventional technique of operant conditioning, it took weeks to months to train rats to obtain rewards by pushing a lever with their forelimb. Therefore, we developed a “spout-lever” by integrating a lever and a spout, and this enabled us to train rats to perform the forelimb movement task in a short period of time. This method allows for more rapid generation of rats to perform particular behavioral tasks in physiological experiments.

2. Multineuronal Recording

Multineuronal recording is a physiological technique in which spike activities of a large number of neurons are simultaneously recorded using silicon probes (multichannel electrodes). Signals recorded with electrode are distinguished by spike sorting, an analysis technique, to separate the spike (unit) activity produced by each

neuron. Multineuronal recording also makes it possible to simultaneously record local field potentials and spike activities to permit the analysis of functional synchronous oscillation activities such as gamma and ripple waves.

3. Optogenetics

To understand the mechanism of information processing in neuronal networks, it is useful to demonstrate causality by optogenetically manipulating signals flowing in the networks. We are conducting experiments using gene-expressing virus vectors as well as transgenic rats that express channelrhodopsin-2, which uses blue light to depolarize membrane potentials. In addition, we are conducting research to establish a multi-line analysis technique that identifies axonal projections of recorded neurons by combining multineuronal recording technology with optogenetics.

4. Theoretical Analysis – Simulation Modeling

In collaboration with computational neuroscientists, we are conducting sophisticated and efficient theoretical analyses of multineuronal recording data. Our goal is to fuse experiment and theory by utilizing simulation and modeling techniques.

5. Two-photon imaging of neural activity

We are constructing a two-photon microscope with the world's largest field-of-view. Using this microscope, we will record more than 100,000 neuronal activities from the brain during task execution and clarify the mechanism by which neurons cooperatively express brain functions.

6. Fiber Photometry Using Viral Vector Approach for Neuronal Activity and Neurotransmitter Release Measurement

This method involves the use of a viral vector approach for the targeted expression of genetically encoded indicators within specific neuronal populations. For assessing population-level neuronal activity, we employ calcium indicators such as GCaMP, providing a real-time measure of neuronal activity. Additionally, we utilize dLight, a dopamine-sensitive fluorescent probe, to measure local dopamine release. This probe enables the precise quantification of dopamine levels change in targeted brain regions. The viral vector method ensures that these indicators are selectively expressed in neurons of interest, allowing for the specific and localized measurement of neuronal activity or neurotransmitter release.

Research Methodologies – Pursuing Originality

Our research targets the brain networks in rats that are responsible for behavioral expression in order to understand essential brain mechanisms. Conventional neuroscience has often explored the functional localization in the brain by “averaging” brain activities. However, brain activities dynamically change every second, and there is no doubt that it is not just single areas that play a role in information processing, but rather the whole network, which consists of multiple areas. Therefore, we aim to perform truly original research by increasing the sophistication of our methods and extending our interests to multidisciplinary research without fear of failure, from the viewpoints of “from static to dynamic states” and “from points to lines.”

see

<https://researchmap.jp/yoshikazuismura/>

(3) Education

The Department of Physiology and Cell Biology supports excellent next-generation researchers such as post-doctoral research fellows and graduate students through research activities that aim to elucidate the basic principles of brain networks. In principle, students define their research topics based on their future goals. One experimental setup is provided per one or two students/researchers. They receive curricula to learn a series of experimental techniques, join discussions that develop their logical thinking ability rather than simply increasing their knowledge, and receive opportunities to effectively conduct collaborative research in and out of the laboratory.

The Department is responsible for a lecture and laboratory practice on General Physiology for medical school students. It also provides research training for students during the project semester and MD-PhD courses that aim to foster basic researchers in the early stages of their education. The field of physiology is essential for comprehensively understanding body functions and providing the foundation for doctors to treat patients. We hope that you will voluntarily and actively participate in the activities of the department to immerse yourself

in physiology.

(4) Lectures & Courses

We respect each one's independence and positive attitude, and foster a sense of social cooperation and responsibility.

(5) Publications

[Original Articles]

1. Tomomi Sakairi, Masanori Kawabata, Alain Rios, Yutaka Sakai, Yoshikazu Isomura. Hippocampal sharp-wave ripples decrease during physical actions including consummatory behavior in immobile rodents bioRxiv. 2024.12; 2024.12.26.630368
2. Hikaru Sugino, Sho Tanno, Tatsumi Yoshida, Yoshikazu Isomura, Riichiro Hira. Functional segregation and dynamic integration of the corticotectal descending signal in rat. Neuroscience research. 2024.09; 210; 38-50

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1. Alain Rios, Kyohei Fujita, Yoshikazu Isomura, Nobuya Sato. Adaptive circuits for action and value information in rodent operant learning Neuroscience Research. 2024.09;
2. Riichiro Hira. Closed-loop experiments and brain machine interfaces with multiphoton microscopy Neurophotonics. 2024.02;

[Conference Activities & Talks]

1. Sunahara M, Rios A, Kawabata M, Kato S, Hamada S, Ohtsuka T, Kobayashi K, Takahashi H, Isomura Y. The functional role of thalamic reticular nucleus in motor execution and control . The 47th Annual Meeting of Japan Neuroscience Society: Neuro2024 (Fukuoka Convention Center, Fukuoka) 2024.07.26
2. Kawabata M, Isomura Y. Exploring the distribution and flow of information related to sensory-motor transformation using wide-area electrophysiological recordings . The 47th Annual Meeting of Japan Neuroscience Society: Neuro2024 (Fukuoka Convention Center, Fukuoka) 2024.07.26
3. Rios A, Hira R, Kawabata M, Fujita K, Sunahara M, Sakairi T, Etori S, Isomura Y. Differential Roles of Prefrontal Cortex Neurons in Reward-Based Decision-Making . The 47th Annual Meeting of Japan Neuroscience Society: Neuro2024 (Fukuoka Convention Center, Fukuoka) 2024.07.24 Fukuoka Convention Center, Fukuoka
4. Mochimasu A, Kawabata M, Sasaki T, Isomura Y. Quantification of Stimulus Timing Prediction and its Change by Drug Administration in Waiting Time Task using head-fixed rats . The 47th Annual Meeting of Japan Neuroscience Society: Neuro2024 (Fukuoka Convention Center, Fukuoka) 2024.07.24
5. Sugino H, Yoshida T, Isomura Y, Hira R. Complex temporal dynamics in response to cortical stimulation in the deep layer of lateral superior colliculus . The 47th Annual Meeting of Japan Neuroscience Society: Neuro2024 (Fukuoka Convention Center, Fukuoka) 2024.07.24
6. Hira R, Nishio T, Igarashi J, Hira A, Isomura Y, Smith SL. BrainModules: A versatile visualization tool for functional and anatomical correlation for mice and marmosets . The 47th Annual Meeting of Japan Neuroscience Society: Neuro2024 (Fukuoka Convention Center, Fukuoka) 2024.07.24
7. Rios A, Nonomura S, Kato S, Yoshida J, Matsushita N, Nambu A, Takada M, Hira R, Kobayashi K, Sasaki Y, Kimura M, Isomura Y. Reward history enhances action-related activity of nigral dopaminergic striatal output pathways. The 101st Annual Meeting of The Physiological Society of Japan 2024.03.28 KitaKyushu International Conference Center, Fukuoka
8. Kawabata M, Hirayama Y, Ebina T, Matsuzaki M, Isomura Y.. Establishing cognitive behavioral tasks for body-fixed marmoset. The 13th Annual Meeting of Japan Society for Marmoset Research 2024.02.20 NCNP, Kodaira, Tokyo

Department of Stem Cell Regulation

Professor Tetsuya TAGA
Junior Associate Professor Kouichi TABU
Assistant Professor Gerel MELIG
Administrative Assistant Maya MAKINO
Technical Assistant Marika NODERA, Toru ISHIKAWA, Kazuko INOUE

(1) Outline

Research in this department has been conducted to elucidate the mechanisms by which stem cells are regulated. The major focus has been on neural stem cells, hematopoietic stem cells, and cancer stem cells. The study is aimed to understand development, maintenance, and regeneration of the central nervous system and the hematopoietic system, and to obtain a clue to tackle the problem of cancer recurrence. Particular attention is given to cell-external cues (such as cytokines) and cell-intrinsic programs (including epigenetic modification), taking cross-interactions of transcriptional regulatory signals into consideration.

(2) Research

Research Subjects in this department are as follows:

- 1) Molecular basis for the maintenance of neural stem cells
- 2) Regulation of the neural stem cell fate
- 3) Characterization of hematopoietic stem cells in fetal hematopoietic organs
- 4) Characterization of cancer stem cells and their niche
- 5) Development of bio-functional polymers and their applications for cancer stem cell regulation

(3) Education

Our education has been conducted to elucidate the mechanisms by which stem cells are regulated. The major focus has been on neural stem cells, hematopoietic stem cells, and cancer stem cells. The study is aimed to understand development, maintenance, and regeneration of the central nervous system and the hematopoietic system, and to obtain a clue to tackle the problem of cancer recurrence. The projects have been performed, for instance by elucidation of stem cell characteristics, analysis of transcriptional regulatory signaling pathways, and identification of niche signals.

(4) Lectures & Courses

Under our education program, students will learn the molecular basis of stem cell regulation in view of cell-extrinsic signals and cell intrinsic-programs during tissue development, maintenance, and regeneration from molecular to whole-body levels. Students will receive exposure to cutting edge concepts and research technologies, and study regulatory mechanisms in neural, hematopoietic, and cancer stem cells. With emphasis also on physiological and pathological conditions surrounding the stem cells, we aim to improve student's understanding of stem cells from multiple viewpoints.

(5) Publications

[Original Articles]

1. Tarapongpun T, Onlamoon N, Tabu K, Chuthapisith S, Taga T. The optimized priming effect of FGF-1 and FGF-2 enhances preadipocyte lineage commitment in human adipose-derived mesenchymal stem cells. *Genes to cells*. 2024.03; 29(3); 231-253

[Conference Activities & Talks]

1. Kouichi Tabu and Tetsuya Taga. C3a receptor-mediated self-sacrificing adaptation in cancer stem cells contributing to glioma recurrence. 第 83 回日本癌学会学術集会 2024.09.18
2. Tetsuya Taga. Overview of inflammatory diseases involving bone, skin and beyond. 16th World Congress on Inflammation 2024.07.22
3. Melig Gerel, Nobuhisa Ikuo, Saito Kioka, Tsukahara Ryota, Itabashi Ayumi, Kanai Yoshiakira, Kanai-Azuma Masami, Taga Tetsuya. Rasip1 is a downstream effector of Sox17 that plays a role in maintaining hematopoietic cluster cells in midgestation mouse embryos. The 45th Annual Meeting of the Japanese Society of Inflammation and Regeneration 2024.07.17
4. Tetsuya Taga, Norihisa Bizen, Kouichi Tabu, Mei Wu, Christian Mangani, Rong Zhang, Mark Bradley. Identification of a niche-mimicking synthetic polymer scaffold for the maintenance of neural stem cells in a culture system without growth factors and serum. The 21st Stem Cell Research Symposium 2024.05.25
5. Tetsuya Taga, Norihisa Bizen, Kouichi Tabu, Mei Wu, Christian Mangani, Rong Zhang, Mark Bradley. Identification of a niche-mimicking synthetic polymer scaffold for the maintenance of neural stem cells in a culture system without growth factors and serum. 第 21 回幹細胞シンポジウム 2024.05.24
6. Taichi Kashiwagi, Tetstsushi Kagawa, Ikuo Nobuhisa, Akihiko Yoshimura, Tetsuya Taga. NSC fate preference transition from neurogenesis to astrogliogenesis by the FGF signaling negative feed-back regulator Sprouty 4 . The 21st Stem Cell Research Symposium 2024.05.24

Department of Respiratory Medicine

Professor: Yasunari Miyazaki

Junior Associate Professor: Haruhiko Furusawa, Tsuyoshi Shirai

Assistant Professor: Masahiro Ishizuka, Takayuki Honda, Rie Sakakibara, Akifumi Mochizuki

Project Assistant Professor: Mitsuru Aoki, Haruna Yamaki

Clinical Fellow: Susumu Takahashi, Sao Yoshii, Nozomi Sato, Takayuki Yamada, Mari Sugawara

Resident: Mitsuki Otsuka, Shotaro Aoki

Ph.D. Student: Jun Sugihara, Takashi Shimamura, Masaru Ito, Shinya Fujii, Nobuyuki Kondo, Takemoto Abe, Natsumi Asao

Professor, Department of Respiratory and Nervous System Science: Yuki Sumi

Professor, Health Administration Center: Ryushi Tazawa

Assistant Professor, Health Administration Center: Seiko Takasawa

Associate Professor, Department of Respiratory Physiology and Sleep Medicine: Tomoya Tateishi

Associate Professor, The Center for Personalized Medicine for Healthy Aging : Tsukasa Okamoto

Junior Assistant Professor, Department of Pulmonary Immunotherapeutics: Masahiro Ishizuka

Project Professor: Yasuhiro Setoguchi

(1) Outline

The lungs are in contact with the outside environment for breathing and are susceptible to external factors such as bacterial / viral infections, smoking, and dust exposure. Therefore, respiratory diseases include tumors, infectious diseases, allergic diseases, other inflammations, and congenital anomalies. In this field, we will foster researchers who are able to understand the pathophysiology of a wide range of respiratory diseases and to conduct research that approaches the mechanism of disease development having a scientific perspective.

(2) Research

1. Pathophysiology of hypersensitivity pneumonitis, identification of causative antigens in the environment
2. Pathophysiology in lung fibrosis
3. Pathophysiology of acute exacerbations in interstitial pneumonia
4. Pathophysiology of pulmonary fibrosis and emphysematous changes
5. Tumor immunity in mesothelioma
6. Examination of oral allergy syndrome and asthma desensitization
7. Airway remodeling mechanism in asthma model
8. Pathophysiology of sleep apnea
9. Development of treatment for antibacterial drug-resistant bacteria

(3) Education

Main objective in the graduate course is to provide our students to study specific diagnostic modalities as well as basic scientific findings regarding the pathogenesis of pulmonary diseases. Students are also taught on basic science and its related laboratory technology depending upon their research subject.

(4) Lectures & Courses

Students should try to understand a variety of pulmonary diseases in terms of scientific aspect and make an appropriate plan to examine unsolved research questions.

(5) Clinical Services & Other Works

Our clinic provides a full spectrum of diagnosis and treatment of a variety of pulmonary diseases. Consultant system is open to all departments in this hospital and daily clinical conference regarding inpatients is organized by professors of the department. In outpatient clinic, chemotherapy, home oxygen therapy, management of sleep apnea, and arrange of clinical studies are provided.

(6) Clinical Performances

We have immunological tools to examine hypersensitivity pneumonitis including antigen inhalation challenge test, specific antibody against causative antigen, and lymphocyte proliferation test. Many patients with interstitial lung diseases in Japan are referred to our clinic.

(7) Publications

[Original Articles]

1. Shimamura T, Furusawa H, Ejima M, Ozawa A, Adachi T, Tateishi U, Miyazaki Y. Clinical characteristics and prognostic factors for MPO-ANCA positive interstitial lung disease: A comparative study of ANCA associated vasculitis (AAV)-ILD and pulmonary limited vasculitis. *Respiratory investigation*. 2024.11; 63(1); 1.
2. Nakayama S, Yoshizawa A, Tsurutani J, Yoshimura K, Aoki G, Iwamoto T, Nagase H, Sugimoto N, Kobayashi K, Izumi S, Kato T, Miyazaki Y, Kurihara Y, Taira N, Aihara T, Kikawa Y, Mukai H. Real-world incidence of and risk factors for abemaciclib-induced interstitial lung disease in Japan: a nested case-control study of abemaciclib-induced interstitial lung disease (NOSIDE). *Breast cancer (Tokyo, Japan)*. 2024.11; 32(1); 177.
3. Kondoh Y, Furukawa T, Hozumi H, Suda T, Egashira R, Jokoh T, Fukuoka J, Kuwana M, Teramachi R, Fujisawa T, Hasegawa Y, Ogura T, Miyazaki Y, Oyama S, Teramukai S, Horiguchi G, Naito A, Inoue Y, Ichikado K, Bando M, Tomioka H, Nishioka Y, Chiba H, Ebina M, Nakanishi Y, Satoh K, Shiratori Y, Hashimoto N, Ishii M. The providing multidisciplinary ILD diagnoses (PROMISE) study - study design of the national registry of Japan facilitating interactive online multidisciplinary discussion diagnosis. *BMC pulmonary medicine*. 2024.10; 24(1); 511.
4. Iijima Y, Furusawa H, Yamana T, Shibata S, Shirai T, Okamoto T, Tateishi T, Adachi T, Kirimura S, Miyazaki Y. Reevaluating diagnosis in interstitial lung disease with a second multidisciplinary discussion. *Respir Invest*. 2024.09; 62(6); 1027-1033
5. Kubota N, Okamoto T, Shimada S, Yamana T, Iijima Y, Sakakibara R, Shibata S, Honda T, Mitsumura T, Shirai T, Furusawa H, Tateishi T, Adachi T, Kirimura S, Miyazaki Y. Solitary Pure Ground-glass Opacity Suspected of Being the Initial Presentation of Nonfibrotic Hypersensitivity Pneumonitis..*Internal Medicine*. 2024.09; 63(18); 2543.
6. Sumikawa H, Komiya K, Egashira R, Tominaga J, Ueno M, Fukuda T, Yamada D, Takei R, Kataoka K, Kimura T, Kondoh Y, Ejima M, Shimamura T, Tateishi T, Tomioka H, Miyazaki Y, Suda T, Johkoh T. Validation of a computed tomography diagnostic model for differentiating fibrotic hypersensitivity pneumonitis from idiopathic pulmonary fibrosis. *Respiratory investigation*. 2024.09; 62(5); 798.
7. Y Kurihara, T Honda, A Takemoto, K Seto, S Endo, K Tanimoto, S Kirimura, M Kobayashi, S Baba, Y Nakashima, R Wakejima, RSakakibara, H Ishibashi, J Inazawa, T Tanaka, Y Miyazaki, K Okubo.

- Immunohistochemistry of p53 surrogates TP53 mutation as an accurate predictor for early-relapse of surgically resected stage I-III lung adenocarcinoma. *JTCVS Open*. 2024. 08;
8. Okamoto T, Hanafusa M, Abe T, Shimamura T, Ito M, Wakai Y, Jinta T, Higa K, Kondoh Y, Okouchi Y, Okuda R, Bando M, Suda T, Tomioka H, Fujiwara T, Takase M, Yoshihara S, Odajima H, Miyazaki Y. Estimated prevalence and incidence of hypersensitivity pneumonitis in Japan. *Allergology international : official journal of the Japanese Society of Allergology*. 2024.08; 74(1); 66-71
 9. Furusawa H, Shimada S, Sawada A, Tanaka K, Yamamoto K, Miyazaki Y. Composite Lymphoma after Treatment with Infliximab for Sarcoidosis and Ankylosing Spondylitis. *Intern Med*. 2024. 06;
 10. Omori T, Hanafusa M, Kondo N, Miyazaki Y, Okada S, Fujiwara T, Kuramochi J. Specific sequelae symptoms of COVID-19 of Omicron variant in comparison with non-COVID-19 patients: a retrospective cohort study in Japan. *Journal of thoracic disease*. 2024.05; 16(5); 3170.
 11. Kitano M, Honda T, Hikita E, Masuo M, Miyazaki Y, Kobayashi M. Delayed immune-related adverse events in long-responders of immunotherapy: a single-center experience. *Asia-Pacific journal of clinical oncology*. 2024.04; 20(4); 463.
 12. Shimada S, Yamaguchi T, Mikoshiba S, Sato K, Mitsumura T, Komori K, Yamana T, Iijima Y, Sakakibara R, Shibata S, Honda T, Shirai T, Okamoto T, Furusawa H, Tateishi T, Miyazaki Y. Relapsing bronchopneumonia due to community-associated methicillin-resistant *Staphylococcus aureus*: a case report. *BMC infectious diseases*. 2024.04; 24(1); 374.
 13. Hanzawa S, Sugiura M, Nakae S, Masuo M, Morita H, Matsumoto K, Takeda K, Okumura K, Nakamura M, Ohno T, Miyazaki Y. The Prostaglandin D2 Receptor CRTH2 Contributes to Airway Hyperresponsiveness during Airway Inflammation Induced by Sensitization without an Adjuvant in Mice. *International archives of allergy and immunology*. 2024.04; 185(8); 1.
 14. Komatsuzaki K, Kageshima H, Sekino Y, Suzuki Y, Ugajin T, Tamaoka M, Hanazawa R, Hirakawa A, Miyazaki Y. Local nasal immunotherapy with birch pollen-galactomannan conjugate-containing ointment in mice and humans. *Allergology International*. 2024.04; 73(2); 290.
 15. Isobe K, Nakamura Y, Sakamoto S, Tomii K, Takimoto T, Miyazaki Y, Matsumoto M, Sugino K, Ichikado K, Moriguchi S, Yamaguchi K, Baba T, Ozasa H, Igata F, Anabuki K, Homma S, Date H, Suda T, Kishi K. Immune checkpoint inhibitors in patients with lung cancer having chronic interstitial pneumonia. *ERJ open research*. 2024. 03; 10(2);
 16. Kubota N, Okamoto T, Shimada S, Yamana T, Iijima Y, Sakakibara R, Shibata S, Honda T, Mitsumura T, Shirai T, Furusawa H, Tateishi T, Adachi T, Kirimura S, Miyazaki Y. A Case of Solitary Pure Ground-glass Opacity Suspected of Being the Initial Presentation of Nonfibrotic Hypersensitivity Pneumonitis. *Internal medicine (Tokyo, Japan)*. 2024.02; 63(18); 2543.
 17. Iijima Y, Ejima M, Yamana T, Sonoda S, Shibata S, Shirai T, Okamoto T, Furusawa H, Tateishi T, Adachi T, Mori M, Kirimura S, Anzai T, Takahashi K, Miyazaki Y. Assessment of clinical relevance of antigen improves diagnostic accuracy of hypersensitivity pneumonitis. *BMC pulmonary medicine*. 2024.02; 24(1); 84.
 18. Yasui S, Honda T, Onishi I, Ikeda S, Miyazaki Y. Effective Treatment of Lung Adenocarcinoma With a Novel SLC44A1-BRAF Fusion Using Pembrolizumab Followed by Trametinib: A Case Report. *Cureus*. 2024.02; 16(2); e54739.
 19. Mochizuki A, Shiraishi K, Honda T, Higashiyama RI, Sunami K, Matsuda M, Shimada Y, Miyazaki Y, Yoshida Y, Watanabe SI, Yatabe Y, Hamamoto R, Kohno T. Passive Smoking-Induced Mutagenesis as a Promoter of Lung Carcinogenesis. *Journal of thoracic oncology : official publication of the International Association for the Study of Lung Cancer*. 2024.02; 19(7); 984.
 20. Aoki H, Miyazaki Y, Anzai T, Yokoyama K, Tsuchiya J, Shirai T, Shibata S, Sakakibara R, Mitsumura T, Honda T, Furusawa H, Okamoto T, Tateishi T, Tamaoka M, Yamamoto M, Takahashi K, Tateishi U, Yamaguchi T. Deep convolutional neural network for differentiating between sarcoidosis and lymphoma based on 18F-FDG maximum-intensity projection images. *Eur Radiol*. 2024.01; 34(1); 374.

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2. Bando M, Homma S, Date H, Kishi K, Yamauchi H, Sakamoto S, Miyamoto A, Goto Y, Nakayama T, Azuma A, Kondoh Y, Johkoh T, Nishioka Y, Fukuoka J, Miyazaki Y, Yoshino I, Suda T, Ministry of Health, Labour and Welfare, the Study Group on Diffuse Pulmonary Disorders, Scientific Research/Research on Intractable Diseases, and Japanese Respiratory Society. Japanese guidelines for the treatment of idiopathic pulmonary fibrosis 2023:Revised edition. *Respiratory investigation*. 2024.05; 62(3); 402.

Gastroenterology and Hepatology

Professor

Ryuichi OKAMOTO(Department of Gastroenterology and Hepatology)

Professor

Yasuhiro ASAHINA(Department of Liver Disease Control)

Kazuo OHTSUKA(Endoscopy)

Associate Professor

Yasuhiro NEMOTO(Department of Gastroenterology and Hepatology)

Takashi NAGAISHI(Department of Advanced Therapeutics for GI Diseases)

Toshimitsu FUJII(Department of Collaborative Medicine for Gastroenterology and Hepatology)

Masakazu NAGAHORI(Clinical Research Center)

Mina NAKAGAWA(Curricular Management Division)

Eriko OKADA(Department of Medical Education Research and Development)

Shiro YUI(Center for Stem Cell and Regenerative Medicine)

Junior Associate Professor

Hiromichi SHIMIZU(Gastroenterology and Hepatology)

Tomohiro MIZUTANI(Department of Gastroenterology and Hepatology)

Masayoshi FUKUDA(Endoscopy)

Kento TAKENAKA(Department of Collaborative Medicine for Gastroenterology and Hepatology)

Yoshihito KANO(Department of Clinical Oncology)

Assistant Professor

Eiko SAITO

Miyako MURAKAWA(Gastroenterology and Hepatology)

Masato MIYOSHI(Department of Gastroenterology and Hepatology)

Masanori KOBAYASHI(Gastroenterology and Hepatology)

Shun KANEKO(Gastroenterology and Hepatology)

Fukiko KITAHATA

Ami KAWAMOTO(Endoscopy)

Shuji HIBIYA(Endoscopy)

Project Assistant Professor

Go ITO(Department of Gastroenterology and Hepatology)

Satoru FUJII(Department of Gastroenterology and Hepatology)

Specially Appointed Assistant Professor

Akiko TAMURA (Gastroenterology and Hepatology)

Sakurako KOBAYASHI (Gastroenterology and Hepatology)

Senior Resident

Ryo MORIKAWA, Tsubasa NOBUSAWA, Keiya WATAKABE, Nobuhiko OGASAWARA,

Eri Oshina, Keito Suzuki, Ryosuke HAMAMURA(Gastroenterology and Hepatology)

Yuki YONEMOTO, Yuka HAYAKAWA, Takahiro SHIN(Endoscopy)

Shun FUJIWARA(Department of Clinical Oncology)

Resident

Kei ONODERA, Tsuyoshi TAKAMATSU, Ryosuke KANAYA(Gastroenterology and Hepatology)

Project Researcher

Jun TSUCHIYA, Taro SHIMIZU(Department of Gastroenterology and Hepatology)

Graduate Student

Tomohiro MOCHIDA, Tomohiro MUTO, Sakura KIRINO, Kento INADA

Shu KATO, Yuki Hady SUGIHARA, Hiromune Katsuda, Shuhei SEKIGUCHI

Shun ISHIDO, Sho KAWASAKI, Hitoshi UCHIDA

(1) Outline

Research project is selected from the clinical problems in the Gastroenterology and Hepatology to understand the research policy, as clinical science that the results of research project finally should be restored to clinical medicine.

The purpose of this course is the understanding the situation of inflammatory bowel disease (IBD) in Japan and the problems about the pathogenesis and intractable cause of IBD. In addition, the understanding the pathogenesis and problems about the liver diseases such as viral hepatitis, cirrhosis and hepatocellular carcinoma is the purpose of this course.

(2) Research

Basic Research Projects

Systemic Organ Regulation

- Elucidating the pathophysiology of inflammatory bowel diseases and development of treatment by diseasespecific immune regulation.
- Development of novel therapeutics for inflammatory and allergic diseases based on gut-specific mucosal immune regulation.
- Basic research and clinical application of regenerative medicine in gastrointestinal diseases.
- Comprehensive analysis of susceptibility genes for various gastrointestinal diseases.
- Crosstalk of the signaling pathways in intestinal epithelial cells.
- Functional analysis of the intestine using primary cell culture in vitro.

(3) Education

We believe that the central role of clinical departments in the graduate school is to establish basis for the innovative medicine / medical treatment in the next generation. Basic research lead by clinical concepts, and development of novel therapeutics established upon basic research are both critically required to achieve our mission. Therefore, our primary goal is set to train highly educated and experienced clinician-researchers in the field of gastroenterology and hepatology.

In the clinical area, we pursue development and application of highly advanced technologies, including novel endoscopic procedures, for sophisticated diagnosis and treatment of gastrointestinal and liver diseases. In basic research, our principle is to achieve "clinical science", a research evoked from various clinical problems, and also directed to launch innovative therapeutic procedures to the daily clinical practice. Based on these principals, we are running research projects to 1) develop novel therapy for refractory inflammatory bowel diseases, 2) prevent progression of liver failure in chronic hepatitis patients and 3) improve anti-cancer therapy for the treatment of gastrointestinal malignancies, by expanding our distinct basic research findings in the area of mucosal immunology, liver immunology, regenerative medicine and virology, to various clinical settings. Moreover, we promote both intra- and inter-national exchanges of researchers, and provide good opportunities to study abroad. The final goal of our education is to promote students to become a well-developed clinician researcher, and also a leading expert in the field of gastroenterology and hepatology.

(4) Lectures & Courses

Research Conference	every Tuesday 18:00 19:30
Journal Club	every Tuesday 18:00 19:30

(5) Clinical Services & Other Works

Expert Areas in Clinical Practice

- Immune-regulation based treatment of inflammatory bowel diseases.
- Prevention of chronic hepatitis progression to hepatocellular cancer and liver failure, by virology-based treatment strategy.
- Clinical trial of innovative treatment for hepatocellular cancer.

- Diagnosis and treatment of small intestinal diseases by balloon assisted enteroscopy and capsule enteroscopy.
- Advanced diagnosis and treatment of colonic diseases by colonoscopy.
- Development of minimally-invasive diagnostic modalities for gastrointestinal diseases (i.e. MR enterography).
- Improved chemotherapy for gastric and pancreatic malignancies.

(6) Clinical Performances

Therapeutics of inflammatory bowel diseases by corrections of immunological disfunctions.

Diagnostic and interventional gastrointestinal endoscopy.

Antiviral therapies against chronic viral hepatitis and preventions of hepatic malignancy novel interventions of hepatic malignancy.

(7) Publications

[Original Articles]

1. Miyako Murakawa, Mina Nakagawa, Hisaaki Nishimura, Shun Kaneko, Masato Miyoshi, Fukiko Kawai-Kitahata, Sayuri Nitta, Jun Tsuchiya, Taro Shimizu, Keiya Watakabe, Tomohiro Mochida, Kento Inada, Yasuhiro Iizuka, Hideki Sakai, Yuki Sakurai, Ayako Sato, Seishin Azuma, Takahiro Kawamura, Chiaki Maeyashiki, Masayuki Kurosaki, Fumihiko Kusano, Hideki Watanabe, Hitoshi Kurata, Yuko Karakama, Takeo Fujiwara, Yuki Nagata, Toshihiro Tanaka, Sei Kakinuma, Ryuichi Okamoto, Yasuhiro Asahina. High serum gamma-glutamyltransferase level after hepatitis C virus elimination is a risk factor for the development of hepatocellular carcinoma. *Hepatol Res.* 2024.12; 54(12); 1128-1138
2. Junichi Takahashi, Hady Yuki Sugihara, Shu Kato, Sho Kawasaki, Sayaka Nagata, Ryuichi Okamoto, Tomohiro Mizutani. Controlled aggregative assembly to form self-organizing macroscopic human intestine from induced pluripotent stem cells. *Cell Rep Methods.* 2024.12; 4(12); 100930
3. Morikawa R, Nitta K, Yasuda S, Kano Y, Noji R, Aoyama S, Sato S, Ikeda S, Okamoto R, Nagata M, Mori T, Suenaga M. Identification of risk factors for gastrointestinal immune-related adverse events associated with immune check point inhibitors. *Expert opinion on drug safety.* 2024.12;
4. Tomohiro Mizutani, Matteo Boretto, Sangho Lim, Jarno Drost, Diego Montiel González, Rurika Oka, Maarten H Geurts, Harry Begthel, Jeroen Korving, Johan H van Es, Ruben van Boxtel, Hans Clevers. Recapitulating the adenoma-carcinoma sequence by selection of four spontaneous oncogenic mutations in mismatch-repair-deficient human colon organoids. *Nat Cancer.* 2024.12; 5(12); 1852-1867
5. Kento Takenaka, Tadakazu Hisamatsu, Taku Kobayashi, Hironori Yamamoto, Naoki Ohmiya, Ryohei Hayashi, Katsuyoshi Matsuoka, Masayuki Saruta, Akira Andoh, Norimasa Fukata, Kenji Watanabe, Hiroyuki Imaeda, Fumihito Hirai, Takayuki Matsumoto, Akihiro Hirakawa, Tomonori Yano, Minoru Matsuura, Ryuichi Okamoto, Kazuo Ohtsuka, Mamoru Watanabe. Inadequate Efficacy of Biologics for Treating Proximal Ileal Lesions in Crohn's Disease; A Prospective Multicenter Study. *Clin Gastroenterol Hepatol.* 2024.12; Online ahead of print;
6. Yotaro Motomura, Kota Yoshifuji, Keisuke Tanaka, Chizuko Sakashita, Yoshihiro Umezawa, Toshikage Nagao, Sayuri Nitta, Yasuhiro Asahina, Takehiko Mori, Masahide Yamamoto. Hepatitis C virus-related hepatitis flare after immunochemotherapy in a patient with follicular lymphoma. *J Clin Exp Hematop.* 2024.12; 64(4); 313-317
7. Hiromune Katsuda, Masanori Kobayashi, Go Ito, Ami Kawamoto, Susumu Krimura, Hiroyuki Sato, Akihiro Hirakawa, Keiichi Akahoshi, Atsushi Kudo, Kazuo Ohtsuka, Ryuichi Okamoto. Evaluating endoscopic ultrasound-guided tissue acquisition for diagnosis of small pancreatic neuroendocrine neoplasms. *Endosc Int Open.* 2024.11; 12(11); E1379-E1385
8. Shun Ishido, Masanori Kobayashi, Ryuichi Okamoto. Low-cost and reliable method for confirming residual bile duct stones utilizing a novel peroral cholangioscope. *Dig Endosc.* 2024.10; 36(10); 1173-1175
9. Ryosuke Hamamura, Masanori Kobayashi, Ryuichi Okamoto. Endoscopic transpapillary gallbladder drainage using a novel cholangioscope. *Dig Endosc.* 2024.10; Online ahead of print;

10. Yuki Tahata, Hayato Hikita, Satoshi Mochida, Nobuyuki Enomoto, Norifumi Kawada, Akio Ido, Daiki Miki, Masayuki Kurosaki, Hitoshi Yoshiji, Ryotaro Sakamori, Hidekatsu Kuroda, Hiroshi Yatsuhashi, Taro Yamashita, Yoichi Hiasa, Naoya Kato, Hisamitsu Miyaaki, Yoshiyuki Ueno, Yoshito Itoh, Kentaro Matsuura, Taro Takami, Yasuhiro Asahina, Goki Suda, Norio Akuta, Ryosuke Tateishi, Yasunari Nakamoto, Eiji Kakazu, Shuji Terai, Masahito Shimizu, Masanori Miyazaki, Yasutoshi Nozaki, Satoshi Sobue, Hiroki Yano, Tomokatsu Miyaki, Akihiro Moriuchi, Takeshi Hori, Kumiko Shirai, Kazuhiro Murai, Yoshinobu Saito, Takahiro Kodama, Tomohide Tatsumi, Tomomi Yamada, Tetsuo Takehara. Factors involved in gastroesophageal varix-related events in patients with hepatitis C virus-related compensated and decompensated cirrhosis after direct-acting antiviral therapy. *Hepatol Res.* 2024.10; Online ahead of print;
11. Eri Oshina, Masanori Kobayashi, Ryuichi Okamoto. Functional Gallbladder Disorder: Characteristic Hepatobiliary Scintigraphy Findings. *Intern Med.* 2024.08; Online ahead of print;
12. Hiromune Katsuda, Masanori Kobayashi, Ryuichi Okamoto. Endoscopic recanalization of an occluded Braun anastomosis using an endoscopic injection needle. *Dig Endosc.* 2024.07; 36(7); 851-852
13. Haruki Uojima, Kazumi Yamasaki, Masaya Sugiyama, Masayoshi Kage, Norihiro Ishii, Ken Shirabe, Hisashi Hidaka, Chika Kusano, Miyako Murakawa, Yasuhiro Asahina, Takashi Nishimura, Hiroko Iijima, Kazumasa Sakamoto, Kiyoaki Ito, Keisuke Amano, Takumi Kawaguchi, Nobuharu Tamaki, Masayuki Kurosaki, Takanori Suzuki, Kentaro Matsuura, Akinobu Taketomi, Satoru Joshita, Takeji Umemura, Sohji Nishina, Keisuke Hino, Hidenori Toyoda, Hiroshi Yatsuhashi, Masashi Mizokami. Quantitative measurements of M2BPGi depend on liver fibrosis and inflammation. *J Gastroenterol.* 2024.07; 59(7); 598-608
14. Takanori Kuroki, Yasuharu Maeda, Shin-Ei Kudo, Noriyuki Ogata, Marietta Iacucci, Kazumi Takishima, Yutaro Ide, Tomoya Shibuya, Shigenori Semba, Jiro Kawashima, Shun Kato, Yushi Ogawa, Katsuro Ichimasa, Hiroki Nakamura, Takemasa Hayashi, Kunihiko Wakamura, Hideyuki Miyachi, Toshiyuki Baba, Tetsuo Nemoto, Kazuo Ohtsuka, Masashi Misawa. A novel artificial intelligence-assisted "vascular healing" diagnosis for prediction of future clinical relapse in patients with ulcerative colitis: a prospective cohort study (with video). *Gastrointest Endosc.* 2024.07; 100(1); 97-108
15. Shimizu H, Aonuma Y, Hibiya S, Kawamoto A, Takenaka K, Fujii T, Saito E, Nagahori M, Ohtsuka K, Okamoto R. Long-term efficacy and safety of tofacitinib in patients with ulcerative colitis: 3-year results from a real-world study. *Intestinal research.* 2024.07;
16. Watakabe K, Miyoshi M, Kakinuma S, Sato A, Tsuchiya J, Shimizu T, Mochida T, Inada K, Kaneko S, Kawai-Kitahata F, Murakawa M, Nitta S, Nakagawa M, Oshima S, Watanabe M, Ma A, Asahina Y, Okamoto R. A20 in hepatic stellate cells suppresses chronic hepatitis by inhibiting DCLK1-JNK pathway-dependent chemokines. *FASEB journal : official publication of the Federation of American Societies for Experimental Biology.* 2024.07; 38(13); e23757
17. Taku Kobayashi, Kei Moriya, Toshimitsu Fujii, Shigeki Bamba, Shinichiro Shinzaki, Akihiro Yamada, Takashi Hisabe, Shintaro Sagami, Shuji Hibiya, Takahiro Amano, Noritaka Takatsu, Katsutoshi Inagaki, Ken-Ichi Iwayama, Toshifumi Hibi. Early resolution of bowel urgency by budesonide foam enema results in improved quality of life in patients with ulcerative colitis: a multicenter prospective observational study. *Intest Res.* 2024.07; Online ahead of print;
18. Kazuma Saito, Masanori Kobayashi, Minato Yokoyama, Towako Taguchi, Koichiro Kimura, Takumi Akashi, Yasuhisa Fujii, Ryuichi Okamoto. Transjejunal fine-needle biopsy using a forward-viewing echoendoscope for diagnosis of a rare hereditary paraganglioma. *VideoGIE.* 2024.07; 9(7); 329-332
19. Masanori Kobayashi, Mao Niimi, Hiromune Katsuda, Keiichi Akahoshi, Yuko Kinowaki, Masanao Sasaki, Akihiro Hirakawa, Ukihide Tateishi, Minoru Tanabe, Ryuichi Okamoto. Optimization of Endoscopic Ultrasound Characteristics in the Diagnosis of Malignant Intraductal Papillary Mucinous Neoplasm. *Pancreas.* 2024.07; 53(6); e521-e527
20. Shun Kaneko, Yasuhiro Asahina, Miyako Murakawa, Shunsuke Ueyama, Chiaki Maeyashiki, Hideki Watanabe, Akiko Kusano-Kitazume, Ayako Sato, Kozue Uchidate, Takehito Asakawa, Sho Watanabe, Yasuhiro Iizuka, Isamu Shibata, Shinya Ooka, Yuko Karakama, Takashi Fujii, Taro Watabe, Keiichi Akahoshi, Minoru Tanabe, Kento Inada, Tomohiro Mochida, Keiya Watakabe, Taro Shimizu, Jun Tsuchiya, Masato Miyoshi, Fukiko Kitahata-Kawai, Sayuri Nitta, Mina Nakagawa, Sei Kakinuma, Ryuichi

- Okamoto, . Prognostic significance of C-reactive protein in unresectable hepatocellular carcinoma treated with atezolizumab and bevacizumab. *Hepatol Res.* 2024.06; 54(6); 562-574
21. Tatsuya Suzuki, Yuka Hayakawa, Shun Kaneko, Kento Takenaka, Keiya Watakabe, Yuko Kinowaki, Akira Takemoto, Kazuo Ohtsuka, Yasuhiro Asahina, Ryuichi Okamoto. Granulomatous hepatitis with Crohn's disease: a case report. *Clin J Gastroenterol.* 2024.06; 17(3); 551-556
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23. Keito Suzuki, Yutaka Yasui, Kaoru Tsuchiya, Hiroaki Matsumoto, Yudai Yamazaki, Naoki Uchihara, Yuki Tanaka, Haruka Miyamoto, Michiko Yamada-Shimizu, Taisei Keitoku, Risa Okada, Mayu Higuchi, Kenta Takaura, Shohei Tanaka, Chiaki Maeyashiki, Nobuharu Tamaki, Hiroyuki Nakanishi, Yuka Takahashi, Yasuhiro Asahina, Ryuichi Okamoto, Masayuki Kurosaki, Namiki Izumi. Impact of immune-related adverse events in patients with hepatocellular carcinoma treated with atezolizumab plus bevacizumab. *J Gastroenterol Hepatol.* 2024.06; 39(6); 1183-1189
24. Motoki Makuuchi, Yoichi Kakuta, Junji Umeno, Toshimitsu Fujii, Tetsuya Takagawa, Takashi Ibuka, Miki Miura, Yu Sasaki, Sakuma Takahashi, Hiroshi Nakase, Hiroki Kiyohara, Keiichi Tominaga, Yosuke Shimodaira, Sakiko Hiraoka, Nobuhiro Ueno, Shunichi Yanai, Takeo Yoshihara, Kazuki Kakimoto, Katsuyoshi Matsuoka, Ryohei Hayashi, Sohachi Nanjo, Itaru Iwama, Yoh Ishiguro, Hirofumi Chiba, Katsuya Endo, Takashi Kagaya, Tomohiro Fukuda, Yasuhisa Sakata, Takahiro Kudo, Tomohisa Takagi, Kenichi Takahashi, Makoto Naganuma, Masaru Shinozaki, Noriyuki Ogata, Hiroki Tanaka, Kazuyuki Narimatsu, Haruka Miyazaki, Takashi Ishige, Motoyuki Onodera, Yu Hashimoto, Hiroshi Nagai, Yusuke Shimoyama, Takeo Naito, Rintaro Moroi, Hisashi Shiga, , Yoshitaka Kinouchi, Akira Andoh, Tadakazu Hisamatsu, Atsushi Masamune. Real-world NUDT15 genotyping and thiopurine treatment optimization in inflammatory bowel disease: a multicenter study. *J Gastroenterol.* 2024.06; 59(6); 468-482
25. Ken Yamashita, Shiro Oka, Takeshi Yamada, Keigo Mitsui, Hironori Yamamoto, Keiichi Takahashi, Akio Shiomi, Kinichi Hotta, Yoji Takeuchi, Toshio Kuwai, Fumio Ishida, Shin-Ei Kudo, Shoichi Saito, Masashi Ueno, Eiji Sunami, Tomoki Yamano, Michio Itabashi, Kazuo Ohtsuka, Yusuke Kinugasa, Takayuki Matsumoto, Tamotsu Sugai, Toshio Uraoka, Koichi Kurahara, Shigeki Yamaguchi, Tomohiro Kato, Masazumi Okajima, Hiroshi Kashida, Yoshito Akagi, Hiroaki Ikematsu, Masaaki Ito, Motohiro Esaki, Masaya Kawai, Takashi Yao, Madoka Hamada, Takahiro Horimatsu, Keiji Koda, Yasumori Fukai, Koji Komori, Yusuke Saitoh, Yukihide Kanemitsu, Hiroyuki Takamaru, Kazutaka Yamada, Hiroaki Nozawa, Tetsuji Takayama, Kazutomo Togashi, Eiji Shinto, Takehiro Torisu, Akira Toyoshima, Naoki Ohmiya, Takeshi Kato, Eigo Otsuji, Shinji Nagata, Yojiro Hashiguchi, Kenichi Sugihara, Yoichi Ajioka, Shinji Tanaka. Clinicopathological features and prognosis of primary small bowel adenocarcinoma: a large multicenter analysis of the JSCCR database in Japan. *J Gastroenterol.* 2024.05; 59(5); 376-388
26. Makoto Naganuma, Naohiro Nakamura, Reiko Kunisaki, Katsuyoshi Matsuoka, Shojiro Yamamoto, Ami Kawamoto, Daisuke Saito, Taku Kobayashi, Kosaku Nanki, Kazuyuki Narimatsu, Hisashi Shiga, Motohiro Esaki, Shinichiro Yoshioka, Shingo Kato, Masayuki Saruta, Shinji Tanaka, Eriko Yasutomi, Kaoru Yokoyama, Kei Moriya, Yoshikazu Tsuzuki, Makoto Ooi, Mikihiro Fujiya, Atsushi Nakazawa, Tomohisa Takagi, Teppei Omori, Toshiyuki Tahara, Tadakazu Hisamatsu & The Japanese UC Study Group . Medical treatment selection and outcomes for hospitalized patients with severe ulcerative colitis as defined by the Japanese criteria. *J Gastroenterol.* 2024.04; 59(4); 302-314
27. Nobuhiko Ogasawara, Yoshihito Kano, Yosuke Yoneyama, Sakurako Kobayashi, Satoshi Watanabe, Sakura Kirino, Fausto D Velez-Bravo, Yourae Hong, Aleksandra Ostapiuk, Pavlo Lutsik, Iichiroh Onishi, Shinichi Yamauchi, Yui Hiraguri, Go Ito, Yusuke Kinugasa, Kenichi Ohashi, Mamoru Watanabe, Ryuichi Okamoto, Sabine Tejpar, Shiro Yui. Discovery of non-genomic drivers of YAP signaling modulating the cell plasticity in CRC tumor lines. *iScience.* 2024.03; 27(3); 109247
28. Marc Ferrante, Peter M Irving, Maria T Abreu, Jeffrey Axler, Xiang Gao, Qian Cao, Toshimitsu Fujii, Astrid Rausch, Joana Torres, Ezequiel Neimark, Alexandra Song, Kori Wallace, Kristina Kligys, Sofie Berg, Xiaomei Liao, Qing Zhou, Jasmina Kalabic, Brian Feagan, Remo Panaccione. Maintenance

- Risankizumab Sustains Induction Response in Patients with Crohn's Disease in a Randomized Phase 3 Trial. *J Crohns Colitis*. 2024.03; 18(3); 416-423
29. Becker B, Wottawa F, Bakr M, Koncina E, Mayr L, Kugler J, Yang G, Windross SJ, Neises L, Mishra N, Harris D, Tran F, Welz L, Schwärzler J, Bánki Z, Stengel ST, Ito G, Krötz C, Coleman OI, Jaeger C, Haller D, Paludan SR, Blumberg R, Kaser A, Cicin-Sain L, Schreiber S, Adolph TE, Letellier E, Rosenstiel P, Meiser J, Aden K. Serine metabolism is crucial for cGAS-STING signaling and viral defense control in the gut. *iScience*. 2024.03; 27(3); 109173
 30. Shun Fujiwara, Yoshihito Kano, Yasuhiro Maejima, Tomoyuki Fujioka, Kazuhiro Tamura, Susumu Kirimura, Satoshi Miyake, Ryuichi Okamoto. Clinical Response of Primary Malignant Pericardial Mesothelioma with Peritoneal Dissemination to Nivolumab. *Intern Med*. 2024.02; 63(4); 513-519
 31. Yoshitaka Nishikawa, Takahiro Horimatsu, Shiro Oka, Takeshi Yamada, Keigo Mitsui, Hironori Yamamoto, Keiichi Takahashi, Akio Shiomi, Kinichi Hotta, Yoji Takeuchi, Toshio Kuwai, Fumio Ishida, Shin-Ei Kudo, Shoichi Saito, Masashi Ueno, Eiji Sunami, Tomoki Yamano, Michio Itabashi, Kazuo Ohtsuka, Yusuke Kinugasa, Takayuki Matsumoto, Tamotsu Sugai, Toshio Uraoka, Koichi Kurahara, Shigeki Yamaguchi, Tomohiro Kato, Masazumi Okajima, Hiroshi Kashida, Fumihiko Fujita, Hiroaki Ikematsu, Masaaki Ito, Motohiro Esaki, Masaya Kawai, Takashi Yao, Madoka Hamada, Keiji Koda, Yasumori Fukai, Koji Komori, Yusuke Saitoh, Yukihide Kanemitsu, Hiroyuki Takamaru, Kazutaka Yamada, Hiroaki Nozawa, Tetsuji Takayama, Kazutomo Togashi, Eiji Shinto, Takehiro Torisu, Akira Toyoshima, Naoki Ohmiya, Takeshi Kato, Eigo Otsuji, Shinji Nagata, Yojiro Hashiguchi, Kenichi Sugihara, Yoichi Ajioka, Shinji Tanaka. Outcomes of Metastatic and Unresectable Small Bowel Adenocarcinoma in Japan According to the Treatment Strategy: A Nationwide Observational Study. *JCO Glob Oncol*. 2024.02; 10; e2300392
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 33. Ami Kawamoto, Kento Takenaka, Shuji Hibiya, Yoshio Kitazume, Hiromichi Shimizu, Toshimitsu Fujii, Eiko Saito, Kazuo Ohtsuka, Ryuichi Okamoto. Combination of leucine-rich alpha-2 glycoprotein and fecal markers detect Crohn's disease activity confirmed by balloon-assisted enteroscopy. *Intest Res*. 2024.01; 22(1); 65-74
 34. Xiang Gao, Toshimitsu Fujii, Byong Duk Ye, Jen-Wei Chou, Ken Sugimoto, Qian Cao, Kristina Kligys, Kaoru Murakoshi, Dennis Teng, Yafei Zhang, Hiroshi Nakase. Efficacy and safety of risankizumab for Crohn's disease in patients from Asian countries: a post hoc subanalysis of the global phase 3 ADVANCE, MOTIVATE, and FORTIFY studies. *J Gastroenterol Hepatol*. 2024.01; 39(1); 55-65
 35. Yuki Yonemoto, Yasuhiro Nemoto, Ryo Morikawa, Nana Shibayama, Shigeru Oshima, Takashi Nagaishi, Tomohiro Mizutani, Go Ito, Satoru Fujii, Ryuichi Okamoto. T cell subsets were increased in the small intestinal intraepithelial lymphocytes of aged mice. *Front Immunol*. 2024.01; 15; 1340048
 36. Shun Kaneko, Yasuhiro Asahina, Miyako Murakawa, Seishin Azuma, Kento Inada, Tomohiro Mochida, Keiya Watakabe, Taro Shimizu, Jun Tsuchiya, Masato Miyoshi, Fukiko Kawai-Kitahata, Sayuri Nitta, Marie Takahashi, Tomoyuki Fujioka, Mitsuhiro Kishino, Tatsuhiko Anzai, Sei Kakinuma, Mina Nakagawa, Ryuichi Okamoto. Analysis of prognosis and background liver disease in non-advanced hepatocellular carcinoma in two decades. *PLoS One*. 2024; 19(3); e0297882
 37. Masanori Kobayashi, Hiromune Katsuda, Aya Maekawa, Keiichi Akahoshi, Ryosuke Watanabe, Yuko Kinowaki, Hisaaki Nishimura, Takeo Fujiwara, Minoru Tanabe, Ryuichi Okamoto. Development of an intraductal papillary mucinous neoplasm malignancy prediction scoring system. *PLoS One*. 2024; 19(10); e0312234

[Misc]

1. Toru Kanno, Kazuo Otsuka, Ryoichi Saito, Katsuhiko Ito, Shigeki Koterazawa, Shinya Somiya, Takao Haitani, Yoshihito Higashi, Hitoshi Yamada. Minimally invasive total pelvic exenteration for symptomatic locally advanced prostate cancer with rectal invasion: Indications and technical considerations. *Asian J Endosc Surg*. 2024.04; 17(2); e13290

[Conference Activities & Talks]

1. Sakura Kirino, Fumiya Uefune, Kensuke Miyake, Ryuichi Okamoto, Shiro Yui. INTEGRATION OF SPATIAL AND DEVELOPMENTAL PLASTICITY FORMS A DYNAMIC REPAIR RESPONSE IN MOUSE AND HUMAN INTESTINAL EPITHELIUM. ISSCR/SCSS SINGAPORE INTERNATIONAL SYMPOSIUM 2024.12.12 Singapore
2. Mina Nakagawa, Miyako Murakawa, Masato Miyoshi, Shun Kaneko, Tsuchiya Jun, Taro Shimizu, Keiya Watakabe, Sei Kakinuma, Ryuichi Okamoto and Yasuhiro Asahina. High GGT levels is a risk factor for HCC development having potential to reflect mitochondrial dysfunction after HCV eradication. AASLD2024 2024.11.15
3. Keisuke Hata, Won Moon, Ami Kawamoto. JSIBD-KASID Joint Symposium_司会. The 15th Annual Meeting of Japanese Society for Inflammatory Bowel Disease 2024.11.15 Tokyo_Japan
4. Mina Nakagawa, Miyako Murakawa, Yasuhiro Asahina. Risk factors for HCC and prognosis after SVR to construct an effective post-treatment surveillance system. JDDW2024 2024.11.01
5. Ami Kawamoto, Toshimitsu Fujii, Ryuichi Okamoto. Serum leucine-rich alpha-2 glycoprotein is an accurate marker for endoscopic and histological healing in ulcerative colitis. JDDW2024 2024.11.01 Kobe_Japan
6. Yuki Yonemoto, Yasuhiro Nemoto, Ryuichi Okamoto. Single cell analysis revealed that two distinct, unique CD4+ T cell subsets were increased in the small intestinal intraepithelial lymphocytes of aged mice. JDDW2024 2024.10.31 Kobe_Japan
7. Shiro Yui, Sakura Kirino, Uefune Fumiya, Nobuhiko Ogasawara, Sakurako Kobayashi, Go Ito, Yoshihito Kano, Ryuichi Okamoto. Modeling the process of YAP modulation in physiology and cancer. Cell Symposium: Engineering development and disease in organoids 2024.08.20 San Diego, USA
8. Shuji Hibiya, Kento Takenaka, Ryuichi Okamoto. Comparison of the efficacy of biologics for intestinal stricture in Crohn's disease. The 107th Congress of the Japan Gastroenterological Endoscopy Society 2024.05.31 Tokyo_Japan
9. Ami Kawamoto, Kento Takenaka, Ryuichi Okamoto. Efficacy of biomarkers in predicting prognosis of Crohn's disease patients with small bowel disease. The 107th Congress of the Japan Gastroenterological Endoscopy Society 2024.05.30 Tokyo_Japan
10. Ryuichi Okamoto. Regenerative medicine for inflammatory bowel disease.. The 21st Stem Cell Research Symposium 2024.05.24 Awaji Japan
11. K Matsuoka, S Motoya, T Yamamoto, M Matsuura, T Fujii, S Shinzaki, Y Mikami, S Arai, J Oshima, Y Endo, H Yuasa, M Hoshi, K Sato, T Hisamatsu. Post-marketing surveillance of tofacitinib in patients with ulcerative colitis in Japan: a final report of safety and effectiveness data. DDW2024 2024.05.19 Walter E. Washington Convention Center_ Washington, D.C.
12. Hiroshi Nakase, Toshimitsu Fujii, Tadakazu Hisamatsu, Yasuo Suzuki, Mamoru Watanabe, Yoko Uchikawa, Shoichiro Goto, Go Fujimoto, Changliang Zhang, Toshifumi Hibi. Ozanimod as induction and maintenance therapy for ulcerative colitis: a randomized, double-blind, placebo-controlled study in Japan (J-True North). DDW2024 2024.05.19 Walter E. Washington Convention Center_ Washington, D.C.
13. Ryuichi Okamoto. Clinical Application of Patient-derived Organoids. Organoid Developer Conference 2024 2024.04.25 Korea
14. Shun Kaneko. The Progress of Internal Medicine for Intrahepatic Cholangiocarcinoma. The 33rd Annual Meeting of the Asian Pacific Association for the Study of the Liver 2024.03.29 Kyoto International Conference Hall, Kyoto
15. Mina Nakagawa, Miyako Murakawa, Masato Miyoshi, Shun Kaneko, Fukiko Kawai-Kitahata, Sayuri Nitta, Sei Kakinuma, Ryuichi Okamoto and Yasuhiro Asahina. SVR 後の肝臓、生存とメタボ因子に関する解析. APASL 2024 Kyoto 2024.03.28

16. Katsuyoshi Matsuoka, Satoshi Motoya, Takayuki Yamamoto, Minoru Matsuura, Toshimitsu Fujii, Shinichiro Shinzaki, Yohei Mikami, Shoko Arai, Junichi Oshima, Yutaka Endo, Hirotoshi Yuasa, Masato Hoshi, Keiko Sato, Tadakazu Hisamatsu. Post-marketing surveillance of tofacitinib in patients with ulcerative colitis in Japan: a final report of effectiveness and safety data. 19th Congress of ECCO 2024.02.23 Stockholmsmässan_Stockholm
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18. Katsuyoshi Matsuoka, Hiroshi Nakase, Toshimitsu Fujii, Tadakazu Hisamatsu, Yasuo Suzuki, Mamoru Watanabe, Yoko Uchikawa, Shoichiro Goto, Go Fujimoto, Changliang Zhang, Toshifumi Hibi. Ozanimod as a once-daily oral therapy for Japanese patients with ulcerative colitis: results from the induction period of a phase 2/3 study (J-True North). 19th Congress of ECCO 2024.02.23 Stockholmsmässan_Stockholm
19. Inoue T, Fushimi M, Yamada D, Watabe T, Watanabe M, Okamoto R, Nagaishi T. Downregulated apelin expression in T cells in the setting of chronic colitis. ECCO 2024.02.23 Stockholmsmässan_Stockholm
20. Inoue T, Fushimi M, Tsugawa N, Yamada D, Watabe T, Watanabe M, Okamoto R, Adachi T, Blumberg RS, Nagaishi T. B cell receptor signaling-mediated activation in lymphoid tissues is regulated by the long isoform of CEACAM1. The 52nd Annual Meeting of the Japanese Society for Immunology 2024.01.19 Chiba_Japan
21. Fushimi M, Inoue T, Yamada D, Kojima Y, Hosoya A, Watabe T, Watanabe M, Okamoto R, Nagaishi T. APL downregulation in T cells in an animal model of chronic colitis. The 52nd Annual Meeting of the Japanese Society for Immunology 2024.01.19 Chiba_Japan

Department of Cardiovascular Surgery

Professor : Tomoyuki FUJITA
 Professor in charge : Toshifumi KUDO
 Associate Professor: Eiki NAGAOKA
 Junior Associate Professor: Takuya KAWABATA, Tatsuki FUJIWARA
 Assistant Professor: Kiyotoshi OISHI, Yohei YAMAMOTO,
 Junya NABESHIMA, Tomoki TAHARA, Hironobu SAKURAI (~March)
 Hospital Staff: Tsuyoshi ICHINOSE (October~), Toru KIKUCHI, Ai KAZAMA, Yoshiki WADA,
 Kazuki TSUKUDA, Rina EBE (November~), Shinnosuke TAKUMA, Hiroki UCHIYAMA (~September)
 Medical Technologist: Tomoko KAGAYAMA

(1) Research

- 1) Developing safe and high quality surgical strategy in coronary artery bypass grafting surgery.
- 2) Developing new surgical technique for robotic cardiac surgery
- 3) Developing new surgical technique for minimally invasive cardiac surgery
- 4) Clinical research for artificial heart
- 5) Research for new regenerative therapy for failing heart to recover cardiac function

(2) Education

Cardiovascular Surgery is a branch of surgery which deals with heart and vascular (mainly aortic) disease. Main objective of our department in the graduate course is to provide medical students an opportunity to study surgical anatomy, pathophysiology, pharmacology, and advanced surgical treatment for heart and aortic disease. Students are also taught basic research for the surgical treatment for heart and aortic disease. We also provide clinical training program for young surgeon to obtain Japanese cardiovascular surgical board.

(3) Clinical Performances

Our department provides well-advanced surgical treatment of heart and aortic surgery. We perform off-pump coronary artery bypass grafting for more than 90% of patients with coronary artery disease, mitral valve repair, not valve replacement, for almost all patients with mitral valve regurgitation. New surgical reconstruction technique is provided for patients with functional mitral regurgitation due to severe heart failure. For elderly patients, we offer minimally invasive aortic surgery such as thoracic endovascular aortic repair (TEVAR) and hybrid aortic surgery without cardiopulmonary bypass for aortic arch and thoracoabdominal aortic disease.

(4) Publications

[Original Articles]

1. Yamamoto K, Takeji Y, Taniguchi T, Morimoto T, Shirai S, Kitai T, Tabata H, Ohno N, Murai R, Osakada K, Murata K, Nakai M, Tsuneyoshi H, Tada T, Amano M, Watanabe S, Shiomi H, Watanabe H, Yoshikawa Y, Nishikawa R, Obayashi Y, Toyofuku M, Tatsushima S, Kanamori N, Miyake M, Nakayama H, Nagao K, Izuhara M, Nakatsuma K, Inoko M, Fujita T, Kimura M, Ishii M, Usami S, Nakazeki F, Togi K, Inuzuka Y, Ando K, Komiya T, Ono K, Minatoya K, Kimura T, CURRENT AS Registry-2 Investigators. Safety of Calcium Channel Blockers in Patients With Severe Aortic Stenosis and Hypertension. *Circulation journal : official journal of the Japanese Circulation Society*. 2024;12;

2. Yanagino Y, Kainuma S, Kawamoto N, Tadokoro N, Kakuta T, Ikuta A, Tonai K, Fujita T, Fukushima S. Surgical explantation of an infected Lotus Edge valve: a case report. *General Thoracic and Cardiovascular Surgery Cases*. 2024.12; 3(1); 56
3. Tsukuda K, Yamamoto Y, Kazama A, Wada Y, Uchiyama H, Kikuchi T, Kudo T. Loeys-Dietz Syndrome Presenting with an Abdominal Aortic Aneurysm: A Case Report. *Annals of vascular diseases*. 2024.12; 17(4); 440-442
4. Uchiyama H, Kudo T, Yamaguchi T, Obana N, Watanabe K, Abe K, Miyazaki H, Toyofuku M, Nomura N, Akeda Y, Nakao R. Mucosal adjuvanticity and mucosal booster effect of colibactin-depleted probiotic *Escherichia coli* membrane vesicles. *Human vaccines & immunotherapeutics*. 2024.12; 20(1); 2337987
5. Tadokoro Naoki, Koyamoto Tetsuya, Tonai Kohei, Yoshida Yuki, Hirahsima Koudai, Kainuma Satoshi, Kawamoto Naonori, Minami Kimito, Nishioka Hiroshi, Tsukamoto Yasumasa, Fujita Tomoyuki, Fukushima Satsuki. The outcomes of a standardized protocol for extracorporeal mechanical circulatory support selection-left ventricular challenge protocol *Journal of Artificial Organs*. 2024.12; 27(4); 358-367
6. Yanagino Yusuke, Kainuma Satoshi, Kawamoto Naonori, Tadokoro Naoki, Kakuta Takashi, Ikuta Ayumi, Tonai Kohei, Fujita Tomoyuki, Fukushima Satsuki. Surgical explantation of an infected Lotus Edge valve: a case report *General Thoracic and Cardiovascular Surgery Cases*. 2024.12; 3; s44215-024
7. Hatakeyama Dai, Tanii Hina, Nishikawa Erina, Takahira Mizuki, Honjo Tsugumi, Ebisuda Nao, Abe Naoya, Shinohara Yasuo, Mitomo Shunsuke, Tsutsui Ayumi, Fujita Tomoyuki, Kuzuhara Takashi. Anacardic Acid Derivatives Isolated from Fungal Species *Tyromyces fissilis* as New Histone Acetyltransferase Inhibitors *Biological & Pharmaceutical Bulletin*. 2024.12; 47(12); 2076-2082
8. Eiki Nagaoka, Hirokuni Arai, Tomohiro Mizuno, Keiji Oi, Tatsuki Fujiwara, Kiyotoshi Oishi, Tomoyuki Fujita. Innovative Surgical Left Atrial Appendage Closure Technique: Early Experience of Inverted Spiral Closure Technique *Innovations (Phila)*. 2024.11;
9. Tomi Y, Kinoshita T, Yura M, Sakamoto N, Fujita T, Tokunaga M, Kinugasa Y. Accuracy of the preoperative estimation of esophageal invasion length of adenocarcinoma of the esophagogastric junction and its discrepancy with the pathological measurement. *Surgery today*. 2024.11;
10. Obayashi Y, Miyake M, Takegami M, Amano M, Kitai T, Fujita T, Koyama T, Tanaka H, Ando K, Komiya T, Izumo M, Kawai H, Eishi K, Yoshida K, Kimura T, Nawada R, Sakamoto T, Shibata Y, Fukui T, Minatoya K, Tsujita K, Sakata Y, Fukuzawa M, Uehara K, Tamura T, Nishimura K, Furukawa Y, Izumi C, BPV-AF Registry Group. Bioprosthetic Valve Positions in Patients With Atrial Fibrillation - Insights From the BPV-AF Registry. *Circulation reports*. 2024.11; 6(11); 521-528
11. Iwasaki Y, Seguchi O, Ikura M, Arisato T, Hada T, Mochizuki H, Kuroda K, Nakajima S, Watanabe T, Tsukamoto Y, Yanase M, Yoshihara F, Ikeda Y, Hatakeyama K, Fukushima S, Fujita T, Fukushima N. BK polyomavirus nephropathy after heart transplantation: A case report. *Journal of cardiology cases*. 2024.11; 30(5); 143-146
12. Obayashi Y, Takeji Y, Taniguchi T, Morimoto T, Shirai S, Kitai T, Tabata H, Ohno N, Murai R, Osakada K, Murata K, Nakai M, Tsuneyoshi H, Tada T, Amano M, Watanabe S, Shiomi H, Watanabe H, Yoshikawa Y, Nishikawa R, Yamamoto K, Toyofuku M, Tatsushima S, Kanamori N, Miyake M, Nakayama H, Nagao K, Izuhara M, Nakatsuma K, Inoko M, Fujita T, Kimura M, Ishii M, Usami S, Nakazeki F, Togi K, Inuzuka Y, Ando K, Komiya T, Ono K, Minatoya K, Kimura T, CURRENT AS Registry-2 Investigators. Concomitant Mitral Regurgitation in Severe Aortic Stenosis - Insights From the CURRENT AS Registry-2. *Circulation journal : official journal of the Japanese Circulation Society*. 2024.11; 88(12); 1996-2007
13. Suematsu Y, Morita H, Abe M, Uehara Y, Koyoshi R, Fujimi K, Ideishi A, Takata K, Kato Y, Hirata T, Yahiro E, Morito N, Kitajima K, Yano Y, Satoh A, Yoshimura C, Ishida S, Okutsu S, Takahashi K, Shinohara Y, Sakaguchi T, Katsuki S, Tada K, Fujii T, Funakoshi S, Hu Y, Satoh T, Ohnishi H, Okamura K, Mizuno H, Arakawa K, Asayama K, Ohtsubo T, Ishigami T, Shibata S, Fujita T, Munakata M, Ohishi M, Ichihara A, Katsuya T, Mukoyama M, Rakugi H, Node K, Arima H, Miura SI. Differences in the effects of exercise on blood pressure depending on the physical condition of the subject and the type of exercise: a systematic review and meta-analysis. *Hypertension research : official journal of the Japanese Society of Hypertension*. 2024.11; 48(2); 720-732
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15. Morita H, Abe M, Suematsu Y, Uehara Y, Koyoshi R, Fujimi K, Ideishi A, Takata K, Kato Y, Hirata T, Yahiro E, Morito N, Kitajima K, Satoh A, Yoshimura C, Ishida S, Okutsu S, Takahashi K, Shinohara Y, Sakaguchi T, Katsuki S, Tada K, Fujii T, Funakoshi S, Hu Y, Satoh T, Ohnishi H, Okamura K, Mizuno H, Arakawa K, Asayama K, Ohtsubo T, Ishigami T, Shibata S, Fujita T, Munakata M, Ohishi M, Ichihara A, Katsuya T, Mukoyama M, Rakugi H, Node K, Arima H, Miura SI. Resistance exercise has an antihypertensive effect comparable to that of aerobic exercise in hypertensive patients: a meta-analysis of randomized controlled trials. *Hypertension research : official journal of the Japanese Society of Hypertension*. 2024.11; 48(2); 733-743
16. Obayashi Yuki, Miyake Makoto, Takegami Misa, Amano Masashi, Kitai Takeshi, Fujita Tomoyuki, Koyama Tadaaki, Tanaka Hidekazu, Ando Kenji, Komiya Tatsuhiko, Izumo Masaki, Kawai Hiroya, Eishi Kiyoyuki, Yoshida Kiyoshi, Kimura Takeshi, Nawada Ryuzo, Sakamoto Tomohiro, Shibata Yoshisato, Fukui Toshihiro, Minatoya Kenji, Tsujita Kenichi, Sakata Yasushi, Fukuzawa Masayuki, Uehara Kyokun, Tamura Toshihiro, Nishimura Kunihiro, Furukawa Yutaka, Izumi Chisato. Bioprosthetic Valve Positions in Patients With Atrial Fibrillation: Insights From the BPV-AF Registry *Circulation Reports*. 2024.11; 6(11);521-528
17. Suzuki S, Amano M, Nakagawa S, Irie Y, Moriuchi K, Okada A, Kitai T, Amaki M, Kanzaki H, Nishimura K, Fukushima S, Kusano K, Fujita T, Noguchi T, Izumi C. Outcomes of Watchful Waiting Strategy and Predictors of Postoperative Prognosis in Asymptomatic or Equivocally Symptomatic Chronic Severe Aortic Regurgitation With Preserved Left Ventricular Function. *Journal of the American Heart Association*. 2024.10; 13(20); e036292
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21. Yohei Yamamoto, Kazuki Tsukuda, Ai Kazama, Tomoko Kagayama, Toshifumi Kudo. Popliteal vein entrapment syndrome associated with an accessory slip of the lateral head of the gastrocnemius muscle *Journal of Vascular Surgery Cases, Innovations and Techniques*. 2024.08; 10(4); 101502
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23. amamoto Y, Uchiyama H, Oonuki M, Tsukuda K, Kazama A, Wada Y, Uchiyama H, Kikuchi T, Nishizawa M, Kudo T. Long-term outcomes of below-the-knee bypass surgery using heparin-bonded expanded polytetrafluoroethylene grafts. *Surgery Today*. 2024.07; Amano M, Takegami M, Miyake M, Kitai T, Fujita T, Koyama T, Tanaka H, Ando K, Komiya T, Izumo M, Kawai H, Eishi K, Yoshida K, Kimura T, Nawada R, Sakamoto T, Shibata Y, Fukui T, Minatoya K, Tsujita K, Sakata Y, Sugio K, Nishimura K, Furukawa Y, Izumi C; BPV-AF Registry Group. Clinical effects of direct oral anticoagulants in elderly patients with a bioprosthetic valve and atrial fibrillation. *Int J Cardiol*. 2024.07; 413; 132375
24. Mochizuki Hiroki, Yanase Masanobu, Kuroda Kensuke, Nakajima-Doi Seiko, Watanabe Takuya, Seguchi Osamu, Morii-Ikura Megumi, Minagawa Kenta, Omote Junko, Hirano Kazuyasu, Fukushima Satsuki, Fujita Tomoyuki, Fukushima Norihide. Impact of Dietary Vitamin K Intake on Anticoagulation Therapy in Patients With Left Ventricular Assist Device During the 2018 Osaka Earthquake *Circulation Reports*. 2024.07; 6(7); 272-275
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27. Tadokoro Naoki, Kainuma Satoshi, Kawamoto Naonori, Kakuta Takashi, Tonai Kohei, Shimizu Hideyuki, Fujita Tomoyuki, Fukushima Satsuki. Safety and efficacy of aortic valvuloplasty for de novo aortic insufficiency in patients with a left-ventricular assist device. *Gen Thorac Cardiovasc Surg*. 2024.05; 72(5); 324-330
28. Yanagino Yusuke, Kainuma Satoshi, Nisii Tatsuya, Kawamoto Naonori, Tadokoro Naoki, Ikuta Ayumi, Tonai Kohei, Hirayama Masaya, Fujita Tomoyuki, Fukushima Satsuki. Unique Presentation of Ruptured Right Sinus of Valsalva Aneurysm Into the Right Atrium(タイトル和訳中) *Circulation Journal*. 2024.05; 88(6); 1007
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30. Miyazaki H, Kumegawa S, Kudo T, Wada Y, Ueno K, Takahashi Y, Tanaka K, Asamura S. Practicality and Hemodynamic Advantage of Microvascularly Augmented Pectoralis Major Musculocutaneous Flap: Technical Approach and Evidence Based on Indocyanine Green Angiography. *Annals of plastic surgery*. 2024.05; 92(5); 533-536
31. Hada T, Seguchi O, Kitahata N, Komeyama S, Mochizuki H, Watanabe T, Kainuma S, Fukushima S, Tsukamoto Y, Fujita T, Kobashigawa J, Fukushima N. Heart transplantation with super-aged donors older than 65 years. *JHLT open*. 2024.05; 4; 100083
32. Yanagino Yusuke, Kawamoto Naonori, Kainuma Satoshi, Tadokoro Naoki, Kakuta Takashi, Ikuta Ayumi, Tonai Kohei, Fujita Tomoyuki, Fukushima Satsuki. Successful Implantation of Rapid Deployment Aortic Valve after TAVR Explantation. *J Cardiothorac Surg*. 2024.04; 19(1); 211
33. Yanagino Yusuke, Kainuma Satoshi, Nisii Tatsuya, Kawamoto Naonori, Tadokoro Naoki, Ikuta Ayumi, Tonai Kohei, Hirayama Masaya, Fujita Tomoyuki, Fukushima Satsuki. Unique Presentation of Ruptured Right Sinus of Valsalva Aneurysm Into the Right Atrium. *Circ J*. 2024.04; 88(6); 1007
34. Amemiya Kisaki, Matsuyama Taka-Aki, Ishibashi-Ueda Hatsue, Morita Yoshiaki, Matsumoto Manabu, Ohta-Ogo Keiko, Ikeda Yoshihiko, Tsukamoto Yasumasa, Fukushima Norihide, Fukushima Satsuki, Fujita Tomoyuki, Hatakeyama Kinta. Can right ventricular endomyocardial biopsy predict left ventricular fibrosis beforehand in dilated cardiomyopathy? *ESC Heart Fail*. 2024.04; 11(2); 1001-1008
35. Amaki Makoto, Moriwaki Kensuke, Nakai Michikazu, Yamano Tetsuhiro, Okada Atsushi, Kanzaki Hideaki, Izumo Masaki, Usuku Hiroki, Onishi Tetsuhiro, Nagai Toshiyuki, Miyamoto Yoshihiro, Fujita Tomoyuki, Kawai Hiroya, Akashi Yoshihiro, Tsujita Kenichi, Matoba Satoaki, Kobayashi Junjiro, Izumi Chisato, Anzai Toshihisa. Structural Heart Disease: current situation and future perspectives Cost-effective analysis of transcatheter aortic valve replacement in patients with severe symptomatic aortic stenosis: A prospective multicenter study *Journal of Cardiology*. 2024.04; 83(3-4); 169-176
36. Kawai Y, Fujimura N, Obara H, Ichihashi S, Kudo T, Hozawa K, Yamaoka T, Kato T, Kawarada O, Banno H. Endovascular Treatment as an Alternative to Bypass Surgery for Juxtarenal Aortic Occlusion: Results from the CHAOS (CHronic Abdominal Aortic Occlusion, ASian Multicenter) Registry. *Annals of vascular surgery*. 2024.03; 104; 174-184
37. Amaki Makoto, Moriwaki Kensuke, Nakai Michikazu, Yamano Tetsuhiro, Okada Atsushi, Kanzaki Hideaki, Izumo Masaki, Usuku Hiroki, Onishi Tetsuhiro, Nagai Toshiyuki, Miyamoto Yoshihiro, Fujita Tomoyuki, Kawai Hiroya, Akashi Yoshihiro, Tsujita Kenichi, Matoba Satoaki, Kobayashi Junjiro, Izumi Chisato, Anzai Toshihisa. Cost-effective analysis of transcatheter aortic valve replacement in patients with severe symptomatic aortic stenosis: A prospective multicenter study. *J Cardiol*. 2024.03; 83(3); 169-176
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40. Nabeta T, Matsumoto S, Ishii S, Eda Y, Yazaki M, Fujita T, Iida Y, Ikeda Y, Kitai T, Naruse Y, Taniguchi T, Yoshioka K, Tanaka H, Okumura T, Baba Y, Matsue Y, Ako J. Characteristics and incidence of cardiac events across spectrum of age in cardiac sarcoidosis. *International journal of cardiology. Heart & vasculature*. 2024.02; 50; 101321

[Misc]

1. Development of ECMO device thrombus detection and thrombus prevention technology required for medium- to long-term use of ECMO 2024.08;(9 月);

[Conference Activities & Talks]

1. Yohei Yamamoto, Kazuki Tsukuda, Ai Kazama, Yoshiki Wada, Toru Kikuchi, Hiroki Uchiyama, Toshifumi Kudo. The neutrophil-to-lymphocyte ratio as a predictor of prognosis in patients undergoing femoral endarterectomy. 25th Congress of the Asian Society for Vascular Surgery 2024.12.05 Bangkok, Thailand
2. Fujita Tomoyuki. Master Class III: Part I (Sponsored by Corycm) . 2024 JATS – AATS Mitral Conclave 2024.11.01
3. Yohei Yamamoto, Kazuki Tsukuda, Ai Kazama, Yoshiki Wada, Hiroki Uchiyama, Toru Kikuchi, Tomoko Kagayama, Toshifumi Kudo. Popliteal vein entrapment syndrome: report of three recent cases with our institutional experience. Another Phlebology 4th International Workshop and 13th Balkan Venous Forum meeting 2024.10.04 Budapest, Hungary
4. Yoshiki Wada, Shoji Fukuda, Tomomi Kusakabe, Toshifumi Kusakabe. Basic Research: The First Step to Therapeutic Angiogenesis with Extracellular Vesicles. ESVS 38th ANNUAL MEETING 2024.09.24 Krakow, Poland
5. Toshifumi Kudo. Endovascular Treatment for Aortoiliac Occlusive Lesions with Covered Stent.. 2nd World Congress on Heart and Cardiovascular Diseases 2024.09.14 Macau, China
6. Tatsuki Fujiwara, Hirinobu Sakurai, Wataru Hijikata, Daiki Toda, Hiro Kato, Katsuhiko Ohuchi, Orolzod Bumerdene, Tomoyuki Fujita VERIFICATION OF THE EFFECT OF PULSATILE FLOW FROM A BLOOD PUMP ON THROMBUS FORMATION IN A MEMBRANE OXYGENATOR. 50th Annual ESAO Congress 2024.09.08 Aachen, Germany
7. Tsukuda Kazuki, Yamamoto Yohei, Kazama Ai, Wada Yoshiki, Kikuchi Toru, Uchiyama Hiroki, Kudo Toshifumi. Brachial Artery Aneurysm After Hemodialysis Fistula Ligation: Case Report. Annals of Vascular Diseases 2024.09.01
8. Yohei Yamamoto, Kazuki Tsukuda, Ai Kazama, Yoshiki Wada, Hiroki Uchiyama, Toru Kikuchi, Toshifumi Kudo. Inferior vena cava reconstruction with the use of bovine pericardium patch. The 44th Annual Meeting of the Japanese Society of Phlebology 2024.06.13 Nagano, Japan
9. Yohei Yamamoto, Kazuki Tsukuda, Ai Kazama, Yoshiki Wada, Hiroki Uchiyama, Toru Kikuchi, Toshifumi Kudo. Long-term outcomes of our institutional experience with EVAR. The 52nd Annual Meeting of Japanese Society for Vascular Surgery 2024.05.29 Oita, Japan
10. Fujita Tomoyuki. LVAD Surgical Considerations in Dierent Patient Types: Small to Large, Young to Old, BTT- DT. 2024 HeartMate 3™ LVAD Best Practice Network 2024.05.25 Seoul
11. Toshifumi Kudo. Endovascular Treatment for Aortoiliac Occlusive Lesions with Covered Stent. . 2nd World Congress on Heart and Cardiovascular Diseases 2024.05.09 Bangkok, Thailand
12. Current Status of Destination Therapy in Non-Heart Transplant Facilities. 2024.03.10
13. Could Transplantation of iPS Cell-derived Cardiomyocytes be a New Treatment Option for Ischemic Critical Heart Failure?. 2024.03.08

[Awards & Honors]

1. The international Society for Mechanical Circulatory support Sezai Award, ISMCS, 2024.11

Nephrology

Professor:

Shinichi UCHIDA

Associate Professor:

Eisei SOHARA

Shotaro NAITO (Dept. of Blood Purification)

Soichiro IIMORI (Endowed Chair)

Shintaro MANDAI (Tenure track)

Junior Associate Professor:

Koichiro SUSA

Takayasu MORI (Dept. of Blood Purification)

Assistant Professor:

Fumiaki ANDO

Yutaro MORI (Tenure track)

Hiroaki KIKUCHI

Tamami FUJIKI (Endowed Chair)

Project Assistant Professor

Yu HARA, Ken IKENOUCHI

Graduate Student:

Takefumi SUZUKI, Nobuhisa MORIMOTO, Shunsuke INABA,

Kanako NAGAOKA, Yuta SEKIGUCHI

Hospital Staff:

Yumi TOBARI, Moe KIMURA, Masako FUJITA, Rinsaku MIYAZAWA,

Akihiro ABE, Shunnya SUZUKI

Technician:

Chieko IJIMA, Motoko CHIGA

Secretary:

Asa MURANO

(1) Outline

In the Department of Nephrology, we strive to provide "trusted medical care" and aim for the "cultivation of excellent physicians" through our activities in clinical practice, education, and research. We have extensive clinical experience in dealing with all kinds of renal diseases and have developed high-quality medical care through close collaboration with many other medical institutions, training numerous nephrology specialists in the process.

In recent years, we have been unraveling the genetic abnormalities and pathophysiology of various renal diseases, including hereditary kidney diseases, aiming to use these findings to develop innovative treatments. With the aging population and changes in lifestyle, the number of patients with chronic kidney disease is steadily increasing. To meet the expectations placed on nephrology specialists, we are dedicated to continuous learning and improvement.

(2) Research

Our research theme centers on elucidating the mechanisms by which the kidneys maintain blood pressure and bodily fluid homeostasis, understanding the pathology that arises when these mechanisms fail and affect the entire body, and developing treatment strategies to address these issues. This pursuit not only leads to the development of treatments for kidney disease itself but also facilitates research aimed at addressing multi-organ disorders originating from the kidneys in the context of chronic kidney disease (CKD). Academic and research activities, which were restricted due to the COVID-19 pandemic, have gradually been returning to normal since 2023, as the infection subsided. In the fiscal year 2023 (January to December), following the tradition of previous years, many awards were bestowed at academic conferences and workshops, and active press releases were made. Dr. Yu Hara received the 2022 Young Investigator Award (YIA) from the Japanese Society of Nephrology, awarded to outstanding young researchers under the age of 37 nationwide. Dr. Hara also won the Excellent Presentation Award at the 32nd Vasopressin and Oxytocin Research Symposium. Assistant Professor Yutaro Mori received the Tokyo Medical Association Medical Research Award Encouragement Prize and the Japan Medical Association Medical Research Encouragement Prize in fiscal year 2022. At the Young Basic Research Forum 2023, Dr. Hisazumi Matsuki was awarded the Excellent Presentation Award. In terms of paper publications, the papers by Assistant Professor Shintaro Mandai and Dr. Takahiro Koide were accepted by Circulation Research (IF: 23.1), and papers by Assistant Professor Mandai, Dr. Matsuki, and Dr. Taku Genma were accepted by Hypertension (IF: 8.3), with press releases issued for both. Assistant Professor Hiroaki Kikuchi's paper, submitted after returning from studying abroad, was accepted by Nature Communications (IF: 17.7), and a press release was issued. From January to December 2023, our department had a total of 13 academic papers accepted, including case reports, with five press releases issued during the period.

From February to March 2023, we conducted crowdfunding for our research on comprehensive genetic analysis related to hereditary kidney diseases. We received donations totaling 19.5 million yen and numerous messages of support from approximately 400 donors. We would like to take this opportunity to express our heartfelt gratitude to all those who supported us. We have continued to stably operate clinical research related to comprehensive genetic diagnosis and genome information, conducting analyses for 91 individuals over the year.

(3) Education

Pre-graduation Education

In the Department of Nephrology, we are responsible for the education of medical school students, specifically conducting systematic lectures for third-year medical students, project semesters for fourth-year students, and overseeing clinical internships for fifth and sixth-year students.

< Systematic Lectures >

Systematic lectures are conducted jointly with the Urology and Pathology departments, focusing intensively on diseases within the renal and urological field over a three-week period. In the 2023 academic year, all lectures and Problem-Based Learning (PBL) sessions in the Nephrology Department were returned to in-person instruction. PBL involves students engaging in discussions within small groups, performing differential diagnoses on scenario-based cases. This method was implemented with the participation of Nephrology Department staff and graduate students, organized into two groups with one tutor each. We received positive feedback from students who appreciated the enriching discussions facilitated by the tutors' supportive guidance.

< Project Semester >

Regarding students enrolled in the Project Semester, we plan to accept approximately two students annually.

< Clinical Internships >

Clinical internships commence in December for fourth-year students following the conclusion of the Project Semester. Initially, from late November to February, we conduct Preclinical Clerkship (PCC) sessions, providing practical and comprehensive learning in small groups. From the fifth year onwards, students transition to Clinical Clerkship (CC) with practical training on the ward. CC students are assigned to care for actual patients in a two-week internship, studying nephrology diseases. Students had the opportunity to delve deeper into the pathophysiology of various nephrology diseases. During clinical internships, Differential Diagnosis Exercises (WoSAC - Workplace-based Student Assessment with Clinical reasoning focus) were conducted, where supervising physicians played the role of patients, guiding students in presenting differential diagnoses and

outlining examination and treatment plans. This training, as before, concluded with a comprehensive review by the faculty. Additionally, for sixth-year students, a two-week internship for up to two students per term is provided as part of the Advanced Course, offering higher-level learning goals and opportunities for motivated engagement. We attribute the success of these efforts to the dedication of the faculty members and staff who guide the students.

Furthermore, lectures and examinations for dental students, health and hygiene science students, dental hygienists, and master's students were also conducted by faculty members from the Nephrology Department.

Postgraduate Education

After completing a two-year initial training period following graduation, we conduct advanced training as part of the postgraduate education in collaboration with universities and affiliated hospitals, focusing on specialized training in nephrology. During this period, our goal is to guide individuals to develop awareness of unresolved clinical issues and cultivate an academic doctor's mindset, one that consistently seeks to uncover the essence of matters. The emphasis is on fostering a commitment to addressing clinical challenges and maintaining an attitude of continually seeking the fundamental truths in medical practice.

Research activities at the graduate level are highly active, contributing to the cultivation of physicians who excel in both foundational and clinical aspects through the pursuit of cutting-edge research.

(4) Clinical Services & Other Works

In March 2023, the government introduced guidelines for the principle removal of masks, and significant measures were taken to relax COVID-19 prevention protocols within the university's healthcare system. After approximately three years of disruption caused by the COVID-19 pandemic, the situation has begun to stabilize, and we are gradually returning to normalcy. The number of referred patients, which had declined in most departments, is now slowly recovering. While the number of inpatients and outpatients in the nephrology department, as well as operational revenues, have not yet returned to pre-COVID levels, they are approaching those levels. Outpatient maintenance dialysis, which was once suspended during the pandemic, is also being gradually resumed, with an increase in the number of patients.

The "Function Enhancement Building," located at the front of the university and under construction for a long time, officially opened on October 1st. With the relocation of the Life-Saving Emergency Center, emergency (ER) outpatient services, ICU, ER wards, and the establishment of hybrid operating rooms, we are now able to accept a wide range of emergency patients and provide the highest standard of surgical care. From the end of 2023, to enable smoother appointments for specialized outpatient services, the nephrology department took the lead in implementing a web reservation system through Office Bookings. The number of appointment patients is gradually increasing, aiming for further patient acquisition. We aim to continue enhancing our medical services through stronger collaboration between hospitals and clinics, promoting visits to the dialysis complication clinic, increasing the number of peritoneal dialysis procedures, increasing the number of day surgery PTA (percutaneous transluminal angioplasty), and expanding the diagnosis and treatment options for rare kidney diseases.

(5) Publications

[Original Articles]

1. Hara M, Mandai S*, Mori T, Maejima Y, Uchida S. Takayasu arteritis manifesting as acute kidney injury and congestion due to renal artery stenosis and myocarditis: a case report. *Eur Heart J Case Rep.* 2024.08; 8(8); ytae347
2. Ikenouchi K, Takahashi D, Mandai S*, Watada M, Koyama S, Hoshino M, Takahashi N, Shoda W, Kuyama T, Mori Y, Ando F, Susa K, Mori T, Iimori S, Naito S, Sohara E, Fushimi K, Uchida S. Impact of COVID-19 versus other pneumonia on in-hospital mortality and functional decline among Japanese dialysis patients: a retrospective cohort study. *Sci Rep.* 2024.03; 14(1); 5177

3. Hashimoto H, Mandai S*, Shikuma S, Kimura M, Toma H, Sakaguchi Y, Kimura M, Ota J, Chiba Y, Sakai K, Horiuchi S, Adachi S, Uchida S.. Hypoxia-inducible factor prolyl hydroxylase domain inhibitors may mitigate loss of skeletal muscle mass in haemodialysis patients JCSM Rapid Commun. 2024.01;
4. Nagaoka K, Suemitsu T, Kawai K, Suzuki T, Mori T, Tajima A, Suzuki M, Ohara M. Gitelman syndrome and in vitro fertilization-embryo transfer: advancing preconception care in nephrology. CEN case reports. 2024.12; 13(6); 484-488
5. Takayasu Mori, Takuya Fujimaru, Chunyu Liu, Karynne Patterson, Kouhei Yamamoto, Takefumi Suzuki, Motoko Chiga, Akinari Sekine, Yoshifumi Ubara, Danny E Miller, Miranda P G Zalusky, Shintaro Mandai, Fumiaki Ando, Yutaro Mori, Hiroaki Kikuchi, Koichiro Susa, , Jessica X Chong, Michael J Bamshad, Yue-Qiu Tan, Feng Zhang, Shinichi Uchida, Eisei Sohara. CFAP47 is Implicated in X-Linked Polycystic Kidney Disease. Kidney Int Rep. 2024.12; 9(12); 3580-3591
6. Miuzno S., Noda T., Mogushi K., Hase T., Iida Y., Takeuchi K., Ishiwata Y., Uchida S., Nagata M.. Prediction of vancomycin-associated nephrotoxicity based on the area under the concentration-time curve of vancomycin: a machine learning analysis Biological and Pharmaceutical Bulletin. 2024.11; 47(11); 1946-1952
7. Yanagi, T; Kikuchi, H; Takeuchi, K; Susa, K; Mori, T; Chiga, M; Yamamoto, K; Furukawa, A; Kanazawa, T; Kato, Y; Takahashi, N; Suzuki, T; Mori, Y; Carter, BC; Mori, M; Nakano, Y; Fujiki, T; Hara, Y; Suzuki, S; Ando, F; Mandai, S; Honda, S; Torii, S; Shimizu, S; Tanaka, H; Fujii, Y; Rai, T; Uchida, S; Sohara, E. ULK1-regulated AMP sensing by AMPK and its application for the treatment of chronic kidney disease KIDNEY INTERNATIONAL. 2024.11; 106(5); 887-906
8. Yuta Nakano, Shintaro Mandai, Yutaro Mori, Fumiaki Ando, Koichiro Susa, Takayasu Mori, Soichiro Iimori, Shotaro Naito, Eisei Sohara, Kiyohide Fushimi, Shinichi Uchida. Nationwide mortality following acute type B aortic dissection and the survival advantage of obesity among dialysis patients in Japan. J Nephrol. 2024.11;
9. Fujimaru T, Mori T, Sekine A, Chiga M, Mandai S, Kikuchi H, Mori Y, Hara Y, Fujiki T, Ando F, Susa K, Iimori S, Naito S, Hanazawa R, Hirakawa A, Mochizuki T, Suwabe T, Ubara Y, Uchida S, Sohara E. Importance of IFT140 in Patients with Polycystic Kidney Disease Without a Family History. Kidney international reports. 2024.09; 9(9); 2685-2694
10. Hajime Tanaka, Yuki Fukawa, Kouhei Yamamoto, Kousuke Tanimoto, Akira Takemoto, Takayasu Mori, Hisashi Hasumi, Mayumi Kinoshita, Takumi Kanazawa, Asuka Furukawa, Koichiro Kimura, Hiroyuki Sato, Akihiro Hirakawa, Shohei Fukuda, Yuma Waseda, Soichiro Yoshida, Steven C Campbell, Yasuhisa Fujii. Prognostic impact and genomic backgrounds of renal parenchymal infiltration or micronodular spread in non-metastatic clear cell renal cell carcinoma. Mod Pathol. 2024.08; 100590
11. Yuta Nakano, Shintaro Mandai, Daiei Takahashi, Ken Ikenouchi, Yutaro Mori, Fumiaki Ando, Koichiro Susa, Takayasu Mori, Soichiro Iimori, Shotaro Naito, Eisei Sohara, Kiyohide Fushimi, Shinichi Uchida. Sex disparities in the risk of urgent dialysis following acute aortic dissections in Japan. iScience. 2024.08; 27(8); 110577
12. Nobuhisa Morimoto, Hasan Jamil, Mohab Alakkari, Yuki Joyama, Tatsuhiko Anzai, Kunihiro Takahashi, Soichiro Iimori. Associations between dietary potassium intake and urinary potassium excretion: a protocol for systematic review and meta-analysis. Syst Rev. 2024.07; 13(1); 185
13. Hiroki Nobayashi, Tomomichi Iida, Takuya Fujimaru, Takayasu Mori, Yumi Ito, Hiroyuki Ueda, Eisei Sohara, Shinichi Uchida, Ryuji Aoyagi, Takashi Yokoo. Autosomal-dominant tubulointerstitial kidney disease with a novel UMOD mutation, overlapping with Sjogren's syndrome: a case report. CEN Case Rep. 2024.07;
14. Nobuhisa Morimoto, Shingo Shioji, Yuichiro Akagi, Tamami Fujiki, Shintaro Mandai, Fumiaki Ando, Takayasu Mori, Koichiro Susa, Shotaro Naito, Eisei Sohara, Tatsuhiko Anzai, Kunihiro Takahashi, Wataru Akita, Akihito Ohta, Shinichi Uchida, Soichiro Iimori. Associations between dietary potassium intake from different food sources and hyperkalemia in patients with chronic kidney disease. Journal of Renal Nutrition. 2024.04;

15. Fujimaru T, Mori T, Chiga M, Mandai S, Kikuchi H, Ando F, Mori Y, Susa K, Nakano Y, Shoji T, Fukudome Y, Inaba N, Kitamura K, Nakanishi T, Uchida K, Kimura T, Tamura T, Ozawa K, Uchida S, Sohara E. Genetic Diagnosis of Adult Hemodialysis Patients With Unknown Etiology. *Kidney international reports*. 2024.04; 9(4); 994-1004
16. Mori T, Fujimaru T, Liu C, Patterson K, Yamamoto K, Suzuki T, Chiga M, Sekine A, Ubara Y, Miller DE, Zalusky MP, Mandai S, Ando F, Mori Y, Kikuchi H, Susa K, University of Washington Center for Rare Disease Research, Chong JX, Bamshad MJ, Tan YQ, Zhang F, Uchida S, Sohara E. CFAP47 is a novel causative gene implicated in X-linked polycystic kidney disease. *medRxiv : the preprint server for health sciences*. 2024.04;
17. Yuki Nakao, Yutaro Mori, Makiko Mori, Shintaro Mandai, Tamami Fujiki, Hiroaki Kikuchi, Fumiaki Ando, Koichiro Susa, Takayasu Mori, Yuma Waseda, Soichiro Yoshida, Yasuhisa Fujii, Eisei Sohara, Shinichi Uchida. Recapitulation of Cellular Senescence, Inflammation, and Fibrosis in Human Kidney-Derived Tubuloids by Repeated Cisplatin Treatment *medRxiv*. 2024.03; 2024.03.17.24304404
18. Hata M, Mori T, Hirose Y, Nishida Y, Mandai S, Ando F, Susa K, Iimori S, Naito S, Sohara E, Rai T, Taguchi T, Tomii S, Ohashi K, Uchida S. A case of unexpected diagnosis of fibronectin glomerulopathy with histological features of membranoproliferative glomerulonephritis. *BMC nephrology*. 2024.01; 25(1); 25

[Conference Activities & Talks]

1. Shintaro Mandai. Extracellular Vesicles in Kidney Diseases: Tiny Packages with Big Impact. Extracellular Vesicles in Vascular Calcification in CKD.. American Society of Nephrology Kidney Week 2024 2024.10.24
2. Shintaro Mandai. Oshima Award Lectures. Deciphering the roles of extracellular vesicles in chronic kidney disease and renal senescence. The 67th Annual Meeting of the Japanese Society of Nephrology 2024.06.28
3. Fujimaru T, Mori T, Sekine A, Chiga M, Mandai S, Kikuchi H, Mori Y, Hara Y, Fujiki T, Ando F, Susa K, Iimori S, Naito S, Suwabe T, Ubara Y, Uchida S, Sohara E.. Monoallelic PKHD1 Loss-of-Function Variants Could Be a Cause of Adult Polycystic Kidney Disease. ASN Kidney Week 2024 2024.10.26 San Diego
4. Kanamori T, Udagawa T, Okutsu M, Mori T, Sohara E, Uchida S.. A Missense Mutation in Exon 10 of WT1 Might Lead to Focal Segmental Glomerulosclerosis Due to Its Mislocalization and Downstream Dysregulation. ASN Kidney Week 2024 2024.10.25 San Diego
5. Takayasu Mori. The Significance of NGS Panel Genetic Testing in Chronic Kidney Disease. The 19th Fabry Disease Forum 2024.07.07 Tokyo/Web
6. Kikuchi H, Knepper MA, Sohara E, Uchida S. . Vasopressin-mediated beta-catenin phosphorylation and regulation of gene expression in renal collecting duct. . The 33rd Vasopressin Oxytocin Conference 2024.01.06 東京

[Awards & Honors]

1. Best English Presentation Award, The 33rd Vasopressin Conference, 2024.01
2. The 37th Research Encouragement Award, Tokyo Medical and Dental University Medical Alumni Association, 2024.03
3. UJA (United Japanese researchers Around the world) Paper Award 2024, United Japanese researchers Around the world, 2024.05
4. 2024 UJA Outstanding Paper Award, UJA (United Japanese researchers Around the world), 2024.05

[Social Contribution]

1. Yutaro Mori. Peer Review for *Frontiers in Bioscience-Landmark*, IMR Press, 2023.11.01 - 2024.01.25
2. Yutaro Mori. Peer Review for *Physiology*, American Physiological Society, 2023.12.03 - 2024.01.04

Comprehensive Reproductive Medicine

2025.1.1

Professor : Naoyuki MIYASAKA

Associate Professor : Naoyuki YOSHIKI

Project Professor : Masakazu TERAUCHI

Junior Associate Professor : Kimio WAKANA, Masaki SEKIGUCHI, Noriko OSHIMA

Project Associate Professor : Tomonori ISHIKAWA

Assistant Professor : Yuki IWAHARA, Kotoi TSURANE, Asuka HIROSE, Ayako FUDONO, Kaori SAKURAI
Junichiro MITSUI

Project Assistant Professor : Kazuki SAITO, Yusuke KORI, Tamami ODAI

Hospital Staff : Takahiro MIURA, Yuki KONDO, Yusuke KOCHI, Fumiko TSUBATA

Graduate Student : Misako IWATA, Yuka ENOKUCHI, Shoko KATSUMATA, Masayasu SEGA
Yasunori YOSHINO, Yuri TERAMOTO, Maki TAKAO

(1) Research

Research divisions :

- 1) Research in physiology, endocrinology and metabolism in the reproductive medicine
- 2) Research of female physical and mental change with aging
- 3) Pathophysiological examination of gynecological malignant tumor
- 4) Clinical research and basic research in perinatal medicine

Available scientific procedures :

- 1, Cell culture technique of ovarian granulosa cells, endometrial cells, malignant cells, osteoblast and so on.
- 2, Determination of intracellular calcium (by Fura 2 method and patch clamp)
- 3, Measurement of intra-cellular IP3
- 4, Hormonal assay in plasma, urine, follicular fluid (RIA & EIA)
- 5, Immunohistochemistry with ABC method
- 6, Analysis of micro-structure with electrical microscopy
- 7, Determination with molecular biological technique.
- 8, Physiological determination with isometric tension change
- 9, Determination of cerebral blood flow with MRI in cerebral infarction
- 10, Analysis of protein expression with flow cytometry

(2) Education

CRM (OB/GY) department has an obligation to offer medical services, education, research as one of the clinical departments in national graduate school, and has duty on making a mutual cooperation with local gynecological institutions.

Our main objectives are

- 1, Investigation for a new progress in treatment technique
- 2, Acquisition of medical knowledge and procedure
- 3, Providing systemic lecture about women' s physiological and pathological change during adolescence through

senescence.

Aims of research works are focusing on reproductive medicine, perinatal medicine and oncology.

Educational intention in medical doctor course and nursing course includes systemic lectures, clinical conferences and special lecture by many extramural speakers. During Bed-Side Learning period, students should be treated as one of medical stuffs, attend all of deliveries and be present at gynecological procedure. Several OB/GY institutions will be provided as an extramural drills.

(3) Clinical Performances

For intractable sterilization, satisfactory results are obtained with endoscopic examinations and IVF-ET methods. Health care unit for menopausal women was established , where inspections for atherosclerosis, osteoporosis (DEXA), autonomic nervous system are performed, and postmenopausal managements are provided including HRT, mental care and counseling.

After construction of LDR(labor, delivery, recovery) unit, cure for complicated pregnancies is now carried out, and cases of deliveries are rising now.

Malignant gynecological tumor is also an important aim of this department, for which surgery, chemotherapy and radiotherapy with complete cure are applied to patients. For benign tumor and endometriosis, laparoscopic operations are aggressively performed, whose number is now increasing.

(4) Publications

[Original Articles]

1. Asuka Hirose, Masakazu Terauchi, Tamami Odai, Ayako Fudono, Kotoi Tsurane, Masaki Sekiguchi, Misako Iwata, Tatsuhiko Anzai, Kunihiro Takahashi, Naoyuki Miyasaka. Postpartum hair loss is associated with anxiety. *J Obstet Gynaecol Res.* 2024.12; 50(12); 2239-2245
2. Hiroki Noguchi, Takeshi Iwasa, Akira Iwase, Haruhiko Kanasaki, Fuminori Kimura, Koji Kugu, Kazuki Saito, Tsuyoshi Baba, Tetsuaki Hara, Toshiya Matsuzaki. Phenotypes and clinical laboratory data for polycystic ovary syndrome cases: A nationwide survey in Japan. *J Obstet Gynaecol Res.* 2024.12; 50(12); 2346-2356
3. Yurie Nako, Kuniaki Ota, Toshio Sujino, Junichiro Mitsui, Hisae Kamo, Shoko Katsumata, Yuko Takayanagi, Makiko Tajima, Tomonori Ishikawa, Akira Komiya, Kiyotaka Kawai. A Large Study About Reproductive Factors That Predict Hysterosalpingography-Identified Tubal Pathology: An Insight into the Necessity of Preconception Screening. *J Clin Med.* 2024.12; 14(1);
4. Yamanaka-Mitsui S, Oshima N, Odai T, Takao M, Wakana K, Akashi T, Tsuchiya J, Miyasaka N. Primary ovarian neuroendocrine carcinoma expressing substantially intense (18)F-FDG uptake: A case report. *Radiology case reports.* 2024.10; 19(10); 4445-4450
5. Muhammad FG. Siregar, Masakazu Terauchi, Jonathan T. Lumbantobing, Hotma P. Pasaribu, Muhammad O. Prabudi, Edy Ardiansyah, Iman H. Effendi, Immanuel DL. Tobing, Selly Azmeila and Nabila Nabila. Role of serum estradiol and C-telopeptide on musculoskeletal pain in menopausal women menopausal women *Narra J.* 2024.08; 4(2); e747
6. Kana Yoshimi, Fumi Inoue, Tamami Odai, Nahoko Shirato, Zen Watanabe, Tempei Otsubo, Masakazu Terauchi, Takashi Takeda. Practical diagnosis and treatment of premenstrual syndrome and premenstrual dysphoric disorder by psychiatrists and obstetricians/gynecologists in Japan *Psychiatry and Clinical Neurosciences Reports.* 2024.08; 3; e234
7. Masakazu Terauchi, Yuki Ideno, Kunihiro Hayashi. Effect of shift work on excessive daytime sleepiness in female nurses: results from the Japan nurses' health study. *Ind Health.* 2024.07; 62(4); 252-258
8. Mayumi Ohtsuka, Tohru Yamaguchi, Sachiko Oishi, Koichi Misawa, Atsushi Suzuki, Masanobu Hibi, Masakazu Terauchi. Supplementation with cassis polyphenol has no effect on menopausal symptoms in healthy middle-aged women: A randomized, double-blind, parallel-group, placebo-controlled trial *Nutrition Research.* 2024.06; 126; 14-22

9. Noguchi H, Iwasa T, Iwase A, Kanasaki H, Kimura F, Kugu K, Saito K, Baba T, Hara T, Matsuzaki T. Cut-off value for anti-Müllerian hormone in the diagnostic criteria for polycystic ovary syndrome in the Japanese population. *The journal of obstetrics and gynaecology research*. 2024.06;
10. Odai T, Oshima N, Kori Y, Takao M, Wakana K, Miyasaka N. Pleomorphic Rhabdomyosarcoma of the Uterine Corpus in an Adult Who Underwent Multi-gene Panel Testing. *Cancer diagnosis & prognosis*. 2024.05; 4(3); 363-369
11. Muhammad FG. Siregar, Masakazu Terauchi, Rizka A. Sari, Cut A. Adella, Muhammad O. Prabudi, Melvin NG. Barus, Riza Rivany, Immanuel DL. Tobing, Selly Azmeila. Comparison of leptin and estrone levels between normal body mass index and obese menopausal women *Narra J*. 2024.05; 4(2); e745
12. Masaki Sekiguchi, Jin Muromoto, Kohei Ogawa, Katsusuke Ozawa, Naoyuki Miyasaka, Haruhiko Sago. Longitudinal hematological change in uncomplicated twin pregnancies: The white blood cell count decreases through pregnancy after the first trimester. *Taiwan J Obstet Gynecol*. 2024.05; 63(3); 381-386
13. Terada S, Nishimura H, Miyasaka N, Fujiwara T*. Ambient temperature and preterm birth: A case-crossover study. *BJOG*. 2024.04; 131(5); 632-640
14. Muranishi Y, Kobori Y, Katoh-Fukui Y, Tamaoka S, Hattori A, Osaka A, Okada H, Nakabayashi K, Hata K, Kawai T, Ogata-Kawata H, Iwahata T, Saito K, Kon M, Shinohara N, Fukami M. Systematic molecular analyses for 115 karyotypically normal men with isolated non-obstructive azoospermia. *Human reproduction (Oxford, England)*. 2024.03;
15. Mitsui J, Ibayashi M, Aizawa R, Ishikawa T, Miyasaka N, Tsukamoto S. Lipid droplets synthesized during luteinization are degraded after pregnancy. *The Journal of reproduction and development*. 2024.02;
16. Egawa M, Ikeda M, Miyasaka N, Harada-Shiba M, Yoshida M. Physicians' Perspective Toward Hypertensive Disorders of Pregnancy and Future Cardiovascular Diseases in Japan. *Journal of atherosclerosis and thrombosis*. 2024.02;
17. Shiori Kumazawa, Kazuki Saito, Nanako Hashido, Rinko Ibi, Tomonori Ishikawa, Akira Wakabayashi, Naoyuki Miyasaka. Reinfusion of peritoneal fluid elevates the level of plasma D-dimer in patients with early-onset ovarian hyperstimulation syndrome. *Reproductive Medicine and Biology*. 2024.02; 23(1); e12563
18. Kumazawa Shiori, Saito Kazuki, Hashido Nanako, Ibi Rinko, Ishikawa Tomonori, Wakabayashi Akira, Miyasaka Naoyuki. Reinfusion of peritoneal fluid elevates the level of plasma D-dimer in patients with early-onset ovarian hyperstimulation syndrome(タイトル和訳中) *Reproductive Medicine and Biology*. 2024.02; 23(1); 1 of 7-7 of 7
19. Suzuki Takuma, Tsurane Kotoi, Umemoto Tomoyuki, Sasano Tetsuo, Ushiki Eiko, Fudono Ayako, Hirose Asuka, Sekiguchi Masaki, Miyasaka Naoyuki. PCSK9 inhibitor use during pregnancy in a case of familial hypercholesterolemia complicated with coronary artery disease(タイトル和訳中) *The Journal of Obstetrics and Gynaecology Research*. 2024.01; 50(1); 128-132

[Misc]

1. Akira Fujiyoshi, Shun Kohsaka, Jun Hata, Mitsuhiko Hara, Hisashi Kai, Daisaku Masuda, Naomi Miyamatsu, Yoshihiko Nishio, Masatsune Ogura, Masataka Sata, Kenji Sekiguchi, Yasushi Takeya, Kouichi Tamura, Akihiko Wakatsuki, Hiroshi Yoshida, Yoshio Fujioka, Ryuji Fukazawa, Osamu Hamada, Aya Higashiyama, Mai Kabayama, Koshiro Kanaoka, Kenjiro Kawaguchi, Shintaro Kosaka, Ayako Kunitamura, Ayumi Miyazaki, Masaki Nii, Mitsuaki Sawano, Masakazu Terauchi, Shusuke Yagi, Takashi Akasaka, Tohru Minamino, Katsuyuki Miura, Koichi Node, on behalf of the Japanese Circulation Society Joint Working Group. *JCS 2023 Guideline on the Primary Prevention of Coronary Artery Disease Circulation Journal*. 2024.03;
2. Yoshiya Tanaka, Satoshi Soen, Shintaro Hirata, Yosuke Okada, Saeko Fujiwara, Ikuko Tanaka, Yuriko Kitajima, Takuo Kubota, Kosuke Ebina, Yuichi Takashi, Reiko Inoue, Mika Yamauchi, Naoaki Okubo, Masanobu Ueno, Yasuhisa Ohata, Nobuaki Ito, Keiichi Ozono, Hisanori Nakayama, Masakazu Terauchi, Sakae Tanaka, Seiji Fukumoto. The 2023 Guidelines for the management and treatment of glucocorticoid ■ induced osteoporosis *J Bone Miner Metab*. 2024.03;

[Conference Activities & Talks]

1. Masaki Sekiguchi. Perinatal care system in Japan. Continuing Medical Education Seminar 2024.11.08
2. Masakazu Terauchi, Yusuke Kohri, Yuka Enokuchi, Tamami Odai, Naoyuki Miyasaka. Oral Communication: General Menopause "Severe tiredness is associated with insomnia and depression of menopausal transition in women attending a menopause clinic". 19th World Congress on Menopause 2024.10.21 Melbourne ,Australia
3. Hirose A, Terauchi M , Tamami O , Fujiwara A , Hirata M , Hirose S , Matsuoka K , Umayahara K , Sakamoto M , Miyasaka N. Effects of micronized progesterone in menopausal hormone replacement therapy on sleep. IMS 19th world congress on menopause 2024.10.20 Melbourne
4. Masakazu Terauchi. Symposium by CAMS Society: Menopause in Asia-Pacific: Cultural Perspectives, Guidelines, Mobility and Sleep "Sleep Problems in Middle-Aged Women". 19th World Congress on Menopause 2024.10.19 Melbourne, Australia
5. Fumika Morokuma, Makiko Egawa, Masakazu Nishigaki, Haruka Hamanoue, Hideaki Masuzaki, Kiyonori Miura, Tomoko Kobahashi, Masayuki Yoshida. Effectiveness and usability of 'Ninshiru.jp', a website about pregnancy, childbirth, and prenatal testing. 日本人類遺伝学会第 69 回大会 2024.10.11 札幌市
6. Makiko Egawa, Kinya Ishikawa, Eriko Takamine, Sayako Takahashi, Mariko Komine, Hiroko Kohbata, Taro Ishiguro, Maki Gau, Yusuke Ebana, Masayuki Yoshida. Predictive genetic testing for late-onset, inherited neurological diseases: a case series of 40 clients. 日本人類遺伝学会第 69 回大会 2024.10.10 札幌市
7. Masakazu Terauchi, Yusuke Kohri, Yuka Enokuchi, Tamami Odai, Naoyuki Miyasaka. Severe tiredness is associated with insomnia and depression of menopausal transition in women attending a menopause clinic. The Menopause Society Annual Meeting 2024 2024.09.13 Chicago
8. Masakazu Terauchi. A Japanese Perspective on Women' s Midlife Health and S-Equol. Equelle HCP Dinner 2024.09.11 Chicago
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Department of Urology

(1) Publications

[Original Articles]

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[Conference Activities & Talks]

1. Waseda Y. The Importance of Assessing LUTS beyond Incontinence: Decrease in Urinary Incontinence Distress and Emergence of OAB Symptoms After Artificial Urinary Sphincter Implantation. The 29th Annual Meeting of the Korean Continence Society 2024.09.28
2. Hajime Tanaka. The Emergent Role of Theranostics in Renal Cell Carcinoma. UAA annual congress 2024 2024.09.05
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14. 田中 一、藤井 靖久. Management and treatment outcomes for intravesical recurrence after bladder preservation therapy for muscle-invasive bladder cancer. 2024.04.27
15. 福田 翔平. preoperative saecopenia index based on serum creatinine and cystatin C is associated with prognosis after nephrectomy for nonmetastatic renal cell carcinoma. 第 111 回日本泌尿器科学会総会 2024.04.27
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19. 吉田 宗一郎. The Impact of Next Generation Imaging Modalities on Prostate Cancer Treatment.. 第 111 回日本泌尿器科学会総会 2024.04.25
20. 吉田 宗一郎. Local therapy for primary and metastatic lesions in metastatic prostate cancer: treatment strategies and case discussions from a urologist's perspective. 第 111 回日本泌尿器科学会総会 2024.04.25
21. 吉田 宗一郎. Phase I / II a Trial of 18F-prostate Specific Membrane Antigen(PSMA)PET/CT in Healthy Volunteers and Prostate Cancer Patients. 第 111 回日本泌尿器科学会総会 2024.04.25
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24. 田中 一、藤原 基裕、小林 正貴、中村 祐基、Fan Bo、石川 雄大、福田 翔平、早稲田 悠馬、吉田 宗一郎、吉村 亮一、木原 和徳、藤井 靖久. Long-term oncologic outcomes of tetramodal bladder-preservation therapy for muscle-invasive bladder cancer. 第 111 回日本泌尿器科学会総会 2024.04.25
25. 松本 峻弥. investigation of Eligibility for Kidney-Sparing Surgery in Upper Tract Urothelial Carcinoma: Risk Stratification Using Radical Nephroureterectomy Specimens. 第 111 回日本泌尿器科学会総会 2024.04.25
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28. Shohei Fukuda, Masaki Kobayashi, Chen Wei, Motohiro Fujiwara, Yuki Nakamura, Yudai Ishikawa, Akinori Nakayama, Margaret Meagher, Dattatraya Patil, Yuma Waseda, Hajime Tanaka, Soichiro Yoshida, Kazutaka Saito, Ithaar H Derweesh, Viraj A Master, Yasuhisa Fujii. Outcomes of partial and radical nephrectomy in patients with pathological T3a upstaging of clinical T1 renal cell carcinoma: an analysis from the INternational Marker Consortium for Renal Cancer (INMARC) Cohort. EAU annual congress 2024 2024.04.08
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31. Yoshida S, Kimura K, Ikeda M, Fukui K, Tsuchiya J, Nakamura Y, Waseda Y, Tanaka H, Tateishi U, Fujii Y.. Quantitative MRI Parameters Providing the Novel Value in Discriminating Muscle-Invasive Bladder Cancer.. The 39th Annual Congress of the European Association of Urology 2024.04.06
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37. Waseda Y, Ikeda R, Matsumoto S, Yoshitomi K, Fan B, Kobayashi M, Fujiwara M, Nakamura Y, Ishikawa Y, Fukuda S, Tanaka H, Yoshida S, Fujii Y. Optimal timing of surgical intervention after diagnosis of upper urinary tract stones: a perspective from renal function preservation.. 39th Annual congress of EAU 2024.04.04
38. Shunya Matsumoto. Incidence of potential candidates for kidney-sparing surgery in upper tract urothelial carcinoma : analysis using radical nephroureterectomy specimens. 39th Annual congress of EAU 2024.04.04
39. Takao S, Furusawa A, Fukushima H, Okuyama S, Kano M, Yamamoto H, Choyke PL, Kobayashi H.. F3 targeted near-infrared photoimmunotherapy: The ideal therapeutic approach for numerous malignancies.. AACR Annual Meeting 2024 2024.04
40. Hajime Tanaka. Presurgical Immune Checkpoint Inhibitors in Renal Cell Carcinoma with Inferior Vena Cava Tumor Thrombus: Yes or No?. Advancements in Urology: An AUA/JUA Symposium 2024.03.09
41. Masaki Kobayashi. Session I : Prostate cancer Panel Discussion: Case Management MRI Guided Fusion Biopsy of the Prostate . Advancements in Urology 2024 AUA/JUA Symposium 2024.03.07

Department of Gastrointestinal Surgery

Professor

Yusuke KINUGASA

Associate Professor

Masanori TOKUNAGA, Hiroyasu KAGAWA, Takuya OKADA

Junior Associate Professor

Hisashi FUJIWARA, Toshiro TANIOKA, Shinichi YAMAUCHI,
Marie HANAOKA, Kenro KAWADA

Assistant Professor

Taichi Ogo, Yudai KAWAMURA, Takashi SHIGENO,
Keisuke OKUNO, Megumi SASAKI, Ayumi TAKAOKA,
Yudai YAMAMOTO, Tetsuo SUGISHITA

Graduate Student (Hospital Staff)

Emi KANEMOTO, Jun SAKUMA, Yoshiaki TOMI,
Yamato YAMASHITA, Sono ITO, Ryuta KAKUTA,
Miyako TAZAWA, Kei NAKAJIMA, Akitoshi NANKAKU,
Naoya ISHIBASHI, Masayoshi SAKANO, Hiroyuki SHIOBARA,
Rumi SHIMANO, Fumio TSUKAMOTO, Syunsaku NAKAGAWA,
Shiho MATSUNAGA, Hiroki YONEZAWA, Kyoko RYU,
Mayuko OTOMO, Yoshihiro SAKAI, Yuta SUZUKI,
Yoshimi YAMASAKI, Souhei AKUTA, Sakiko ASANO,
Syota ARIGA, Hayato IKAWA, Kei ISHIHARA, Yuki TADOKORO,
Keiji TSUKAHARA, Hiroaki TSUJI, Mari NAKAGAWA,
Takamasa FUJITA, Masahiro FUSE, Kenta YAO, Yurina Fujisaki,
Yusuke YATABE, Kota SUGIURA, Yuki TAKENAKA,
Naruhiko TOKUHASHI, Aya NARUMI, Tsumugu HARADA,
Masato NUKUI, Syoma YAMAMOTO

(1) Outline

The Department of Gastrointestinal Surgery is composed of three departments: esophageal surgery, gastric surgery, and colorectal surgery. It conducts research on the entire gastrointestinal tract. We conduct clinical research based on clinical activities and basic research in specialized laboratories within and outside the department, which is applied to clinical practice. We provide up-to-date and high-level gastrointestinal surgery and pre- and post-graduate education.

(2) Research

- 1) Development of esophageal surgery
- 2) Development of gastric surgery
- 3) Development of colorectal surgery

(3) Education

The department's history started as both the Department of Esophageal and General Surgery and the Department of Surgical Oncology of TMDU, and many surgeons and researchers in various specialties have gathered and have been keeping a high level of activity. The primary purposes of education are to make the post-graduate physicians grow up to excellent surgeons and to contribute to the development of medical/surgical sciences. Surgeons with high-level medical knowledge and techniques are expected to grow in this department. Moreover, making surgeons with matured humanity is one of the purposes. The department has a peaceful atmosphere and stands for active work in solving difficult problems.

(4) Lectures & Courses

The program's cornerstones are basic gastrointestinal and general surgery knowledge and skills. It aims to cultivate a high level of practical ability to quickly perform logical and objective medical treatment backed up by the skill and kindness of a clinician.

(5) Clinical Services & Other Works

Not only to engage in specialized training and research activities within the university, but also to contribute to community medicine while improving their abilities as gastrointestinal and general surgeons at the affiliated hospitals. They are also encouraged to study in Japan and overseas and to work at overseas bases.

(6) Clinical Performances

The primary clinical services diagnose and treat esophageal, gastric, and colorectal diseases. Postgraduate students learn and study general surgery and subspecialties, such as esophageal, gastric, and colorectal surgery. Clinics are spread out widely, and the department provides a full spectrum of standard and special technologies, such as minimally invasive surgery and extended radical surgery for malignancies.

(7) Publications

[Original Articles]

1. Takashi Shigeno, Daisuke Kajiyama, Kazuma Sato, Naoto Fujiwara, Yusuke Kinugasa, Hiroyuki Daiko, Takeo Fujita. Efficiency of conversion surgery for esophageal squamous cell carcinoma with solitary abdominal para-aortic lymph node metastasis *Surgery today*. 2024.12; 54(12); 1490-1497
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5. Kei Nakajima, Daichi Kitaguchi, Shin Takenaka, Atsuki Tanaka, Kyoko Ryu, Nobuyoshi Takeshita, Yusuke Kinugasa, Masaaki Ito. Automated surgical skill assessment in colorectal surgery using a deep learning-based surgical phase recognition model *Surgical endoscopy*. 2024.11; 38(11); 6347-6355
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 8. Takuya Miura, Kazushige Kawai, Hiromasa Fujita, Shinsuke Kazama, Hideki Ueno, Yusuke Kinugasa, Kazuhiro Sakamoto, Hirotoshi Kobayashi, Kenichi Hakamada, Yoichi Ajioka. Upfront surgery, neoadjuvant chemoradiotherapy, or neoadjuvant chemotherapy for rectal cancer with lateral lymph node metastasis: A multicenter MRI and lateral lymph node dissection study Annals of Gastroenterological Surgery. 2024.10; 9(2); 309-318
 9. Yurina Yasui Fujisaki, Takaki Yoshikawa, Rei Ogawa, Masashi Nishino, Takeyuki Wada, Tsutomu Hayashi, Yukinori Yamagata, Masanori Tokunaga, Yusuke Kinugasa, Yasuyuki Seto. Necessity of splenectomy for antral-type scirrhus gastric cancer European journal of surgical oncology. 2024.10; Online ahead of print;
 10. Sono Ito, Takeshi Takamoto, Satoshi Nara, Daisuke Ban, Takahiro Mizui, Hiroshi Nagata, Yasuyuki Takamizawa, Konosuke Moritani, Shunsuke Tsukamoto, Yukihide Kanemitsu, Yusuke Kinugasa, Minoru Esaki. RAS mutation associated with short surgically controllable period in colorectal liver metastases: a retrospective study World journal of surgical oncology. 2024.09; 22(1); 247
 11. Jun Sakuma, Akihiro Hoshino, Hisashi Fujiwara, Taichi Ogou, Kenro Kawada, Keisuke Okuno, Toshiro Tanioka, Shigeo Haruki, Masanori Tokunaga, Yusuke Kinugasa. Blood flow assessment of gastric tube with indocyanine green fluorescence angiography and postoperative endoscopy during esophagectomy: indocyanine green enhancement time indicated congestion BMC gastroenterology. 2024.09; 24(1); 316
 12. Akitoshi Nankaku, Yusuke Yamaoka, Akio Shiomi, Hiroyasu Kagawa, Shoichi Manabe, Takuma Oishi, Kiyoshi Tone, Akifumi Notsu, Yusuke Kinugasa. Lavage cytology diagnosed by immunostaining may be a poor prognostic factor in pathological stage III colorectal cancer Annals of Gastroenterological Surgery. 2024.09; 9(2); 271-280
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 15. Kazuhiro Tamura, Yoshinobu Tomita, Takumi Kanazawa, Hajime Shinohara, Masayoshi Sakano, Sachiko Ishibashi, Masumi Ikeda, Mayumi Kinoshita, Junko Minami, Kurara Yamamoto, Yuki Kato, Asuka Furukawa, Shigeo Haruki, Masanori Tokunaga, Yusuke Kinugasa, Morito Kurata, Masanobu Kitagawa, Kenichi Ohashi and Kouhei Yamamoto. Lipid Peroxidation Regulators GPX4 and FSP1 as Prognostic Markers and Therapeutic Targets in Advanced Gastric Cancer INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES. 2024.08; 25(17); 9203
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18. Sono Ito, Shunsuke Tsukamoto, Hiroyasu Kagawa, Yukihide Kanemitsu, Junichiro Hiro, Kazushige Kawai, Hiroaki Nozawa, Yasumasa Takii, Tomohiro Yamaguchi, Yoshito Akagi, Takeshi Suto, Yasumitsu Hirano, Heita Ozawa, Koji Komori, Masayuki Ohue, Yuji Toiyama, Seiichi Shinji, Kazuhito Minami, Tomoharu Shimizu, Kazuhiro Sakamoto, Kay Uehara, Kenichi Sugihara, Yusuke Kinugasa, Yoichi Ajioka. Short- and long-term outcomes of surgical treatment for inguinal lymph node metastasis in rectal and anal canal adenocarcinoma Colorectal disease. 2024.07; 26(7); 1378-1387
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20. S Kasai, H Kagawa, A Shiomi, H Hino, S Manabe, Y Yamaoka, C Maeda, Y Tanaka, Y Kinugasa. Incidence and risk factors for perineal hernia after robotic abdominoperineal resection: a single-center, retrospective cohort study Techniques in coloproctology. 2024.07; 28(1); 79
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 29. Megumi Sasaki, Yasumitsu Hirano, Kojun Okamoto, Isamu Koyama & Yusuke Kinugasa. Outcomes of Colorectal Cancer Surgery in Nonagenarian Patients *Indian Journal of Surgery.* 2024.04; 86(2); 289-293
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 32. Hiroyasu Kagawa, Yusuke Kinugasa, Tomohiro Yamaguchi, Masayuki Ohue, Kazushige Kawai, Junichiro Hiro, Seiichi Shinji, Hiroaki Nozawa, Yasumitsu Hirano, Koji Komori, Yasumasa Takii, Takeshi Suto, Shunsuke Tsukamoto, Yoshito Akagi, Heita Ozawa, Yuji Toiyama, Kazuhito Minami, Tomoharu Shimizu, Kay Uehara, Kazuhiro Sakamoto, Keita Mori, Kenichi Sugihara, Yoichi Ajioka. Impact of resection for ovarian metastases from colorectal cancer and clinicopathologic analysis: A multicenter retrospective study in Japan *Annals of Gastroenterological Surgery.* 2024.03; 14;8(2); 273-283
 33. Yoshitaka Nishikawa, Takahiro Horimatsu, Shiro Oka, Takeshi Yamada, Keigo Mitsui, Hironori Yamamoto, Keiichi Takahashi, Akio Shiomi, Kinichi Hotta, Yoji Takeuchi, Toshio Kuwai, Fumio Ishida, Shin-Ei Kudo, Shoichi Saito, Masashi Ueno, Eiji Sunami, Tomoki Yamano, Michio Itabashi, Kazuo Ohtsuka, Yusuke Kinugasa, Takayuki Matsumoto, Tamotsu Sugai, Toshio Uraoka, Koichi Kurahara, Shigeki Yamaguchi, Tomohiro Kato, Masazumi Okajima, Hiroshi Kashida, Fumihiko Fujita, Hiroaki Ikematsu, Masaaki Ito, Motohiro Esaki, Masaya Kawai, Takashi Yao, Madoka Hamada, Keiji Koda, Yasumori Fukai, Koji Komori, Yusuke Saitoh, Yukihide Kanemitsu, Hiroyuki Takamaru, Kazutaka Yamada, Hiroaki Nozawa, Tetsuji Takayama, Kazutomo Togashi, Eiji Shinto, Takehiro Torisu, Akira Toyoshima, Naoki Ohmiya, Takeshi Kato, Eigo Otsuji, Shinji Nagata, Yojiro Hashiguchi, Kenichi Sugihara, Yoichi Ajioka, Shinji Tanaka. Outcomes of Metastatic and Unresectable Small Bowel Adenocarcinoma in Japan According to the Treatment Strategy: A Nationwide Observational Study *JCO global oncology.* 2024.02; 10:e2300392;
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[Misc]

1. Sohei Akuta, Yasumitsu Hirano, Yasuhiro Ishiyama, Misuzu Yamato, Yusuke Kinugasa . Single-incision robot-assisted surgery for colon cancer dissection with the da Vinci Xi system - a video vignette *Colorectal disease*. 2024.05; 26(5); 1078-1079
2. Marie Hanaoka, Ayumi Takaoka, Noriko Iwata, Shinichi Yamauchi, Yusuke Kinugasa. Tips for Robotic-Assisted Lateral Lymph Node Dissection With Internal Iliac Artery Resection After Neoadjuvant Chemoradiotherapy *Diseases of the colon and rectum*. 2024.03; 67(3); e199

[Conference Activities & Talks]

1. Yusuke Kinugasa. Robotic PLND. International Colorectal Surgery FORUM 2024 2024.11.16 Taiwan (Zubei City)
2. Toshiro Tanioka, Takashi Shigeno, Yudai Kawamura, Keisuke Okuno, Taichi Ogo, Kenro Kawada, Hisashi Fujiwara, Masanori Tokunaga, Keisuke Kinugasa. The enhanced view totally extraperitoneal approach (eTEP) for midline ventral hernia repair. World Congress of Abdominal Wall Hernia Surgery 2024.10.11 Singapore
3. Takashi Shigeno, Keisuke Okuno, Taichi Ogo, Hisashi Fujiwara, Toshiro Tanioka, Kenro Kawada, Shigeo Haruki, Masanori Tokunaga, Kiyohide Fushimi, Yusuke Kinugasa. Efficacy of intraoperative recurrent laryngeal nerve monitoring during minimally invasive esophagectomy for esophageal cancer: A nationwide inpatient cohort study. 20th ISDE World Congress for Esophageal Diseases 2024.09.22 Edinburgh
4. Toshiro Tanioka, Keisuke Okuno, Masanori Tokunaga. Current status and future perspective of clinical trials in Japan. Academic Conference on Laparoscopic Gastric Cancer Surgery and the 6th LEAPS 2024.09.07 Guangdong, China
5. Toshiro Tanioka, Takashi Shigeno, Yudai Kawamura, Keisuke Okuno, Taichi Ogo, Kenro Kawada, Hisashi Fujiwara, Masanori Tokunaga, Yusuke Kinugasa. Short-and Mid-Term outcomes after enhanced view totally extraperitoneal approach (eTEP) for primary ventral and incisional hernia repair. 18th Congress of the KHS & 2024 International Symposium 2024.07.05 Seoul
6. Yusuke Kinugasa. Current status of robotic colorectal cancer surgery in Japan. DCK2024 (141st Congress of the German Society of Surgery) 2024.04.25 Leipzig
7. Yusuke Kinugasa. Current status of robotic colorectal cancer surgery in Japan. The 124th Annual Congress of Japan Surgical Society 2024.04.18 Tokyo
8. 奥野圭祐、谷岡利朗、小郷泰一、藤原尚志、川田研郎、春木茂男、徳永正則、絹笠祐介. 術前臨床学的因子を用いた、胃癌に対するロボット支援胃切除術の手術合併症予測モデルの開発. 第96回日本胃癌学会総会 2024.03.01 京都

Department of Thoracic Surgery

Professor	Kenichi Okubo
Associate professor	Hironori Ishibashi
Assistant professor	Ryo Wakejima
Assistant professor	Ayaka Asakawa
Assistant professor	Yuya Ishikawa
Assistant professor	Yusuke Sugita
Graduate Student	Yasuyuki Kurihara
Graduate Student	Hiroto Tomo Takahara
Graduate Student	Kuniyo Sueyoshi
Graduate Student	Ryota Ishizawa

(1) Outline

Department of Thoracic Surgery deal with clinical management, basic and clinical research, and education of thoracic surgery, which includes surgical diagnosis and treatment of respiratory diseases.

(2) Research

- Minimally invasive surgery for lung cancer
- Multimodal treatments for thoracic malignancies
- Surgery for metastatic lung tumors
- Clinico-pathological studies on lung cancer

(3) Education

Department of Thoracic Surgery has a mission to educate medical post-graduates for expert thoracic surgeons. Thoracic surgeon requires the Board of Surgery and the Board of Thoracic Surgery to perform clinical cares as a specialist. We provide clinical specialty course for thoracic surgery and graduate course for thoracic surgery, and support to obtain the boards.

(4) Clinical Services & Other Works

Out-patient Clinic: Tuesday, Thursday, Friday
 Operative Day: Monday, Wednesday, Friday
 Clinical Conference: Monday
 Chest Conference : Monday
 Clinico-pathological Conference: Wednesday
 Medical Round: every morning
 Professor's Round: Tuesday
 Journal Club: Tuesday (every other week)
 Mortality & Morbidity Conference: Tuesday (every other week)
 Lab Meeting: Tuesday (monthly)

Scientific Meeting: Japan Surgical Society, Japanese Association for Chest Surgery, Japanese Association for Thoracic Surgery, Japan Lung Cancer Society, Japan Society for Respiratory Endoscopy

(5) Clinical Performances

Thoracic Surgery deal with surgical treatment for lung, mediastinum, pleura and chest wall. We provide high-grade medical care as a university hospital. We offer less invasive surgery for early-stage lung cancers or benign diseases, and multimodality treatment for locally advanced thoracic malignancies.

(6) Publications

[Original Articles]

1. Ayaka Asakawa, Hironori Ishibashi, Shunichi Baba, Katsutoshi Seto, Ryo Wakejima, Kenichi Okubo. Usefulness of the Global Leadership Initiative on malnutrition (GLIM) criteria in preoperative nutritional assessment of patients with primary lung cancer. *Clinical Nutrition ESPEN*. 2024.02; 59; 135-139
2. Yusuke Sugita, Daisuke Muraoka, Ayako Demachi-Okamura, Hiroyasu Komuro, Katsuhiro Masago, Eiichi Sasaki, Yasunori Fukushima, Takuya Matsui, Shuichi Shinohara, Yusuke Takahashi, Reina Nishida, Chieko Takashima, Teppei Yamaguchi, Yoshitsugu Horio, Kana Hashimoto, Ichidai Tanaka, Hiroshi Hamana, Hiroyuki Kishi, Daiki Miura, Yuki Tanaka, Kousuke Onoue, Kazuhide Onoguchi, Yoshiko Yamashita, Richard Stratford, Trevor Clancy, Rui Yamaguchi, Hiroaki Kuroda, Hironori Ishibashi, Kenichi Okubo, Hirokazu Matsushita. Candidate tumor-specific CD8+ T cell subsets identified in the malignant pleural effusion of advanced lung cancer patients by single-cell analysis. *Oncoimmunology*. 2024.06; 13(1);
3. Takahara H, Kanazawa T, Oshita H, Tomita Y, Hananoi Y, Ishibashi S, Ikeda M, Furukawa A, Kinoshita M, Yamamoto K, Kato Y, Ishibashi H, Okubo K, Kurata M, Kitagawa M, Ohashi K, Yamamoto K. GPX4 and FSP1 Expression in Lung Adenocarcinoma: Prognostic Implications and Ferroptosis-Based Therapeutic Strategies. *Cancers*. 2024.11; 16(22);
4. Yasuyuki Kurihara, Takayuki Honda, Akira Takemoto, Katsutoshi Seto, Satoshi Endo, Kousuke Tanimoto, Susumu Kirimura, Masashi Kobayashi, Shunichi Baba, Yasuhiro Nakashima, Ryo Wakejima, Rie Sakakibara, Hironori Ishibashi, Johji Inazawa, Toshihiro Tanaka, Yasunari Miyazaki, Kenichi Okubo. Immunohistochemistry of p53 surrogates TP53 mutation as an accurate predictor for early-relapse of surgically resected stage I-III lung adenocarcinoma *JTCVS Open*. 2024.08;
5. Asakawa A, Yoshimoto R, Kobayashi M, Izumi N, Maejima T, Deguchi T, Kubota K, Takahashi H, Yamada M, Ishibashi S, Onishi I, Kinowaki Y, Kurata M, Kobayashi M, Ishibashi H, Okubo K, Ohashi K, Kitagawa M, Yamamoto K. The Comprehensive Characterization of B7-H3 Expression in the Tumor Microenvironment of Lung Squamous Cell Carcinoma: A Retrospective Study. *Cancers*. 2024.06; 16(11);

[Others]

1. Reconstruction of the Bifurcation of Right Upper Bronchus Using Miyamoto's Technique for Typical Carcinoid, 2024.01
Annals of Thoracic and Cardiovascular Surgery. Volume 30(1); 2024
Ayaka Asakawa, Hironori Ishibashi, Kuniyo Sueyoshi, Erika Mori, Yasuhiro Nakashima, Masashi Kobayashi, and Kenichi Okubo
2. Pulmonary Artery Aneurysm in a Patient with Nontuberculous Mycobacteria Infection, 2024.04
Internal Medicine. April 2024, Vol.63(7):989-992
Soichi Maruyama, Haruhiko Furusawa, Satoshi Endo, Takashi Kumagai, Takahiro Mitsumura, Sho Shimada, Takashi Yamana, Rie Sakakibara, Yuki Iijima, Sho Shibata, Takayuki Honda, Tsuyoshi Shirai, Tsukasa Okamoto, Tomoya Tateishi, Meiyo Tamaoka, Yuko Kinowaki, Hironori Ishibashi, Kenichi Okubo, Yasunari Miyazaki
3. Bilateral thoracotomy for horseshoe lung complicated with severe aspergilloma: a case report, 2024.04
Surgical Case Reports. volume 10, Article number: 81 (2024)
Chihiro Kagohashi, Yasuyuki Kurihara, Mariko Hanafusa & Kenichi Okubo

4. Excision of Giant Chronic Expanding Hematoma of the Thorax Caused by Rib Fractures after Proton Radiotherapy for Lung Cancer, 2024.09
Ann Thorac Cardiovasc Surg. 2024;30(1):24.00121.
Yukitaka Sato, Hironori Ishibashi, Yuki Funauchi, Kenichi Okubo
5. Stapler-induced vascular injury during uniportal VATS lobectomy: lessons learned from a rare complication case, 2024.10
Surgical Case Reports. 2024 Oct 28;10(1):249.
Yasuhiro Nakashima , Mariko Hanafusa, Hironori Ishibashi, Hiroshi Hosoda

Igakuken Disease-oriented Molecular Biology

Visiting Professor Takahiko Hara

Visiting Professor Makoto Arai

Visiting Professor Masato Hasegawa

Associate Visiting Professor Yuichiro Mitaoka

Associate Visiting Professor Hidetaka Tannno

Graduate Student Mai Asakura, Kyoka Iino,
Ittetsu Nakajima, Lanyu Huang, Kayoko
Shinozaki, Yuga Yasuda, Kanata Imamura, Kai
Zhang (April~)

(1) Research

[Takahiko Hara] We attempt to elucidate how tissue stem cells (hematopoietic stem cells, skeletal muscle stem cells, etc.) are developed in embryos and maintained in adults by utilizing *in vitro* differentiation systems of ES/iPS cells and conditional KO mouse strains. In addition, we advance the molecular biology of CXCL14, which is involved in obesity-induced diabetes, carcinogenesis, feeding behavior, etc.

[Makoto Arai] Our research focuses on unraveling the pathophysiology of mental illnesses using molecular biology tools. Our ultimate goal is to identify new disease mechanisms, leading to the development of novel and more efficacious therapies. We perform genetic association studies, as well as metabolomics studies using samples from patients with psychiatric disorders. Any abnormalities identified from patient samples are investigated further, using *in vitro* and *in vivo* systems, such as, cell culture assays to highlight functional alterations and behavioral studies in gene knockout mouse models.

[Masato Hasegawa] We investigate the molecular pathogenesis and progression of neurodegenerative diseases including Alzheimer's disease, Parkinson's disease and amyotrophic lateral sclerosis. We use biochemistry, immunohistochemistry and molecular biology in all our work of *in vitro*, cellular and animal models to find effective ways for clinical therapy.

[Yuichiro Mitaoka] Our goal is to develop new therapeutic approaches for genetic disorders by using genome editing in human iPS cells. We introduce causative mutations of heart and liver diseases into human iPS cells to study the pathogenic

mechanism by analyzing these cells with cellular and molecular biology techniques such as PCR and immuno-staining. We also seek for ways to improve genome editing technologies including CRISPR-Cas9 to achieve precise genome editing.

[Hidetaka Tanno] By applying high-throughput single-cell technology to cancer patient-derived samples, we analyze the immune responses in cancer patients at the single-cell level. We develop novel cancer therapeutics and diagnostic methods by utilizing the obtained results. We also create new technologies that are useful in immunology.

(2) Education

We will educate students for the purpose that they could investigate molecular mechanisms of life-threatening diseases such as cancer, diabetes, schizophrenia, amyotrophic lateral sclerosis, and genetic disorders. Trained students will eventually help us to develop novel therapeutic strategies against them. In addition, they must learn the importance of good animal models (including genetically engineered mice), which faithfully reproduce symptom and progression of the diseases.

(3) Publications

[Original Articles]

1. K. Kitajima, and T. Hara. Generation of chimeric antigen receptor-macrophages by using human induced pluripotent stem cells. *Biochem. Biophys. Res. Commun.*, published on line on December 13, 2024 as doi.org/10.1016/j.bbrc.2024.151158.
2. K. Kitajima, Y. Takahashi, H. Ando, M. Shingai, M. Hamasaki, M. Tanikawa, M. Kanokoda, M. Nakajima, Y. Nishito, and T. Hara. Modification of Lhx2 activity for *ex vivo* amplification of human iPSC-derived hematopoietic stem/progenitor cells. *Front. Cell Dev. Biol.*, 12: 1482989, 2024.
3. R. Miyajima, K. Tanegashima, N. Naruse, M. Denda, T. Hara*, and A. Otaka*. Identification of low-density lipoprotein receptor-related protein 1 as a CXCL14 receptor using chemically synthesized tetrafunctional probes. *ACS Chem. Biol.*, 19: 551-562, 2024. *Co-corresponding authors.
4. K. Kitajima, M. Shingai, H. Ando, and T. Hara. FLT3 signaling augments macrophage production from human pluripotent stem cells. *Int. Immunol.*, 36: 99-110, 2024.

5. M. Asakura, K. Toriumi, A. Nozaki, J. Yang, J. Tatsuzaki, K. Suzuki, M. Miyashita, M. Itokawa, and M. Arai. Anthocyanins as potent inhibitors of pentosidine synthesis: Antioxidant-mediated effects. *Biochem. Biophys. Res. Commun.*, 740: 151007, 2024.
6. T. Wang, K. Toriumi, K. Suzuki, M. Miyashita, A. Ozawa, M. Masada, M. Itokawa, and M. Arai. Amyloban, extracted from *Herichium erinaceus*, ameliorates social deficits and suppresses the enhanced dopaminergic system in social defeat stress mice. *Neuropsychopharmacol. Rep.*, 44: 728-736, 2024.
7. A. Watanabe, F. Koyano, K. Imai, Y. Hizukuri, S. Ogiwara, T. Ito, J. Miyamoto, C. Shibuya, M. Kimura, K. Toriumi, C. Mottono, M. Arai, K. Tanaka, Y. Akiyama, K. Yamano, and N. Matsuda. The origin of esterase activity of Parkinson's disease causative factor DJ-1 implied by evolutionary trace analysis of its prokaryotic homolog HchA. *J. Biol. Chem.*, 300: 107476, 2024.
8. K. Ueno, I. Nohara, M. Miyashita, M. Itokawa, H. Okado, M. Arai, and M. Saitoe. Behavioral Dysfunctions Caused by Pyridoxamine Deficiency in *Drosophila melanogaster*. *J. Nutr. Sci. Vitaminol. (Tokyo)*, 70: 252-261, 2024.
9. K. Tabata, S. Son, J. Miyata, K. Toriumi, M. Miyashita, K. Suzuki, M. Itokawa, H. Takahashi, T. Murai, and M. Arai. Association of homocysteine with white matter dysconnectivity in schizophrenia. *Schizophrenia (Heidelb.)*, 10: 39, 2024.
10. F. Kametani, M. Tahira, M. Takao, T. Matsubara, K. Hasegawa, M. Yoshida, Y. Saito, S. Murayama, and M. Hasegawa. Analysis and comparison of post-translational modifications of α -synuclein filaments in multiple system atrophy and dementia with Lewy bodies. *Sci. Rep.*, 14: 22892, 2024.
11. D. Arseni, T. Nonaka, M. H. Jacobsen, A. G. Murzin, L. Cracco, S. Y. Peak-Chew, H. J. Garringer, I. Kawakami, H. Suzuki, M. Onaya, Y. Saito, S. Murayama, C. Geula, R. Vidal, K. L. Newell, M. Mesulam, B. Ghetti, M. Hasegawa, and B. Ryskeldi-Falcon. Heteromeric amyloid filaments of ANXA11 and TDP-43 in FTL-D-TDP Type C. *Nature*, 634: 662-668, 2024.
12. C. Qi, R. Kobayashi, S. Kawakatsu, F. Kametani, S.H.W. Scheres, M. Goedert, and M. Hasegawa. Tau filaments with the chronic traumatic encephalopathy fold in a case of vacuolar tauopathy with VCP mutation D395G. *Acta. Neuropathol.*, 147: 86, 2024.
13. T. Sano, T. Nagata, S. Ebihara, K. Yoshida-Tanaka, A. Nakamura, A. Sasaki, A. Shimozawa, H. Mochizuki, T. Uchihara, M. Hasegawa, and T. Yokota. Effects of local reduction of endogenous α -synuclein using antisense oligonucleotides on the

fibril-induced propagation of pathology through the neural network in wild-type mice. *Acta. Neuropathol. Commun.*, 12: 75, 2024.

14. T. Kato-Inui, G. Takahashi, T. Ono, and Y. Miyaoka. Fusion of histone variants to Cas9 suppresses non-homologous end joining. *PLoS One*, 19: e0288578. 2024.

[Review Articles]

1. A. Tarutani and M. Hasegawa. Ultrastructures of α -Synuclein Filaments in Synucleinopathy Brains and Experimental Models. *J. Mov. Disord.*, 17: 15-29, 2024.

[Books]

[Conference Activities & Talks]

- 1 K. Tabata, S. Yamasaki, N. Katsuta, H. Sugawa, K. Toriumi, M. Miyashita, M. Itokawa, H. Takahashi, R. Nagai, A. Nishida, and M. Arai. Deciduous teeth are novel biosamples reflecting perinatal accumulation of AGEs and are predictive of psychotic symptoms during adolescence: a preliminary study. IMARS-15 (The 15th International Maillard Reaction Society), 2024.9.18, Maastricht.
- 2 K. Tabata, S. Yamasaki, N. Katsuta, H. Sugawa, K. Toriumi, M. Miyashita, M. Itokawa, H. Takahashi, R. Nagai, A. Nishida, and M. Arai. Deciduous teeth are novel biosamples reflecting perinatal accumulation of AGEs and are predictive of psychotic symptoms during adolescence: a preliminary study. NEURO2024 (The 46th Annual Meeting of the Japanese Society of Biological Psychiatry, The 47th Annual Meeting of the Japan Neuroscience Society, The 67th Annual Meeting of the Japanese Society for Neurochemistry, 2024.7.24, Fukuoka.
- 3 M. Hasegawa. Molecular dissection of pathological protein aggregates in neurodegenerative diseases, Symposium 4, The 113th Annual Meeting of the Japanese Society of Pathology, 2024.3.29, Nagoya.
- 4 Y. Miyaoka. In vivo delivery of therapeutic molecules by transplantation of genome-edited induced pluripotent stem cells. 8th Update on Fabry Disease. 2024.6.2, Hamburg.

Department of Clinical Anatomy

Professor : Keiichi AKITA

Professor : Akimoto NIMURA (Department of Functional Joint Anatomy)

Associate Professor : Kumiko YAMAGUCHI (Center for Healthcare Education)

Associate Professor : Masayo HARADA

Junior Associate Professor : Satoru MURO

Assistant Professor : Takuya IBARA (Department of Functional Joint Anatomy),

Toru SASAKI (Department of Functional Joint Anatomy)

Research Technician : Rintaro YAMAMOTO

Staff Assistant : Kurumi KOZEN

Parttime Lecturer : Itsuko OKUDA, Kenro CHIKAZAWA, Sachi-yuki TSUKADA, Masahiro TSUTSUMI,

Masataka NAKAZAWA, Tomoyuki YANO, Shota HOSHIKA,

Motoki TANAKA, Shigeru OKUHARA (April~), Izumi SUGIHARA (April~),

Chie MORIMOTO (April~)

Graduate Student : Syuusaku HOSONO, Shouko MOUE, Ryo KARAKAWA (~March),

Hidehiko YOSHIMATSU (~March), Isabella Georgina DJAMEH,

Yuzuki SUGIYAMA, Tong LIU, Jennifer Edinam DANYO,

Weiyi WANG (April~), Nina HIRANO

Research student : Takahiro KASHIYAMA

(1) Outline

Department of Clinical Anatomy supports clinical medicine through formulation of human anatomical and developmental biological bases of diagnoses and surgical procedures. We handle the whole body in human anatomical researches. We think it is classic but important to represent human morphology for exactly what they are based on meticulous observations of human body structures regardless of diagnostic techniques and surgical procedures. Our researches are aimed to share languages among all clinicians based on clinical anatomy by describing the results of observations in an accessible way for clinicians. In addition, we perform analyses using experimental embryological approaches and developmental biological approaches, because we think it is important to consider how human structures are constructed.

(2) Research

- 1) Clinical anatomic study of the shoulder joint and rotator cuff.
- 2) Clinical anatomic study of the anal region for the rectoanal surgery.
- 3) Cadaveric study of the female pelvis for the gynecologic oncology and colposcopy.
- 4) Analyses of the lamination in the masticatory muscles with special reference of nerve supply.
- 5) Embryological study of the differentiation of cloaca and surrounding muscles.

(3) Education

Clinical anatomy is generally considered as the practical application of anatomical knowledge to diagnosis and treatment, however we think that this course is a part of pure anatomical science based on the findings of the morphological observations of the human bodies. Main objective of Clinical anatomy in the graduate course is to

make detailed anatomical data to answer the questions developed from clinical fields especially by surgeons and radiologists. We collaborate with many clinicians: ENT, orthopedics, gynecology, thoracic surgery, radiology and so on, and our projects have been broad areas. Students are expected to get fine dissection techniques of human bodies and also learn techniques of histology and embryological experiments. By using these techniques, we study the spatial relationships of organs, vessels nerves, and also try to examine their developmental processes in various projects.

(4) Lectures & Courses

Theories and hypotheses of morphogenesis derived from descriptive anatomy and descriptive biology have been confirmed and modified by experimental biology. Furthermore, progresses of developmental biology identified molecules and signaling pathways involved in the morphogenesis. Progresses in the developmental biology also verified morphological hypotheses, and added revisions to the morphological models. The postulates of the morphological models which are currently investigated were built and completed by Anatomy. However, we find Anatomy is still not completed and has many obscure issues through careful dissection of human body. It might be thought that everything was done and there could be no new finding in the human anatomical field anymore because the anatomy employs the classic procedures such as the gross anatomy. However, there are still a lot of unclear anatomical topics, because they had not been focused and not investigated with their clinical significances.

(5) Publications

[Original Articles]

1. Numasawa M, Nawa N, Yamaguchi K, Akita K, Yamawaki M. Association between grit and depressive symptoms among medical students, moderated by academic performance. *Medical education online*. 2024.07; 29(1); 2373523
2. Shusaku Hosono, Koji Fujita, Akimoto Nimura, Takuya Ibara, Keiichi Akita. Cervical Spine Range of Motion and Sleep Disturbances in Patients With Atopic Dermatitis: A Cross-Sectional Study. *Cureus*. 2024.12; 16(12); e75449
3. Sara Sugiura, Toru Sasaki, Koji Fujita, Toshitaka Yoshii. Treatment for Overgrowth of a Finger Owing to Vascular Malformations: A Case Report. *Cureus*. 2024.11; 16(11); e74716
4. Fukino, K; Iitsuka, M; Kitagawa, N; Tubbs, RS; Akita, K; Iwanaga, J. Three-dimensional Analysis of the Muscles Related to the So-Called "Pterygomandibular Raphe": An Anatomical and Histological Study DYSPHAGIA. 2024.08; 39(4); 642-647
5. Masahiro Tsutsumi, Akimoto Nimura, Hajime Utsunomiya, Shintarou Kudo, Keiichi Akita. Capsular attachment on the anterosuperior femoral head-neck junction: A hypothesis about femoroacetabular impingement. *J Anat*. 2024.08; 245(2); 231-239
6. Muro S, Chikazawa K, Delancey JOL, Akita K. Skeletal Muscle Complex Between the Vagina and Anal Canal: Implications for Perineal Laceration. *International urogynecology journal*. 2024.07; 35(12); 2313-2322
7. Masahiro Tsutsumi, Seiya Kanazawa, Akimoto Nimura, Keiichi Akita, Shintarou Kudo. In vivo movement interrelationships among the medial meniscus, joint capsule, and semimembranosus during tibial rotation. *Sci Rep*. 2024.07; 14(1); 17022
8. Toda H, Oshima T, Ibara T, Chin T. Longitudinal Alterations in the Control of Lateral Center of Mass Movement During Walking in a Patient With Unilateral Transtibial Amputation: A Case Study. *Cureus*. 2024.06; 16(6); e61683
9. Fukino, K; Tsutsumi, M; Honda, E; Nimura, A; Iwanaga, J; Akita, K. Contribution of the complex comprising the masticatory fascia, disc, and capsule to temporomandibular joint stabilization: An anatomical study ANNALS OF ANATOMY-ANATOMISCHER ANZEIGER. 2024.06; 254; 152268
10. Yuka Nishimura, Masahiro Tsutsumi, Rintaro Yamamoto, Tohma Sakuraya, Kenji Emura, Takamitsu Arakawa. Morphological differences between the dorsal and palmar septa of the first extensor compartment in relation to the brachioradialis and pronator quadratus. *Annals of Anatomy*. 2024.04; 253; 152228

11. Yuzuki Sugiyama, Satoru Muro, Daisuke Ban, Keiichi Akita. Retroperitoneal fasciae as barriers for nerve and arterial passages connecting the retroperitoneal region to the peritoneal organs. *J Anat.* 2024.03;
12. Muro S, Shoji S, Suriyut J, Akita K. Anatomy of muscle connections in the male urethra and anorectal canal. *BJU international.* 2024.03; 133(6); 752-759
13. Yamada E, Umemoto T, Taguchi T, Onishi I, Yamamoto A, Tsukamoto K, Ibara T, Sasaki T, Kaburagi H, Maejima Y, Sasano T, Ohashi K, Yoshii T, Nimura A, Fujita K. Prevalence of amyloid deposition and cardiac amyloidosis in shoulder disease compared to carpal tunnel syndrome. *JSES international.* 2024.03; 8(2); 349-354
14. Yamamoto A, Yamada E, Ibara T, Nihey F, Inai T, Tsukamoto K, Waki T, Yoshii T, Kobayashi Y, Nakahara K, Fujita K. Using In-Shoe Inertial Measurement Unit Sensors to Understand Daily-Life Gait Characteristics in Patients With Distal Radius Fractures During 6 Months of Recovery: Cross-Sectional Study. *JMIR mHealth and uHealth.* 2024.03; 12; e55178
15. Yuta Tanaka, Toru Sasaki, Shigenori Kawabata, Jun Hashimoto, Hisato Higashikawa, Yuko Hoshino, Kensuke Sekihara, Yoshiaki Adachi, Koji Fujita, Akimoto Nimura, Taishi Watanabe, Yuki Miyano, Saeri Kaminaka, Yusuke Yamamoto, Toshitaka Yoshii. Assessing ulnar neuropathy at the elbow using magnetoneurography. *Clin Neurophysiol.* 2024.03; 161; 180-187
16. Chikazawa K, Muro S, Yamaguchi K, Imai K, Kuwata T, Konno R, Akita K. Denonvilliers' fascia as a potential nerve-course marker for the female urinary bladder. *Gynecologic oncology.* 2024.01; 184; 1-7
17. Muro S, Kim J, Nimura A, Tsukada S, Akita K. Morphometric Analysis of the Tibial Attachment Shape of the Anterior Cruciate Ligament and Its Relationship With the Location of the Anterior Horn of the Lateral Meniscus. *The American journal of sports medicine.* 2024.01; 52(3); 3635465231219978-690
18. Akiko Yamamoto, Koji Fujita, Eriku Yamada, Takuya Ibara, Fumiyuki Nihey, Takuma Inai, Kazuya Tsukamoto, Yoshiyuki Kobayashi, Kentaro Nakahara, Atsushi Okawa. Gait characteristics in patients with distal radius fracture using an in-shoe inertial measurement system at various gait speeds. *Gait Posture.* 2024.01; 107; 317-323
19. Masahiro Tsutsumi, Akari Saiki, Isao Yamaguchi, Akimoto Nimura, Hajime Utsunomiya, Keiichi Akita, Shintarou Kudo. In vivo interrelationships between the gluteus minimus and hip joint capsule in the hip internal rotation position with flexion. *BMC Musculoskelet Disord.* 2024.01; 25(1); 87

[Misc]

1. Tharathorn Suwatthanarak, Vitoon Chinswangwatanakul, Asada Methasate, Chainarong Phalanusitthepha, Minoru Tanabe, Keiichi Akita, Thawatchai Akaraviputh. Surgical strategies for challenging common bile duct stones in the endoscopic era: A comprehensive review of current evidence. *World J Gastrointest Endosc.* 2024.06; 16(6); 305-317
2. Akimoto Nimura, Haruhiko Shimura, Shota Hoshika, Atsuhiko Fukai, Keiichi Akita. Elbow anatomy in perspective of joint capsule and surrounding aponeuroses: a narrative review. *JSES Int.* 2024.05; 8(3); 654-660

[Conference Activities & Talks]

1. Keiichi Akita. Anatomical Insights: Hip Joint Capsule, Ligaments, and Muscular Interactions. 3rd Medacta Orthopaedic Research and Education (M. O. R. E.) Japanese Symposium 2024.10.14 Minato, Tokyo
2. Keiichi Akita. Fostering Effective Anatomy Educators: Developing new ideas based on study of the past. The 21st Congress of the International Federation of Associations of Anatomists (IFAA) Satellite Symposium 2024.09.09 Seoul, Korea
3. Akimoto Nimura, Keiichi Akita. Anatomical Study about Stabilizing Structures in the Trapeziometacarpal Joint. The 21st Congress of the International Federation of Associations of Anatomists (IFAA) 2024.09.08 Gwangju, Korea

4. Satoru Muro, Takuya Ibara, Yuzuki Sugiyama, Akimoto Nimura, Keiichi Akita. Evaluating accuracy in AI-powered serial segmentation for CT, MRI, Visible Human, and histological sections. The 21st Congress of the International Federation Association of Anatomists (IFAA) 2024.09.06 Gwangju, Korea
5. Keiichi Akita, Satoru Muro. Relationship between the layered structure of the musculature of the anal canal and the mechanism of hemorrhoidal fistula formation. The 21st Congress of the International Federation of Associations of Anatomists (IFAA) 2024.09.05 Gwangju, Korea
6. Yuzuki Sugiyama, Satoru Muro, Daisuke Ban, Keiichi Akita. Spatial relationship between the retroperitoneal fasciae on the dorsal side of the pancreas and the nerves. 15th International Symposium of Clinical and Applied Anatomy 2024.06.28 Swansea, United Kingdom
7. Toru Sasaki, Kazuya Tsukamoto, Koji Fujita. Comparison between Outcomes of Carpal Tunnel Release and Opponensplasty for Severe Carpal Tunnel Syndrome. Federation of European Societies for Surgery of the Hand (FESSH 2024) 2024.06.26 Rotterdam, Netherlands
8. Masayo Harada, Georgina Djameh, Tomoko Kitabata, Keiichi Akita. Sequential analyses of the Wolffian duct differentiation in male mice. The 57th Annual Meeting of Japanese Society of Developmental Biologists 2024.06.20 Kyoto, Kyoto
9. Keiichi Akita. The Role of Anatomical Dissection Practices in Japanese Medical and Dental Curriculum. 3rd National Conference of Anatomical Didactics 2024.06.08 Łódź, Poland

[Awards & Honors]

1. Top Downloaded Article, Wiley, 2024.03

Department of Systems BioMedicine

Professor Hiroshi ASAHARA
 Project Associate Professor Yuki NAITO
 Junior Associate Professor Ryouta KURIMOTO
 Assistant Professor Tomoki CHIBA, Takahide MATSUSHIMA, Yuta FUJII
 Postdoctoral fellow Yutaro UCHIDA, Lin LIU, Misao TAKEMOTO
 Graduate Students Suzu CHIDA, Masayasu SEGA, Kohei NAKAMURA,
 Takahiro MORITA, Masatoshi KOH, Junya ITO Nao WATANABE,
 Satoshi NAKAMURA, Kana KOTSUZUMI, Maho HASHIMOTO, Reiji HIRAI,
 Kasumi YUMOTO, Rina WATASE, Masayuki TAKEDA, Kazuki MIYAWAKI

(1) Outline

In the post-genomic era, research methodologies and subjects have undergone significant transformation. Our systems medicine approach employs reverse engineering principles, systematically analyzing selected genes through innovative ideas and bold implementation of machine and computational technologies.

We present definitive answers at each stage of our research process while performing both inductive and deductive reasoning from extensive datasets. In our research, each experiment incorporates both positive and negative controls, and completed studies yield enduring conclusions that contribute to humanity's intellectual heritage, similar to architectural achievements.

Through this systematic approach, we consistently uncover intriguing phenomena that transcend our current understanding and lead to novel concepts in medical science.

(2) Research

1. Identification of novel RNA-binding proteins that form inflammatory and cancer pathologies, and development of therapeutic approaches
2. Development of new medical applications for inflammatory diseases and cancer using miRNA
3. Maintenance mechanisms of articular cartilage and development of treatments for osteoarthritis
4. Elucidation of transcriptional and translational networks in breast and pancreatic cancers
5. Development of a control system for activation of motor function centered on tendons
6. GWAS and e/sQTL analysis of musculoskeletal tissues
7. Development of a chromatin immunoprecipitation system using the laboratory robot "Mahoro"
8. Analysis of protein dynamics combining high-throughput microscopy systems and AI
9. Exploration of novel molecular mechanisms at the RNA level
10. Development of genetically modified mouse production technologies and their application to disease and drug discovery research

(3) Education

Undergraduate Education: The department lecture series "Molecular Genetics" and "Biochemistry Laboratory" provide comprehensive understanding of gene expression mechanisms and knowledge and techniques applicable to cutting-edge medical research and clinical practice. This curriculum serves as a bridge between basic molecular

biology and innovative applications in modern healthcare.

Research Training: Through research practice programs and project semesters, students acquire diverse approaches essential for systems medicine research: ① Comprehensive gene expression profiling integrating single-cell RNA-seq and AI analysis ② High-efficiency screening systems utilizing CRISPR-Cas9 genome editing technology ③ Elucidation of disease mechanisms through integrated analysis of multi-layered omics data. Students engage in discovery-based learning by exploring gene networks that regulate development, regeneration, and inflammation. The program provides a consistent research experience from hypothesis to proof of concept by verifying research results using human samples and uniquely created genetically modified mouse models.

Graduate Education: The "Developmental and Regenerative Science" course in the Master's program of Medical and Dental Sciences not only provides acquisition of basic knowledge related to developmental, regenerative, and reproductive medicine but also fosters insight into cutting-edge research strategies. We emphasize the development of critical thinking and innovative problem-solving abilities in these rapidly evolving fields. Our educational philosophy integrates theoretical frameworks with practical experience to cultivate leaders in biomedical innovation who can translate molecular-level insights into clinical applications.

The goal is to gain sufficient information from both medical and biological perspectives to develop deep insights in this field. In the Doctoral program of the Graduate School of Medical and Dental Sciences, we aim to master the concepts, strategies, and technologies of systems medicine, which identifies core networks by comprehensively analyzing gene expression to elucidate the mechanisms of tissue development and diseases caused by their disruption. Through the study of individual development, we aim to not only accumulate medical and biological knowledge but also to learn what paradigms remain unresolved, imagine the expected impact of their revelation, and approach the essence of science education.

In undergraduate student research education, as part of the research practice program, we have newly established a "Meister Training" research training system covering from molecular biology to experiments using mouse individuals, from basics to applications, to enhance fundamental research capabilities.

(4) Publications

[Original Articles]

1. Yutaro Uchida, Ryota Kurimoto, Tomoki Chiba, Takahide Matsushima, Goshi Oda, Ichiroh Onishi, Yasuto Takeuchi, Noriko Gotoh, Hiroshi Asahara. RNA binding protein ZCCHC24 promotes tumorigenicity in triple-negative breast cancer. *EMBO Rep.* 2024.12; 25(12); 5352-5382
2. Junya Ito, Kensuke Miyake, Tomoki Chiba, Kazufusa Takahashi, Yutaro Uchida, Perry J Blackshear, Hiroshi Asahara, Hajime Karasuyama. Tristetraprolin-mediated mRNA destabilization regulates basophil inflammatory responses. *Allergol Int.* 2024.11;
3. Hiroki Tsutsumi, Tomoki Chiba, Yuta Fujii, Takahide Matsushima, Tsuyoshi Kimura, Akinori Kanai, Akio Kishida, Yutaka Suzuki, Hiroshi Asahara. Single-nucleus transcriptional and chromatin accessibility analyses of maturing mouse Achilles tendon uncover the molecular landscape of tendon stem/progenitor cells. *bioRxiv.* 2024.10;
4. Lisa Yagasaki, Tomoki Chiba, Ryota Kurimoto, Mitsuyo Nakajima, Takanori Iwata, Hiroshi Asahara. The essential role of Mx1 in periodontal ligament on the metabolism of alveolar bone and cementum *Regen Ther.* 2024.03; 25; 186-193
5. Miyake K, Ito J, Takahashi K, Nakabayashi J, Brombacher F, Shichino S, Yoshikawa S, Miyake S, Karasuyama H. Single-cell transcriptomics identifies the differentiation trajectory from inflammatory monocytes to pro-resolving macrophages in a mouse skin allergy model. *Nature communications.* 2024.02; 15(1); 1666

[Misc]

1. Ryo Nakamichi, Hiroshi Asahara. The role of mechanotransduction in tendon. *J Bone Miner Res.* 2024.08; 39(7); 814-820
2. Takahide Matsushima, Asahara Hiroshi. Molecular mechanisms of mechanosensing and plasticity of tendons and ligaments. *J Biochem.* 2024.05;

[Conference Activities & Talks]

1. Y. Uchida, R. Kurimoto, T. Chiba, T. Matsushima, G. Oda, I. Onishi, Y. Takeuchi, N. Gotoh, H. Asahara.. RNA Binding Protein ZCCHC24 Maintains Cancer Stem Like Status In Triple Negative Breast Cancer. Cell Bio 2024 2024.12.16
2. Junya Ito, Kensuke Miyake, Tomoki Chiba, Hajime Karasuyama, Hiroshi Asahara.. RNA-binding protein tristetraprolin negatively regulates pro-inflammatory mediator production in basophils via mRNA degradation. 第 53 回日本免疫学会学術集会 2024.12.04
3. Junya Ito, Kensuke Miyake, Tomoki Chiba, Hajime Karasuyama, Hiroshi Asahara.. RNA-binding protein tristetraprolin negatively regulates pro-inflammatory mediator production in basophils via mRNA degradation. 第 53 回日本免疫学会学術集会 2024.12.04
4. Reiji Hirai, Maho Hashimoto, Masayuki Takeda, Yutaro Uchida, Tomoki Chiba, Hiroshi Asahara. 変形性関節症における化学修飾 microRNA-140 の治療効果. RNA フロンティアミーティング 2024 2024.10.29
5. Hiroshi Asahara, Ryo Nakamichi. Enhancement of Muscle and Motor Abilities Initiated by Tendons through Mechanosensor Gene Polymorphisms: Athlete Giftedness and Genetics. EMBO Workshop Skeletal Muscle Development, Metabolism, and Repair during Homeostasis and Disease 2024.10.15
6. Hiroshi Asahara, Ryo Nakamichi. Enhancement of Muscle and Motor Abilities Initiated by Tendons through Mechanosensor Gene Polymorphisms: Athlete Giftedness and Genetics. EMBO Workshop Skeletal Muscle Development, Metabolism, and Repair during Homeostasis and Disease 2024.10.15
7. Yudai Ono , Saundra Schlesinger, Yutaro Kawa , Keitaro Wada , Kanako Fukunaga , Shinsei Yambe , Yuki Yamasaki 1 Yuta Tsuchiya , Ramu Sagasaki , Koichi Saeki , Tempei Sato ,Hiroshi Haeno , Chisa Shukunami , Hiroshi Asahara , Masafumi Inui. The role of Scleraxis lineage cells in skeletal muscle morphogenesis. EMBO Workshop Skeletal Muscle Development, Metabolism, and Repair during Homeostasis and Disease 2024.10.14
8. 劉琳、千葉朋希、浅原弘嗣. Generation and characterization of conditional Mxk knockout mouse. AOMC-JMS2024 2024.09.13
9. Takahide Matsushima, Yuki Naito, Tomoki Chiba, Ryota, Kurimoto, Koji Ochiai, Koichi Takahashi, Naoki Goshima, Hiroshi Asahara. Comprehensive Analysis of Stress-Dependent Subcellular Localization Changes in Proteins. AOMC-JMS2024 2024.09.13
10. Hiroshi Asahara. Treatment of musculoskeletal diseases by creation and application of bio-tendons. Cell Symposia: Engineering development and disease 2024.08.21
11. Tomoki Chiba, Hiroshi Asahara. Mechanism of cancer malignancy via chronic inflammation mediated by YAP/TAZ through RNA hierarchy. 第 25 回日本 RNA 学会年会 2024.06.27
12. Yutaro Uchida, Ryota Kurimoto, Tomoki Chiba, Takahide Matsushima, Yasuto Takeuchi, Noriko Gotoh, Hiroshi Asahara. RNA binding protein RBPU maintains cancer stem like status in triple negative breast cancer. 第 25 回日本 RNA 学会年会 2024.06.26
13. Nao Watanabe, Maho Hashimoto, Tomoki Chiba, Yuki Naito, Hiroshi Asahara. Generation of a conditional Xist knockdown mouse model using Cas7-11. 第 25 回日本 RNA 学会年会 2024.06.26
14. Hiroshi Asahara. Mechanism of Cancer Malignancy via Chronic Inflammation Mediated by YAP/TAZ through RNA Hierarchy. 29th Annual Meeting of the RNA Society 2024.05.30
15. Hiroshi Asahara. Athlete Giftedness and Gene. Ortho Research Seminar Series 2024.05.14
16. Ryo Nakamichi, Hiroshi Asahara. Athletic giftedness and genetics. Cell Symposia: Exercise Metabolism 2024.05.05
17. Hiroshi Asahara, Ryo Nakamichi. The functional enhancement for physical performance via Piezo1-Mxk axis in tendon. OARSI 2024 2024.04.20
18. Hiroshi Asahara. Efficient Generation of Conditional Knockout Mice and Insights into Piezo1 Gene Variation in Enhancing Physical Performance. IMS セミナー（理化学研究所 生命医科学研究センター主催） 2024.04.17

19. Yuta Fujii; Ryo Nakamichi; Martin Lotz; Hiroshi Asahara. Effect Of Piezo1 Deletion On Tendons. ORS 2024 Annual Meeting 2024.02.03
20. Kensuke Miyake, Junya Ito, Kazufusa Takahashi, Jun Nakabayashi, Shigeyuki Shichino, Hajime Karasuyama. Classical monocyte-derived macrophages display high efferocytic ability and contribute to the resolution of basophil-dependent skin allergic inflammation. The 52nd Annual Meeting of the Japanese Society for Immunology 2024.01.18
21. Junya Ito, Kensuke Miyake, Kazufusa Takahashi, Shigeyuki Shichino, Hajime Karasuyama. FoxO1 regulates the number of basophils in the peripheral tissues and basophil-dependent allergic inflammation. The 52nd Annual Meeting of the Japanese Society for Immunology 2024.01.17

[Patents]

1. INHIBITOR OF THE EXPRESSION OF CANCER-PROMOTING FACTORS, SCREENING METHOD FOR ACTIVE INGREDIENT THEREOF, EXPRESSION CASSETTE USEFUL IN SAID METHOD, DIAGNOSTIC DRUG, AND DIAGNOSTIC METHOD, Patent Number : IL 274456
2. INHIBITOR OF THE EXPRESSION OF CANCER-PROMOTING FACTORS, SCREENING METHOD FOR ACTIVE INGREDIENT THEREOF, EXPRESSION CASSETTE USEFUL IN SAID METHOD, DIAGNOSTIC DRUG, AND DIAGNOSTIC METHOD, Patent Number : IL 274456

Department of Comprehensive Pathology

Professor
 Fumihiko ISHIKAWA
 Junior associate Professor
 Liang MINGGAO
 Assistant Professor
 Yuko KINOWAKI, Towako TAGUCHI
 Laboratory Technician
 Miori INOUE
 Technical Assistant
 Sachiko ISHIBASHI, Masumi IKEDA

(1) Outline

A major goal in the field of comprehensive pathology is to understand and overcome many intractable diseases such as leukaemia, lymphomas and tumours. In research, the patient is the starting point for research and the goal of research is also to help the patient. We share the motivation to help and support patients across disciplines, from sequencing, computation and drug discovery, while valuing the classical approach of pathology = sectioning, utilising the foundation of pathological diagnosis to determine the disease and its severity, and we all work together to help and support patients. We are conducting research by incorporating a wide variety of science and technology. We share the 'desire to overcome disease = pathology that helps' across all generations, from staff to students. The real world at the bedside is one in which the same diagnosis can lead to different disease states and different responses to treatment. The importance of this system is to perform comprehensive measurements from the individual, connecting multiple layers of tissues/organs, cells, proteins, genes, metabolites, etc., and to find the essence of the disease and weaknesses in the disease from the data. Every staff member brings his or her own area of specialisation to the table, with each disease they wish to understand and each patient they wish to help in mind. We don't just work in the world of pathology, we work with many collaborators and encourage you to learn from them. Whether you are an undergraduate, postgraduate or doctor, you will also be a link between knowing and seeing the world and meeting amazing people. We also collaborate with the business development world to develop new treatments and bring them to patients, both nationally and internationally. We will also introduce you to our collaborators, so doing research while moving between medicine, dentistry and various other areas may be a good way to broaden your horizons, deepen your research and realise your dreams.

(2) Research

1. reproduction of human blood, immunity and disease As mentioned above, each patient has a different disease and a different immune system that tries to suppress it. Immunity is created from haematopoietic stem cells, and while reproducing this process in mice, we are researching what genes are needed to create a strong immunity, how leukaemia develops in the bones and spreads throughout the body, and what treatments can stop it. Diverse ideas and research tools are needed for research that can help. 2. understanding leukaemia relapse and developing treatments Our major goal is to eradicate 'relapse', where leukaemia cells, once reduced by chemotherapy and other treatments, reappear. To achieve this, we find the cells that cause the relapse, identify therapeutic targets in them and create a treatment. We have been working on these efforts together with the wishes of a large number of patients. We have a continuum of research to track

down leukaemia, and as we proceed, we also have the desire to learn about changing technologies and build even better teamwork. 3. visualisation of the bone marrow microenvironment Pathological assessment of the bone marrow microenvironment in human bone marrow What is needed to capture the bone marrow microenvironment as it is known in haematology with optical microscopy? We will also approach this from a molecular biological aspect. Construction of the bone marrow microenvironment using random mutations - Understanding cell-cell interactions in the cancer microenvironment - While many previous reports on the 'cancer microenvironment' have mainly focused on poor prognosis cancers themselves, this research team has comprehensively investigated the mechanism of induction of drug resistance by tumour peritumour support cells. In contrast, the research team established a new CRISPR screening method*3 to comprehensively elucidate the mechanism of drug resistance induction by per tumour support cells. Understanding treatment resistance in disease using CRISPR-Cas Associate Professor Kurata was one of the first to learn about CRISPR and has taken an international leadership role. He is taking on challenges that he has wanted to solve for many years but has not been able to do so, such as tumour resistance to treatment. Postgraduate students and young pathologists are also successfully including CRISPR in their respective research topics to improve their research. 4. deepening pathology and medicine for a wide range of diseases, including breast cancer, pancreatic endocrine tumours, endometriosis, liposarcoma and malignant mesothelioma. 5. visualisation of disease cell/stromal relationships.

(3) Education

Undergraduate education: Education is provided throughout the four years from the first grade to the fourth grade of specialized courses through the general pathology, each theory practice, PBL, block type learning, comprehensive diagnostics practice, BSL, and the like. The program is implemented in cooperation with the human pathology department, hospital pathology department, molecular pathology department, difficult research neuropathology department, and dentistry oral pathology course. At the case study meeting, CPE, which is held at the end of each discussion practice, a small number of students are in charge of one case, give presentations, and promote understanding of pathology through case experience.

(4) Lectures & Courses

Post-graduate education: Training of pathological, anatomy and surgical pathology for the purpose of acquiring the qualification of a pathological society-certified physician, as well as training in related hospitals. Through CPC and case study meetings with clinical departments, the aim is to deepen their understanding of clinical medicine. Regarding research, in addition to the usual pathological methods, we will use them according to the theme of each person such as immunopathology, virology, biochemistry and molecular biology methods, so that we can conduct advanced research.

(5) Clinical Services & Other Works

I the university hospital, surgical materials, biopsy materials, and various organs obtained by pathological dissection are subjected to immunohistological technic in addition to the usual morphological methods.

(6) Clinical Performances

To improve diagnostic accuracy, the methods of molecular pathology are also applied.

(7) Publications

[Original Articles]

1. Adele R, Hussein R, Tavares E, Ahmed K, Di Scipio M, Charish J, Liang M, Monis S, Tumber A, Chen X, Paton TA, Roslin NM, Eileen C, Ivakine E, Sunny NE, Wilson MD, Campos E, Rajala RV, Maynes JT, Monnier PP, Paterson AD, Héon E, Vincent A. Autosomal dominant macular dystrophy linked to a chromosome 17 tandem duplication. JCI insight. 2024;10; 9(23);
2. Mirceta M, Schmidt MHM, Shum N, Prasolava TK, Meikle B, Lanni S, Mohiuddin M, McKeever PM, Zhang M, Liang M, van der Werf I, Scheers S, Dion PA, Wang P, Wilson MD, Abell T, Philips EA, Sznajder

- LJ, Swanson MS, Mehkary M, Khan M, Yokoi K, Jung C, de Jong PJ, Freudenreich CH, McGoldrick P, Yuen RKC, Abrahão A, Keith J, Zinman L, Robertson J, Rogaeva E, Rouleau GA, Kooy RF, Pearson CE. C9orf72 repeat expansion creates the unstable folate-sensitive fragile site FRA9A. *NAR molecular medicine*. 2024.10; 1(4); ugae019
3. Kobayashi M, Niimi M, Katsuda H, Akahoshi K, Kinowaki Y, Sasaki M, Hirakawa A, Tateishi U, Tanabe M, Okamoto R. Optimization of Endoscopic Ultrasound Characteristics in the Diagnosis of Malignant Intraductal Papillary Mucinous Neoplasm. *Pancreas*. 2024.07; 53(6); e521-e527
 4. Kazuma Saito, Masanori Kobayashi, Minato Yokoyama, Towako Taguchi, Koichiro Kimura, Takumi Akashi, Yasuhisa Fujii, Ryuichi Okamoto. Transjejunal fine-needle biopsy using a forward-viewing echoendoscope for diagnosis of a rare hereditary paraganglioma. *VideoGIE*. 2024.07; 9(7); 329-332
 5. Tatsuya Suzuki, Yuka Hayakawa, Shun Kaneko, Kento Takenaka, Keiya Watakabe, Yuko Kinowaki, Akira Takemoto, Kazuo Ohtsuka, Yasuhiro Asahina, Ryuichi Okamoto. Granulomatous hepatitis with Crohn's disease: a case report. *Clin J Gastroenterol*. 2024.06; 17(3); 551-556
 6. Asakawa A, Yoshimoto R, Kobayashi M, Izumi N, Maejima T, Deguchi T, Kubota K, Takahashi H, Yamada M, Ishibashi S, Onishi I, Kinowaki Y, Kurata M, Kobayashi M, Ishibashi H, Okubo K, Ohashi K, Kitagawa M, Yamamoto K. The Comprehensive Characterization of B7-H3 Expression in the Tumor Microenvironment of Lung Squamous Cell Carcinoma: A Retrospective Study. *Cancers*. 2024.06; 16(11);
 7. Yamada E, Umemoto T, Taguchi T, Onishi I, Yamamoto A, Tsukamoto K, Ibara T, Sasaki T, Kaburagi H, Maejima Y, Sasano T, Ohashi K, Yoshii T, Nimura A, Fujita K. Prevalence of amyloid deposition and cardiac amyloidosis in shoulder disease compared to carpal tunnel syndrome. *JSES international*. 2024.03; 8(2); 349-354
 8. Kawade G, Kurata M, Matsuki Y, Fukuda S, Onishi I, Kinowaki Y, Watabe S, Ishibashi S, Ikeda M, Yamamoto M, Ohashi K, Kitagawa M, Yamamoto K. Mediation of FSP1 expression via 4-HNE accumulation contributes to acquisition of resistance to apoptosis and ferroptosis in DLBCL. *Laboratory investigation; a journal of technical methods and pathology*. 2024.02; 102027
 9. Kinowaki Y, Fukumura Y, Kawade G, Sugita K, Kinowaki K, Akahoshi K, Kobayashi M, Ono H, Kudo A, Tanabe M, Akashi T, Ohashi K, Kurata M. Gene expression profiling of pancreatic neuroendocrine carcinoma and mixed neuroendocrine-non-neuroendocrine neoplasm. *Gene*. 2024.01; 893; 147916
 10. Hata M, Mori T, Hirose Y, Nishida Y, Mandai S, Ando F, Susa K, Iimori S, Naito S, Sohara E, Rai T, Taguchi T, Tomii S, Ohashi K, Uchida S. A case of unexpected diagnosis of fibronectin glomerulopathy with histological features of membranoproliferative glomerulonephritis. *BMC nephrology*. 2024.01; 25(1); 25
 11. Masanori Kobayashi, Hiromune Katsuda, Aya Maekawa, Keiichi Akahoshi, Ryosuke Watanabe, Yuko Kinowaki, Hisaaki Nishimura, Takeo Fujiwara, Minoru Tanabe, Ryuichi Okamoto. Development of an intraductal papillary mucinous neoplasm malignancy prediction scoring system. *PLoS One*. 2024; 19(10); e0312234

Department of Molecular Oncology

Professor: Shinji TANAKA
Associate Professor: Yoshimitsu AKIYAMA
Assistant Professor: Shu SHIMADA
Assistant Professor: Megumi HATANO
Graduate Student: Kouya YASUKAWA
Graduate Student: Kentaro UMEMURA
Graduate Student: Atsushi KAMACHI
Graduate Student: Yu MIYATA
Graduate Student: Megumi KATO

(1) Outline

To understand the molecular mechanisms underlying carcinogenesis and malignant progression for clinical application of cancer prevention, diagnosis and treatment.

(2) Research

1. Molecular analysis of refractory malignancies including liver, pancreatic and scirrhous gastric cancers
2. Development of molecularly targeted therapy for refractory malignancies
3. Cancer epigenetics/epigenomics and clinical application in refractory malignancies
4. Research of cancer stem cells and targeted therapy
5. Development of regenerative medicine using stem cell research

(3) Education

Hygiene is our charge. The undergraduate curriculum of hygiene includes lectures, and laboratory studies. Topics of lectures consist of environmental pollution and human health, world-wide environmental problems, carcinogen and occupational cancer, smoking-related diseases, infectious diseases including AIDS and hepatitis, food poisoning, anoxia and heat-related diseases.

(4) Lectures & Courses

The graduate students pursue their own projects associated with one of researches being in progress in the division. Every student can learn the basic scientific techniques, such as genetic engineering, cell culture and biochemical procedures. There are also many special lectures on cancer, gene, cell biology and biochemistry for the graduate students. On weekly seminars, the students present their own research data and introduce important papers from newly-arrived journals. Once the students get new findings, they are encouraged to present them at the domestic or international meeting and write manuscripts.

(5) Publications

[Original Articles]

1. Shimada S, Tanaka S. The chronicles of hepatocellular carcinoma classification: Subtyping, modeling, and treatment. *Hepatology*. 2024.02; 79(2); 261-263
2. Tsukihara S, Akiyama Y, Shimada S, Hatano M, Igarashi Y, Taniai T, Tanji Y, Kodera K, Yasukawa K, Umeura K, Kamachi A, Nara A, Okuno K, Tokunaga M, Katoh H, Ishikawa S, Ikegami T, Kinugasa Y, Eto K, Tanaka S. Delactylase effects of SIRT1 on a positive feedback loop involving the H19-glycolysis-histone lactylation in gastric cancer. *Oncogene*. 2024; in press
3. Igarashi Y, Akiyama Y, Shimada S, Watanabe S, Hatano M, Kodera K, Okazaki K, Tanji Y, Tsukihara S, Taniai T, Nara A, Yamane M, Kamachi A, Umemura K, Yasukawa K, Ono H, Akahoshi K, Tanabe M, Haruki K, Furukawa K, Ikegami T, Tanaka S. Identification and clinical implications of endogenous retrovirus elements suppressed by SETDB1 in hepatocellular carcinoma. *JHEP Reports*. 2024; in press
4. Taniai T, Shimada S, Akiyama Y, Hatano M, Yasukawa K, Igarashi Y, Tsukihara S, Tanji Y, Kodera K, Okazaki K, Haruki K, Nara A, Yagi K, Akahoshi K, Ban D, Asahina Y, Ikegami T, Tanabe M, Tanaka S. Integrative transcriptome profiling elucidates molecular and immunovascular characteristics of macrotrabecular hepatocellular carcinoma. *Hepatology*. 2024; in press
5. Yasukawa K, Shimada S, Akiyama Y, Taniai T, Igarashi Y, Tsukihara S, Tanji Y, Umemura K, Kamachi A, Nara A, Yamane M, Akahoshi K, Shimizu A, Soejima Y, Tanabe M, Tanaka S. ACVR2A attenuation impacts lactate production and hyperglycolytic conditions attracting regulatory T cells in hepatocellular carcinoma. *Cell Reports Medicine*. 2024; in press
6. Yamane M, Ishikawa Y, Yamashita H, Morimoto K, Asano D, Sugawara T, Watanabe S, Ueda H, Akahoshi K, Ono H, Tanaka S, Tanabe M. Middle segment preserving pancreatectomy versus total pancreatectomy: a comparative analysis of short- and long-term outcomes. *Surgery Today*. 2024.12; Online ahead of print
7. Hatano M, Tanase-Nakao K, Uehara E, Iwano R, Muroya K, Narumi S. Concurrent THRB and DUOX2 variants in a patient detected via newborn screening for congenital hypothyroidism: a case of resistance to thyroid hormone. *Clinical pediatric endocrinology : case reports and clinical investigations : official journal of the Japanese Society for Pediatric Endocrinology*. 2024.02; 33(2); 94-100

[Conference Activities & Talks]

1. Shinji Tanaka. Session; Advances in Systematic Treatment options for Liver Cancer Personalized Approaches to Liver Cancer Management: Molecular and Immunological Landscape to Develop Novel Strategies (invited lecture). APASL Oncology 2024 Chiba 2024.09.24 Chiba
2. Shinji Tanaka. International Japan Joint Symposium 6; Cutting edge of HCC basic in Asia: Special Remarks. The 60th Annual Meeting of the Japanese Society of Hepatology 2024.06.13 Kumamoto
3. Shinji Tanaka. Session; Unraveling the Progression of Genomic Anomalies in Hepatocellular Carcinoma Integrated Omics Analysis for the Progression of Hepatocellular Carcinoma (invited lecture). APASL 2024 Kyoto 2024.03.29 Kyoto
4. Shinji Tanaka. Session; Asian MAFLD: Basic Understanding (Molecular Pathogenesis) Metabolic Dysfunction-Associated Liver Cancer (invited lecture). APASL 2024 Kyoto 2024.03.28 Kyoto
5. Masahiro Yamane, Shohei Motohashi, Daisuke Asano, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Hiroaki Ono, Keiichi Akahoshi, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. The value of ablation therapy combined with surgical resection for neuroendocrine liver metastasis. ILLS 2024 in Kyoto 2024.10.01 Kyoto
6. Atsushi Nara, Keiichi Akahoshi, Hiroki Ueda, Koichiro Morimoto, Daisuke Asano, Shuichi Watanabe, Yoshiya Ishikawa, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. Usefulness of the Novel Rupture Severity Score (NRSS) in Determining the Timing of Transarterial Embolization (TAE) for Ruptured Hepatocellular Carcinoma. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.29 Hiroshima

7. Hiroaki Ono, Daisuke Asano, Toshitaka Sugawara, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Keiichi Akahoshi, Atushi Kudo, Shinji Tanaka, Minoru Tanabe. Investigation of the usefulness of TNMG classification in pancreatic neuroendocrine tumors. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
8. Daisuke Asano, Keiichi Akahoshi, Yoshiya Ishikawa, Toshitaka Sugawara, Shuichi Watanabe, Hiroki Ueda, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. What is the safe and shortest way to learn laparoscopic liver surgery? DSS-based training system and safety use of CUSA. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
1. Shimada S, Akiyama Y, Akahoshi K, Tanaka S. Loss of SFXN1 mitigates lipotoxicity and predicts poor outcome in non-viral hepatocellular carcinoma. The 83rd Annual Meeting of the Japanese Cancer Association 2024.09.21 Fukuoka
2. Akiyama A, Shimada S, Tanaka S. Clinical significance and molecular function of the histone methyltransferase SETDB1 overexpression in gastric cancer. The 83rd Annual Meeting of the Japanese Cancer Association 2024.09.20 Fukuoka

[Patents]

1. Dominant negative mutants of IRS-1 and uses thereof (Tanaka S, Wands JR), Patent Number : United States Patent 6,528,479
2. Compositions and methods for detection and treatment of hepatocellular carcinoma (Tanaka S, MacDonald G), Application Number : US 61/811,360

[Others]

1. Chairs: Shinji Tanaka, Pei-Jer Chen. International Japan Joint Symposium 6; Cutting edge of HCC basic in Asia: Special Remarks, 2024.06
The 60th Annual Meeting of the Japanese Society of Hepatology, Kumamoto
2. Chair: Shinji Tanaka, Takeshi Aoki, Requested Oral: Biomarkers of HBP Cancer, 2024.06
The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery, Hiroshima
3. Chairs: Shinji Tanaka, Toshikazu Ushijima. The JCA-Mauvernay Awards Session, 2024.09
The 83rd Annual Meeting of the Japanese Cancer Association, Fukuoka

Department of Surgical Pathology

Associate Professor: Morito KURATA

Assistant Professor: Ichiro Onishi, Susumu KIRIMURA, Junko KUNIEDA
Hiroshi SHINTAKU, Anri KOYANAGI

Project Assistant Professor: Keiko MIURA

Secretary: Ayako UENO

(1) Outline

Missions of diagnostic pathology are summarized to following 4 items. 1) participation to the medical treatment of the patients through anatomical diagnosis 2) assessment of medical treatment through autopsy examination 3) training of diagnostic pathologists 4) development of diagnostic methods by anatomical, immunohistochemical, microbiological and molecular technologies.

In cooperation with departments of human pathology and comprehensive pathology, pathology and anatomical sciences and oral pathology provides 1. diagnostic pathology services for the clinicians of the affiliated hospital 2. education of medical students and post-graduate students through both lectures and medical practice 3. development of new methods in diagnostic pathology.

(2) Research

- 1) Exploration of drug resistance mechanisms in the microenvironment and their pathophysiology
- 2) Development of useful histological diagnostic markers for pathological diagnosis
- 3) Clinicopathological study of malignant mesothelioma
- 4) Clinicopathological study of IBD
- 5) Clinicopathological study of glomerular diseases
- 6) Clinicopathological study of pancreatic neuroendocrine tumors
- 7) Clinicopathological studies on neurodegenerative diseases

(3) Education

Main object of surgical pathology in the course of graduate school is to provide medical students opportunity to study pathophysiology and diagnosis of core diseases, both neoplastic and non-neoplastic, through biopsy, surgical and autopsy cases. Another important mission is a training of pathology specialist in the post-graduate school through diagnostic services of surgical pathology, cytopathology and autopsy.

(4) Lectures & Courses

The initial purpose of this program is to acquire how to morphologically diagnose both neoplastic and non-neoplastic diseases. In addition, it is also very important to recognize the limitations and problems of morphological diagnosis and to learn the morphological and molecular methods which are necessary for the resolution of the problems. The ultimate purpose is to develop a new diagnostic method which can resolve the problems of morphological diagnosis.

(5) Clinical Services & Other Works

In cooperation with departments of human pathology,comprehensive pathology,pathology and anatomical sciences,oral pathology, oral pathology autopsy services (40 case in a year), cytopathology services (9,517 cases in a year) and surgical pathology (11,695 cases in a year) for the clinicians of the affiliated hospital. Diagnosis is mostly done by the organ-subspecilized staffs. Clinico-pathological conferences have been held about two hundred times.

(6) Clinical Performances

Department of diagnostic pathology participates in the medical treatment of the patients through anatomical diagnosis. In the era of molecule-targeted therapy, specialized information has been requested in the field of pathological diagnosis. In order to appropriately respond to a latest request of clinicians, we practice pathological diagnosis in cooperation with departments of human pathology and comprehensive pathology with latest techniques, such as immunohistochemistry, electron microscopy, and FISH.

(7) Publications

[Original Articles]

1. Kurata M, Onishi I. A new model of extramedullary hematopoiesis. *Blood*. 2024.08; 144(9); 921-922
2. Kinoshita Tomo, Tamada Natsumi, Hara Shoko, Mukawa Maki, Shintaku Hiroshi, Inaji Motoki, Tanaka Yoji, Nariai Tadashi, Maehara Taketoshi. Two Postmortem Cases of Moyamoya Disease with Different RNF213 p.R4810K Variant Statuses NMC Case Report Journal. 2024.12; 11(1); 413-419
3. Takahara H, Kanazawa T, Oshita H, Tomita Y, Hananoi Y, Ishibashi S, Ikeda M, Furukawa A, Kinoshita M, Yamamoto K, Kato Y, Ishibashi H, Okubo K, Kurata M, Kitagawa M, Ohashi K, Yamamoto K. GPX4 and FSP1 Expression in Lung Adenocarcinoma: Prognostic Implications and Ferroptosis-Based Therapeutic Strategies. *Cancers*. 2024.11; 16(22);
4. Tanaka H, Yoshida S, Aoyama S, Ikeda S, Kunieda J, Ohashi K, Fukuda S, Waseda Y, Tanaka H, Fujii Y. A case of double-negative prostate cancer with BRCA2 mutation and high tumor mutation burden treated sequentially with olaparib and pembrolizumab. *IJU case reports*. 2024.09; 7(5); 395-398
5. Iijima Yuki, Furusawa Haruhiko, Yamana Takashi, Shibata Sho, Shirai Tsuyoshi, Okamoto Tsukasa, Tateishi Tomoya, Adachi Takuya, Kirimura Susumu, Miyazaki Yasunari. Reevaluating diagnosis in interstitial lung disease with a second multidisciplinary discussion. *Respir Investig*. 2024.09; 62(6); 1027-1033
6. Takahashi S, Ono D, Shintaku H, Oyama J, Nishida Y, Ishikawa K, Yokota T. Cryptogenic New-onset Refractory Status Epilepticus with Hyperintensity of T1-weighted Magnetic Resonance Imaging in the Bilateral Basal Ganglia: An Autopsy Report. *Internal medicine (Tokyo, Japan)*. 2024.09;
7. Yasuyuki Kurihara, Takayuki Honda, Akira Takemoto, Katsutoshi Seto, Satoshi Endo, Kousuke Tanimoto, Susumu Kirimura, Masashi Kobayashi, Shunichi Baba, Yasuhiro Nakashima, Ryo Wakejima, Rie Sakakibara, Hironori Ishibashi, Johji Inazawa, Toshihiro Tanaka, Yasunari Miyazaki, Kenichi Okubo. Immunohistochemistry of p53 surrogates TP53 mutation as an accurate predictor for early-relapse of surgically resected stage I-III lung adenocarcinoma JTCVS Open. 2024.08;
8. Komiya Y, Kamiya M, Oba S, Kawata D, Iwai H, Shintaku H, Suzuki Y, Miyamoto S, Tobiume M, Kanno T, Aina A, Suzuki T, Hasegawa H, Hosoya T, Yasuda S. Necroptosis in alveolar epithelial cells drives lung inflammation and injury caused by SARS-CoV-2 infection. *Biochimica et biophysica acta. Molecular basis of disease*. 2024.08; 1870(8); 167472
9. Tamura K, Tomita Y, Kanazawa T, Shinohara H, Sakano M, Ishibashi S, Ikeda M, Kinoshita M, Minami J, Yamamoto K, Kato Y, Furukawa A, Haruki S, Tokunaga M, Kinugasa Y, Kurata M, Kitagawa M, Ohashi K, Yamamoto K. Lipid Peroxidation Regulators GPX4 and FSP1 as Prognostic Markers and Therapeutic Targets in Advanced Gastric Cancer. *International journal of molecular sciences*. 2024.08; 25(17);

10. Ariga A, Funauchi Y, Sato S, Kunieda J, Yoshii T. Melorheostosis With Uniform Rib Thickening. *Clinical nuclear medicine*. 2024.07; 49(7); 662-663
11. Fujiwara M, Shimada W, Yokoyama M, Koyanagi A, Shintaku H, Fukuda S, Waseda Y, Tanaka H, Yoshida S, Fujii Y. Durable response to nivolumab rechallenge in a patient with metastatic clear cell renal cell carcinoma. *IJU case reports*. 2024.07; 7(4); 293-296
12. Tsujikawa T, Ohno K, Morita KI, Saburi S, Mitsuda J, Yoshimura K, Kimura A, Morimoto H, Ogi H, Shibata S, Akashi T, Kurata M, Imoto I, Shimizu Y, Kano S, Watanabe A, Yamazaki T, Asada Y, Hayashi R, Saito Y, Ozawa H, Tsukahara K, Oridate N, Sano D, Horii A, Ueki Y, Maruo T, Mukoyama N, Hanai N, Fukusumi T, Iwai H, Fujisawa T, Fujii T, Nibu KI, Iwae S, Ueda T, Chikuie N, Yasumatsu R, Matsuo M, Umeno H, Ono T, Masuda M, Toh S, Itoh K, Hirano S, Asakage T. Clinical, genomic and immune microenvironmental determinants of nivolumab response in head and neck squamous cell carcinoma. *Frontiers in immunology*. 2024.07; 15; 1390873
13. Yusuke Mizuno, Ryuhei Okada, Susumu Kirimura, Ryoichi Yoshimura, Takahiro Asakage. A Case of Malignant Transformation of Recurrent Respiratory Papillomatosis That Was Effectively Treated with Pembrolizumab Case Rep *Oncol*. 2024.07; 17(1); 734-740
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16. Yuri Hayashida, Maho Hatano, Kazuyuki Ito, Manabu Sugie, Junko Kunieda, Masaki Shimizu, Tomohiro Morio, Chikako Morioka. Case Report: A neonatal case of cryopyrin-associated periodic syndrome with severe funisitis and neonatal asphyxia. *Front Pediatr*. 2024.05; 12; 1397412
17. Nobuhiko Ogasawara, Yoshihito Kano, Yosuke Yoneyama, Sakurako Kobayashi, Satoshi Watanabe, Sakura Kirino, Fausto D Velez-Bravo, Yourae Hong, Aleksandra Ostapiuk, Pavlo Lutsik, Ichiroh Onishi, Shinichi Yamauchi, Yui Hiraguri, Go Ito, Yusuke Kinugasa, Kenichi Ohashi, Mamoru Watanabe, Ryuichi Okamoto, Sabine Tejpar, Shiro Yui. Discovery of non-genomic drivers of YAP signaling modulating the cell plasticity in CRC tumor lines. *iScience*. 2024.03; 27(3); 109247
18. Yamada E, Umemoto T, Taguchi T, Onishi I, Yamamoto A, Tsukamoto K, Ibara T, Sasaki T, Kaburagi H, Maejima Y, Sasano T, Ohashi K, Yoshii T, Nimura A, Fujita K. Prevalence of amyloid deposition and cardiac amyloidosis in shoulder disease compared to carpal tunnel syndrome. *JSES international*. 2024.03; 8(2); 349-354
19. Sato A, Fujioka T, Onishi I, Yamaga E, Katsuta L, Kubota K, Kumaki Y, Ishiba T, Oda G, Tateishi U. Arterial Calcification Disappearance in Breast Imaging: A Key Indicator for Transition to Invasive Ductal Carcinoma. *Diagnostics (Basel, Switzerland)*. 2024.03; 14(7);
20. Shun Fujiwara, Yoshihito Kano, Yasuhiro Maejima, Tomoyuki Fujioka, Kazuhiro Tamura, Susumu Kirimura, Satoshi Miyake, Ryuichi Okamoto. Clinical Response of Primary Malignant Pericardial Mesothelioma with Peritoneal Dissemination to Nivolumab. *Intern Med*. 2024.02; 63(4); 513-519
21. Murakami M, Hara K, Ikeda K, Horino M, Okazaki R, Niitsu Y, Takeuchi A, Aoki J, Shiba K, Tsujimoto K, Komiya C, Nakamura Y, Kurata M, Akashi T, Fujii Y, Yamada T. Single-Nucleus Analysis Reveals Tumor Heterogeneity of Aldosterone-Producing Adenoma. *Hypertension (Dallas, Tex. : 1979)*. 2024.02; 81(2); 361-371
22. Kawade G, Kurata M, Matsuki Y, Fukuda S, Onishi I, Kinowaki Y, Watabe S, Ishibashi S, Ikeda M, Yamamoto M, Ohashi K, Kitagawa M, Yamamoto K. Mediation of FSP1 expression via 4-HNE accumulation contributes to acquisition of resistance to apoptosis and ferroptosis in DLBCL. *Laboratory investigation; a journal of technical methods and pathology*. 2024.02; 102027

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24. Iijima Y, Ejima M, Yamana T, Sonoda S, Shibata S, Shirai T, Okamoto T, Furusawa H, Tateishi T, Adachi T, Mori M, Kirimura S, Anzai T, Takahashi K, Miyazaki Y. Assessment of clinical relevance of antigen improves diagnostic accuracy of hypersensitivity pneumonitis. *BMC pulmonary medicine*. 2024.02; 24(1); 84
25. Yasui S, Honda T, Onishi I, Ikeda S, Miyazaki Y. Effective Treatment of Lung Adenocarcinoma With a Novel SLC44A1-BRAF Fusion Using Pembrolizumab Followed by Trametinib: A Case Report. *Cureus*. 2024.02; 16(2); e54739
26. Fujiwara Shun, Kano Yoshihito, Maejima Yasuhiro, Fujioka Tomoyuki, Tamura Kazuhiro, Kirimura Susumu, Miyake Satoshi, Okamoto Ryuichi. Clinical Response of Primary Malignant Pericardial Mesothelioma with Peritoneal Dissemination to Nivolumab *Internal Medicine*. 2024.02; 63(4); 513-519
27. Kinowaki Y, Fukumura Y, Kawade G, Sugita K, Kinowaki K, Akahoshi K, Kobayashi M, Ono H, Kudo A, Tanabe M, Akashi T, Ohashi K, Kurata M. Gene expression profiling of pancreatic neuroendocrine carcinoma and mixed neuroendocrine-non-neuroendocrine neoplasm. *Gene*. 2024.01; 893; 147916
28. Arai Y, Cho J, Fujino A, Taira N, Kunieda J, Koike M. Histopathological Examination of a Symptomatic Carotid Web: A Case Report. *NMC case report journal*. 2024; 11; 69-74
29. Sakano M, Tomita Y, Kanazawa T, Ishibashi S, Ikeda M, Oshita H, Hananoi Y, Kato Y, Yamamoto K, Furukawa A, Kinoshita M, Haruki S, Tokunaga M, Kinugasa Y, Kurata M, Kitagawa M, Ohashi K, Yamamoto K. Prognostic significance and therapeutic potential of guanosine triphosphate cyclohydrolase 1 in esophageal squamous cell carcinoma: clinical implications of ferroptosis and lipid peroxidation regulation. *Frontiers in oncology*. 2024; 14; 1459940

Department of Experimental Animal Model for Human Disease

Professor Masami Kanai-Azuma (2010. 4- Current)
 Junior Associate Professor Yoshikazu Hirate (2014.4-2024.9)
 Assistant Professor Naoaki Mizuno (2024.10- 2024.11)
 Junior Associate Professor " (2024.12- Current)

(1) Outline

Department of Experimental Animal Model for Human Disease is established in April 2010, as an affiliated laboratory of Center for Experimental Animals.

One of the goal of our research is the development of new laboratory models to study human diseases, especially focusing on congenital anomalies. Through the analyses of the mouse models, we aim to reveal the causal components and the molecular mechanisms of human diseases. Our study will provide the valuable basic knowledge for the future applied research that allows prenatal diagnosis on early embryo.

(2) Research

- 1) Organogenesis research in transgenic mice.
- 2) Development of new treatments for infertility and recurrent pregnancy loss using the rodent model.
- 3) Establishment of the novel embryo manipulation techniques for gene therapy.

(3) Education

The lectures cover undergraduate education on experimental animals and the initial research training program in the Graduate School of Medical and Dental Sciences, titled "How to Conduct Animal Experiments."

(4) Publications

[Original Articles]

1. Nanae Miyazaki, Shohei Takami, Mami Uemura, Hironobu Oiki, Masataka Takahashi, Hiroshi Kawashima, Yutaka Kanamori, Takako Yoshioka, Mureo Kasahara, Atsuko Nakazawa, Mayumi Higashi, Ayaka Yanagida, Ryuji Hiramatsu, Masami Kanai-Azuma, Jun Fujishiro, Yoshiakira Kanai. Impact of gallbladder hypoplasia on hilar hepatic ducts in biliary atresia. *Communications medicine*. 2024.06; 4(1); 111
2. Masaki Nagaya, Ayuko Uchikura, Kazuaki Nakano, Masahito Watanabe, Hitomi Matsunari, Kazuhiro Umeyama, Naoaki Mizuno, Toshiya Nishimura, Hiromitsu Nakauchi, Hiroshi Nagashima. Generation of insulin-like growth factor 1 receptor-knockout pigs as a potential system for interspecies organogenesis. *Regen Ther*. 2024.06; 26; 783-791
3. Hisato Nagano, Naoaki Mizuno, Hideyuki Sato, Eiji Mizutani, Ayaka Yanagida, Mayuko Kano, Mariko Kasai, Hiromi Yamamoto, Motoo Watanabe, Fabian Suchy, Hideki Masaki, Hiromitsu Nakauchi. Skin graft with dermis and appendages generated in vivo by cell competition. *Nature Communications*. 2024.04; 15(1); 3366

[Conference Activities & Talks]

1. 韓 笑, 中村 幸祐, 内田 あや, 李 瑞賢, 柳田 絢加, 平松 竜司, 金井 正美, 金井 克晃. Sox17 強制発現によるセルトリバルブの過形成と Sox17 陽性精巢網との機能相補. 第 117 回日本繁殖生物学会 2024.09.23 名古屋大学野依記念学術交流館・シンポジオンホール
 2. Melig Gerel, Nobuhisa Ikuo, Saito Kioka, Tsukahara Ryota, Itabashi Ayumi, Kanai Yoshiakira, Kanai-Azuma Masami, Taga Tetsuya. Rasip1 is a downstream effector of Sox17 that plays a role in maintaining hematopoietic cluster cells in midgestation mouse embryos. 第 45 回日本炎症・再生医学会 2024.07.17 福岡国際会議場
 3. 水野直彬, 長野寿人, 佐藤秀征, 水谷英二, 柳田絢加, 加納麻弓子, 笠井真理子, 山本祐美, 渡部素生, サッチーファビアン, 正木英樹, 金井正美, 中内啓光. 細胞競合と胎仔発生環境を用いた完全な移植用皮膚片の作成. 第 71 回日本実験動物学会総会 2024.05.29 みやこめっせ・ロームシアター京都
-
1. Skin graft with dermis and appendages generated in vivo by cell competition. 2024.05.29

Signal Gene Regulation

Associate Professor FUNATO Noriko

(1) Outline

Advanced Therapeutic Sciences_Signal Gene Regulation

The primary research theme is "Functional Analysis of Transcriptional Regulatory Factors in Craniofacial Morphogenesis." The goal is to advance research toward the treatment of craniofacial bone malformations and cleft palate by elucidating transcription factors involved in the developmental mechanisms of the cranial vault, cranial base, facial bones, jawbones, and palate from both molecular biology and developmental biology perspectives.

(2) Research

1. Transcriptional Regulation of Single Nucleotide Polymorphisms and Gene Clusters in Craniofacial and Bone Development
2. Molecular Mechanisms of Single Nucleotide Polymorphisms and Gene Clusters Involved in Cleft Lip and Palate

(3) Education

Lecture

Goals/Outline:

Students will learn the basics in life sciences by understanding the regulation of signal transduction involved in cell proliferation, differentiation, and death.

Practice

Goals/Outline:

Students will learn to handle recombinant DNA molecules and analyze the data obtained from experiments.

Lab

Goals/Outline:

Students will learn basic molecular biology and genetic engineering techniques by observing and/or performing biochemical experiments using cultured cells and gene-engineered mice.

(4) Lectures & Courses

The aim of the Ochanomizu Research Facility is to provide laboratory equipment and information to support research in advanced molecular and cellular biology. As part of the Graduate School's educational objectives, we offer lectures, seminars, training courses, and individual research assistance in the fields of molecular genetics and histology.

(5) Publications

[Original Articles]

1. Noriko Funato,* Arja Heliövaara, Cedric Boeckx. A regulatory variant impacting TBX1 expression contributes to basicranial morphology in Homo sapiens. *Am J Hum Genet.* 2024.05; 111(5); 939-953

[Others]

1. Tokyo Medical and Dental University Press Release (in Japanese), 2024.04
"Analysis of Genome Changes Contributing to the Characteristic Cranial Base Morphology in Homo sapiens" 【Associate Professor Noriko Funato】
<https://www.tmd.ac.jp/press-release/20240412-1/>
2. Tokyo Medical and Dental University (TMDU) Facebook, 2024.04
"Analysis of Genome Changes Contributing to the Characteristic Cranial Base Morphology in Homo sapiens — Single Nucleotide Polymorphism in the Human Chromosome 22q11.2 Region Evolved from Neanderthals"
<https://www.facebook.com/tmdu.public/posts/pfbid02L47FT6832RcneSC2kGD7giHeV2vMESGXbuzwk7SBoNy0NrZ6VMdjRHPVWakCqCvwl>
3. JapaneseResearch.com Press Release, 2024.04
"Analysis of Genome Changes Contributing to the Characteristic Cranial Base Morphology in Homo sapiens — Single Nucleotide Polymorphism in the Chromosome 22q11.2 Region Evolved from Neanderthals"
<https://research-er.jp/articles/view/132663>
4. EurekAlert!, 2024.04
Genetic variant identified that shaped the human skull base
<https://www.eurekalert.org/news-releases/1041357/>
5. TMDU Press Release, 2024.04
Genetic variant identified that shaped the human skull base
<https://www.tmd.ac.jp/english/press-release/20240412-1/>
6. EurekAlert! (Japan), 2024.04
"Analysis of Genome Changes Contributing to the Characteristic Cranial Base Morphology in Homo sapiens — Single Nucleotide Polymorphism in the Chromosome 22q11.2 Region Evolved from Neanderthals"
<https://www.eurekalert.org/news-releases/1041357?language=japanese>
7. ScienceDaily, 2024.04
Genetic variant identified that shaped the human skull base
<https://www.sciencedaily.com/releases/2024/04/240417131055.htm>
8. Grants-in-Aid for Scientific Research (C), 2024.04
"Integrated analysis of single nucleotide polymorphisms associated with "nonsyndromic" cleft lip and palate" Noriko Funato

[Social Contribution]

1. Japanese Association of Oral Biology, Delegate, Japanese Association of Oral Biology, 2016.04.01 - Now
2. QS Global Academic Survey (QS World University Rankings), 2020 - Now
3. Times Higher Education (THE)'s Global Academic Reputation Survey, 2021 - Now
4. The National Institute of Science and Technology Policy (NISTEP): Survey to assess the current state of science, technology, and innovation creation., 2021 - Now

Department of Hematology

Professor: Takehiko Mori

Junior Associate Professor: Masahide Yamamoto, Toshikage Nagao

Assistant Professor: Yoshihiro Umezawa, Kota Yoshifuji, Keisuke Tanaka

Specially Appointed Associate Professor: Daiki Karigane

Specially Appointed Assistana Professor: Motohito Okabe, Hiroki Akiyama

Associate Professor (Department of Clinical Laboratory): Ayako Nogami

Senior Resident : Yasumasa Nakata, Akari Ikeda, Asuka Kono, Shizuka Hamano, Koki Takeuchi

Graduate Student: Yotaro Motomura, Makiko Saito, Junichi Mukae, Yuma Noguchi,
Mai Soejima, Yuuki Osada, Hiroki Fujiwara, Hideki Amemiya Jose

(1) Outline

The Department of Hematology is responsible for clinical services at our University Hospital with treatment of patients with various hematological disorders including leukemias, lymphomas, anemia, and hemorrhagic diseases by chemotherapies, immunotherapies, molecularly-targeted therapies, and hematopoietic cell transplantation. Our department is also responsible for teaching undergraduate students with the lecture course in hematology as well as the clinical clerkship and for training junior and senior residents. Our department is also actively involved, with doctoral course students, in basic and clinical research aiming to elucidate the molecular and cellular mechanisms involved in pathogenesis of hematological malignancies as well as in acquisition of therapy resistance to develop novel efficient therapies against these diseases.

(2) Research

Our laboratory has traditionally focused on elucidating intracellular signaling mechanisms involved in hematopoietic cell proliferation and tumor development and apoptosis regulation in hematologic malignancies induced by chemotherapeutic agents. Building upon these foundational studies, we are now actively pursuing research themes aimed at clinical applications across various research groups, including:

- 1) Identification of novel molecular targets and development of therapeutic interventions for refractory B-cell malignancies
- 2) Development of next-generation chimeric antigen receptor (CAR) T-cell technology
- 3) Analysis of genetic abnormalities associated with primary intraocular lymphoma and their clinical correlations
- 4) Development of novel diagnostic and management strategies for infections in immunodeficient patients
- 5) Exploration of new regulatory factors in hematopoietic stem cells
- 6) Elucidation of the mechanisms of cellular competition in acute myeloid leukemia

(3) Education

Department of hematology is responsible for teaching basic and clinical hematology to the 3rd-year medical students in Hematology/Oncology block course. We are also responsible for the 5th- and 6th-year students in clinical clerkship to obtain basic knowledge and problem-solving abilities in hematology as well as general internal medicine. In the clerkship, we focus on the participation in the team, which would be helpful to proceed to the post-graduate training.

Even under the restriction due to COVID-19 pandemic, lectures based on case study and group work are provided.

In the resident training course, we provide training to acquire the basic skills of total health care including communications, diagnosis and treatment of various hematological disorders. Our training is based on the essential issues and skills to obtain the certificate of Hematology Specialist.

We always guide the young doctors, including Ph.D. students, to search for the solutions of their own questions by planning and performing basic and/or clinical studies. Our goal is to raise researchers with an excellent research mind.

(4) Lectures & Courses

As described in 3, our goal is to raise experts with ability to solve problems and provide total health care through learning clinical and basic hematology.

(5) Clinical Services & Other Works

The Department of Hematology provides diagnosis and treatment for hematological diseases, such as leukemia, malignant lymphoma, anemia, and thrombocythemia, with chemotherapeutics, molecularly-targeted drugs, immunosuppressive agents, hematopoietic cell transplantation, and CAR-T cell therapy.

(6) Clinical Performances

We provide the highest quality of patient care for a wide spectrum of blood diseases and cancers.

(7) Publications

[Original Articles]

1. Sugimoto Y, Nagaharu K, Ohya E, Ohishi K, Tawara I, Ito T, Gotoh A, Nakamae M, Kimura F, Koike M, Kirito K, Wada H, Usuki K, Tanaka T, Mori T, Wakita S, Saito TI, Saito AM, Shimoda K, Kurokawa T, Tomita A, Edahiro Y, Hashimoto Y, Kiyoi H, Akashi K, Matsumura I, Takenaka K, Komatsu N. Clinical characteristics in adolescents and young adults with polycythemia vera and essential thrombocythemia in Japan. *International journal of hematology*. 2024.12; 120(6); 684-693
2. Morikawa R, Nitta K, Yasuda S, Kano Y, Noji R, Aoyama S, Sato S, Ikeda S, Okamoto R, Nagata M, Mori T, Suenaga M. Identification of risk factors for gastrointestinal immune-related adverse events associated with immune check point inhibitors. *Expert opinion on drug safety*. 2024.12;
3. Inoue K, Tomomasa D, Nakagama Y, Takeuchi H, Tanaka Y, Tanimoto K, Kamiya T, Isoda T, Takagi M, Tanaka K, Yoshifuji K, Miwa Y, Ohnishi H, Okada S, Mori T, Yasuda S, Kido Y, Morio T, Kanegane H. Real-world experience of tixagevimab/cilgavimab prophylaxis in Japanese patients with immunodeficiency. *Journal of infection and chemotherapy : official journal of the Japan Society of Chemotherapy*. 2024.12; 31(2); 102577
4. Yotaro Motomura, Kota Yoshifuji, Keisuke Tanaka, Chizuko Sakashita, Yoshihiro Umezawa, Toshikage Nagao, Sayuri Nitta, Yasuhiro Asahina, Takehiko Mori, Masahide Yamamoto. Hepatitis C virus-related hepatitis flare after immunochemotherapy in a patient with follicular lymphoma. *J Clin Exp Hematop*. 2024.12; 64(4); 313-317

5. Yusuke Kubota, Masatoshi Sakurai, Yasuhito Nannya, Yasunori Kogure, Kohei Shiroshta, Shinya Fujita, Kentaro Yamaguchi, Kota Mizuno, Jun Kato, Takehiko Mori, Seishi Ogawa, Keisuke Kataoka. Post-transplant transient abnormal myelopoiesis evolving from a GATA1 mutant clone in umbilical cord blood. *Ann Hematol.* 2024.12; 103(12); 5989-5998
6. Momo Wakui, Junichi Tsuchiya, Chikara Kase, Kota Yokoyama, Masahide Yamamoto, Ukihide Tateishi. Comparative Study of Metabolic Tumor Volume in Multiple Myeloma and Related Plasma Cell Dyscrasias: 11C-Acetate PET vs. 18F-FDG PET. *Cureus.* 2024.10; 16(10); e71605
7. Nogami, A; Amemiya, HJ; Fujiwara, H; Umezawa, Y; Tohda, S; Nagao, T. Targeting USP14/UCL5: A Breakthrough Approach to Overcoming Treatment-Resistant FLT3-ITD-Positive AML *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES.* 2024.10; 25(19);
8. Keiki Nagaharu, Eiko Ohya, Yoko Edahiro, Yoshinori Hashimoto, Tomoki Ito, Akihiko Gotoh, Mika Nakamae, Fumihiko Kimura, Michiaki Koike, Keita Kirito, Hideho Wada, Kensuke Usuki, Takayuki Tanaka, Takehiko Mori, Satoshi Wakita, Toshiki I Saito, Akiko M Saito, Kazuya Shimoda, Toshiro Kurokawa, Akihiro Tomita, Hitoshi Kiyoi, Koichi Akashi, Itaru Matsumura, Katsuto Takenaka, Norio Komatsu, Kohshi Ohishi, Isao Tawara, Yuka Sugimoto. Predictive significance of high neutrophil ratio for thrombosis in myeloproliferative neoplasms: JSH-MPN-R18 subanalysis. *Ann Hematol.* 2024.09; 103(9); 3535-3541
9. Akiyama H, Kantarjian H, Jabbour E, Issa G, Haddad FG, Short NJ, Hu S, Ishizawa J, Andreeff M, Sasaki K. Outcome of 3q26.2/MECOM rearrangements in chronic myeloid leukemia. *International journal of hematology.* 2024.08; 120(2); 203-211
10. Shintaro Watanuki, Hiroshi Kobayashi, Yuki Sugiura, Masamichi Yamamoto, Daiki Karigane, Kohei Shiroshta, Yuriko Sorimachi, Takayuki Morikawa, Shinya Fujita, Kotaro Shide, Miho Haraguchi, Shinpei Tamaki, Takumi Mikawa, Hiroshi Kondoh, Hiroyasu Nakano, Kenta Sumiyama, Go Nagamatsu, Nobuhito Goda, Shinichiro Okamoto, Ayako Nakamura-Ishizu, Kazuya Shimoda, Makoto Suematsu, Toshio Suda, Keiyo Takubo. SDHAF1 confers metabolic resilience to aging hematopoietic stem cells by promoting mitochondrial ATP production. *Cell Stem Cell.* 2024.08; 31(8); 1145-1161.e15
11. Satoshi Kaito, Yuho Najima, Daichi Sadato, Chizuko Hiramata, Yuya Kishida, Akihito Nagata, Tatsuya Konishi, Yuta Yamada, Shuhei Kurosawa, Kota Yoshifuji, Shuichi Shirane, Naoki Shingai, Takashi Toya, Hiroaki Shimizu, Kyoko Haraguchi, Takeshi Kobayashi, Hironori Harada, Yoshiki Okuyama, Yuka Harada, Noriko Doki. Azacitidine and gemtuzumab ozogamicin as post-transplant maintenance therapy for high-risk hematologic malignancies. *Bone Marrow Transplant.* 2024.08; 59(8); 1169-1175
12. Akiyama M, Kanayama M, Umezawa Y, Nagao T, Izumi Y, Yamamoto M, Ohteki T. An early regulatory mechanism of hyperinflammation by restricting monocyte contribution. *Frontiers in immunology.* 2024.07; 15; 1398153
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15. Yoshifuji K, Sadato D, Toya T, Motomura Y, Hiramata C, Takase H, Yamamoto K, Harada Y, Mori T, Nagao T. Impact of genetic alterations on central nervous system progression of primary vitreoretinal lymphoma. *Haematologica.* 2024.06;
16. Sho Hashiguchi, Dan Tomomasa, Takuro Nishikawa, Shuji Ishikawa, Harumi Akaike, Hidehiko Kobae, Tsuyoshi Shirai, Toshikage Nagao, Kosuke Noma, Satoshi Okada, Kazuhiro Kamuro, Yasuhiro Okamoto, Hirokazu Kanegane. 18q Deletion Syndrome Presenting with Late-Onset Combined Immunodeficiency. *J Clin Immunol.* 2024.06; 44(7); 154

17. Ryusuke Yamamoto, Nobuhiro Hiramoto, Ayumi Fujimoto, Hirohito Yamazaki, Takehiko Mori, Naoyuki Uchida, Noriko Doki, Jun Kato, Masashi Nishikubo, Shinichi Kako, Tetsuya Nishida, Shuichi Ota, Makoto Onizuka, Tetsuya Eto, Koichi Onodera, Kazuhiro Ikegame, Ken-Ichi Matsuoka, Yoshinobu Kanda, Takahiro Fukuda, Yoshiko Atsuta, Yasushi Onishi. Impact of antithymocyte globulin usage and risk stratification for posttransplant lymphoproliferative disorders in aplastic anemia patients after allogeneic hematopoietic cell transplantation. *Bone Marrow Transplant.* 2024.05; 59(5); 688-691
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28. Hikaru Aoki, Yasunari Miyazaki, Tatsuhiko Anzai, Kota Yokoyama, Junichi Tsuchiya, Tsuyoshi Shirai, Sho Shibata, Rie Sakakibara, Takahiro Mitsumura, Takayuki Honda, Haruhiko Furusawa, Tsukasa Okamoto, Tomoya Tateishi, Meiyo Tamaoka, Masahide Yamamoto, Kunihiro Takahashi, Ukihide Tateishi, Tetsuo Yamaguchi. Deep convolutional neural network for differentiating between sarcoidosis and lymphoma based on [18F] FDG maximum-intensity projection images Eur Radiol. 2024.01; 34(1); 374-383
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30. Niklas Landberg, Thomas Köhnke, Yang Feng, Yusuke Nakauchi, Amy C Fan, Miles H Linde, Daiki Karigane, Kelly Lim, Rahul Sinha, Luca Malcovati, Daniel Thomas, Ravindra Majeti. IDH1-Mutant Preleukemic Hematopoietic Stem Cells Can Be Eliminated by Inhibition of Oxidative Phosphorylation. Blood Cancer Discovery. 2024.01; OF1-OF18
1. Asuka Kono, Keisuke Tanaka , Tomohito Shimada , Kana Bando, Atsushi Takahata, Satoshi Koi, Masahide Yamamoto, Takehiko Mori, Shigeo Toyota . Allogeneic stem cell transplantation for refractory ALK-positive anaplastic large cell lymphoma after achieving complete response by alectinib 2024.03; 65(3); 158-63

[Conference Activities & Talks]

1. Dan Tomomasa, Takahiro Kamiya, Fumiko Honda-Ozaki, Miyuki Tsumura, Atsushi Hijikata, Morito Kurata, Tomohiro Morio, Satoshi Okada, Hisako Nakamaki, Takehiko Mori, Hirokazu Kanegane. Novel RAC2 variant showing combined immunodeficiency and B-cell lymphoma. 21th Biennial Meeting of European Society for Immunodeficiencies 2024.10.16
2. Daiki Karigane Amy Fan Kensuke Kayamori Yusuke Nakauchi Thomas Koehnke Athreya Rangavajhula Ravindra Majeti . Intra-leukemic IFN suppresses expansion and mediates chemoresistance in human AML. The 86th Annual Meeting of the Japanese Society of Hematology 2024.10.13
3. Yoshinori Hashimoto Tomoki Ito Akihiko Gotoh Mika Nakamae Fumihiko Kimura Michiaki Koike Keita Kirito Hideho Wada Kensuke Usuki Takayuki Tanaka Takehiko Mori Satoshi Wakita Toshiki Saito Akiko Kada Akiko Saito Kazuya Shimoda Yuka Sugimoto Toshiro Kurokawa Akihiro Tomita Yoko Eda Hiro Hitoshi Kiyoi Koichi Akashi Itaru Matsumura Katsuto Takenaka Norio Komastu . Impact of post-diagnostic thrombosis and hemorrhage on survival in patients with ET. The 86th annual meeting of Japanese Society of Hematology 2024.10.13
4. Yuma Noguchi Takehiko Mori Yasushi Onishi Yukinori Nakamura Minoru Kanaya Shinichi Ito Kosei Matsue Shingo Yano Makoto Onizuka Tetsuya Nishida Seitaro Terakura Satoshi Yoshihara Yasunori Ueda Shiro Fujii Tatsuo Ichinohe Yoshiko Atsuta Katsuto Takenaka. Outcome of allogeneic hematopoietic stem cell transplantation for acquired pure red cell aplasia. The 86th annual meeting of The Japanese Society of Hematology 2024.10.13
5. Yoshihiro Inamoto Jun Kato Shunichi Kimura Masatsugu Tanaka Shokichi Tsukamoto Ayaka Nishihara Masako Toyosaki Yuki Nakajima Satoru Takada Nobuyuki Aotsuka Tomomi Takei Maki Hagihara Katsuhiro Shono Yoshihiro Hatta Yoshihiro Umezawa Nobuhiko Kobayashi Ken Naganuma Chikako Ohwada Yoshinobu Kanda. Evaluation of residual fertility in female recipients after hematopoietic stem cell transplantation. The 86th annual meeting of the Japanese Society of Hematology 2024.10.13
6. Kazuharu Kamachi Hiroki Akiyama Ran Zhao Liang Zhang Lauren Ostermann Bing Carter Hideyuki Saya Osamu Nagano Michael Andreeff Jo Ishizawa. Targeting ferroptosis-apoptosis interplay for acute myeloid leukemia therapy. The 86th annual meeting of the Japanese Society of Hematology 2024.10.12

7. Rie Yamazaki, Yukie Tanaka, Kazuaki Yokoyama, Arinobu Tojo, Takehiko Mori. A case of peripheral T-cell lymphoma presenting with cyclic recurrent neutropenia. The 86th annual meeting of the Japanese Society of Hematology 2024.10.12
8. Masatoshi Sakurai Keisuke Kataoka Kota Mizuno Takuto Mori Shuichi Shirane Hirotohi Sakaguchi Takehiko Mori Naoyuki Uchida Masatsugu Tanaka Nobuaki Nakano Kazuya Ishiwata Makoto Onizuka Naoki Kurita Jun Ishikawa Yuta Katayama Koji Kato Fumihiko Ishimaru Yoshiko Atsuta Junya Kanda Hideki Nakasone Seitaro Terakura. Risk of pre-engraftment immune reaction and its impact on transplant outcomes in CBT. The 86th annual meeting of the Japanese Society of Hematology 2024.10.12
9. Yasumasa Nakata Toshikage Nagao Fumihiko Ouchi Maho Kawakami Aina Tomori Kota Yoshifuji Keisuke Tanaka Yoshihiro Umezawa Masahide Yamamoto Takehiko Mori . Successful avoidance of hepatotoxicity with isavuconazole in a patient intolerant to other azoles. The 86th annual meeting of the Japanese Society of Hematology 2024.10.12
10. Megumi Akiyama Masashi Kanayama Yoshihiro Umezawa Toshikage Nagao Yuta Izumi Masahide Yamamoto Toshiaki Ohteki . An early regulatory mechanism of hyperinflammation by restricting monocyte contribution. The 86th annual meeting of the Japanese Society of Hematology 2024.10.12
11. Kentaro Yamaguchi, Junji Koya, Kota Mizuno, Yosuke Mizuno, Kota Yoshifuji, Yuki Saito, Mariko Tabata, Sumito Shingai, Mitsuhiro Yuasa, Yuta Ito, Kazuki Nakajima, Kenichi Chiba, Ai Okada, Yuichi Shiraishi, Koichi Murakami, Yasunori Kogure, Koichi Oshima, Keisuke Kataoka. CRISPR screening reveals cooperative KMT2D and TP53 disruptions to drive lymphomagenesis via YAP1. The 86th annual meeting of the Japanese Society of Hematology 2024.10.12
12. Maho Kawakami, Yoshihiro Umezawa, Yasumasa Nakata, Kota Yoshifuji, Keisuke Tanaka, Toshikage Nagao, Takehiko Mori, Masahide Yamamoto. R-CHOP concurrent with high-dose MTX for DLBCL with CNS involvement or high risk for CNS relapse. The 86th annual meeting of the Japanese Society of Hematology 2024.10.11
13. Hisako Nakamaki, Hiroki Hatsuzawa, Hirofumi Kai, Maho Kawakami, Keigo Okada, Masahide Yamamoto, Takehiko Mori, Takashi Kumagai. AF and ARDS associated with cytokine release syndrome during BiTE in CAR-T resistant DLBCL. The 86th annual meeting of the Japanese Society of Hematology 2024.10.11
14. Shizuka Hamano, Keisuke Tanaka, Atsushi Takahata , Tomohito Shimada , Kota Yoshifuji Yoshihiro Umezawa, Ayako Nogami, Toshikage Nagao , Masahide Yamamoto , Shigeo Toyota Takehiko Mori . Treatment outcome of primary testicular lymphoma. The 86th annual meeting of the Japanese Society of Hematology 2024.10.11
15. Iroha Morita Makoto Iwasaki Junya Kanda SungGi Chi Tomoki Naito Daisuke Ikeda Naoko Hosono Takahiro Yamauchi Kentaro Fukushima Goichi Yoshimoto Makoto Yoshimitsu Shigeru Kusumoto Naoto Takahashi Emiko Sakaida Kensuke Usuki Keisuke Tanaka Akifumi Takaori Kondo Yosuke Minami . NGS-based risk stratification for decision making in HSCT: Insights from the HM01 and HM02 cohorts. The 86th annual meeting of the Japanese society of hematology 2024.10.11
16. Shimada Motohito, Kaori Akita, Kana Bando, Atsushi Takahata, Keisuke Tanaka, Shigeo Toyota. Azacitidine-venetoclax combination therapy versus intensive chemotherapy for previously untreated acute myeloid leukemia in patients with 65 years of age or older. The 86th annual meeting of the Japanese society of hematology 2024.10.11
17. Hiroaki Shimizu, Shinichi Kako, Takayoshi Tachibana, Akihiko Izumi, Susumu Tanoue, Emiko Sakaida, Takuya Miyazaki, Katsuhiko Shono, Kota Yoshifuji, Shinichiro Machida, Takashi Toya, Noriko Doki, Satoru Takada, Karoru Hatano, Jun Kato, Satoshi Takahashi, Jun Taguchi, Shingo Yano, Yoshinobu Kanda. Safety profiles of novel immunochemotherapeutic agents in B-cell ALL relapsed after allogeneic SCT. The 86th annual meeting of the Japanese Society of Hematology 2024.10.11
18. Aina Tomori, Ayako Nogami, Maho Kawakami, Yasutaka Nakata, Kota Yoshifuji, Keisuke Tanaka, Yoshihiro Umezawa, Tatoshi Koyama, Takehiko Mori. Successful treatment with rituximab for refractory acquired hemophilia A. The 86th Annual Meeting of the Japanese Society of Hematology 2024.10.01
19. Daiki Karigane, Ravindra Majeti. Intra-Leukemic IFN Suppresses Expansion and Mediates Chemoresistance in AML. The 83rd Annual Meeting of the Japanese Cancer Association 2024.09.21

20. Dan Tomomasa, Takahiro Kamiya, Fumiko Honda-Ozaki, Kosuke Noma, Hisako Nakamaki, Atsushi Hijikata, Morito Kurata, Takashi Abe, Tomohiro Morio, Satoshi Okada, Takehiko Mori, Hirokazu Kanegane. Familial B-cell lymphoma and lymphopenia underlie a novel germline RAC2 variant . The 14th JSH International Symposium 2024 2024.07.13
21. Aika Fuseya, Miwako Nishio, Masahide Yamamoto, Yu Uemura, Keisuke Tanaka, Yoshihiro Umezawa, Kumi Oshima, Fumiaki Sano, Takehiko Mori, Masanao Sasaki, Akihiro Hirakawa, Ryuji Koike, Hiroshi Yasui, Ken-Ichi Imadome, Shoichi Ohga, Ayako Arai. Clinical Features and Prognostic Factors of Adult Systemic Chronic Active Epstein-Barr virus Disease: A Retrospective Analysis using Japanese Registry Data . European Hematology Association 2024 2024.06.13
22. Keisuke Tanaka, Kota Yoshifuji, Yoshihiro Umezawa, Ayako Nogami, Yuya Sasaki, Hisako Nakamaki, Maho Kawakami, Aina Tomori, Yasumasa Nakata, Makiko Ogawa, Toshikage Nagao, Masahide Yamamoto, Michiko Kajiwarra, Takehiko Mori. Stem cell mobilization with pegfilgrastim in healthy donor.. The 46th annual meeting of Japanese society for transplantation and cellular therapy 2024.03.24
23. Yuya Sasaki, Keisuke Tanaka, Hisako Nakamaki, Makiko Ogwa, Kota Yoshifuji, Yoshihiro Umezawa, Masahide Yamamoto, Takahiro Kamiya, Hirokazu Kanegane, Takehiko Mori. Successful engraftment by CBT for graft failure after first transplantation for XIAP deficiency. The 46th annual meeting of Japanese Society for Transplantation and Cellular Therapy 2024.03.23
24. Hiroaki Shimizu, Yuho Najima, Shinichi Kako, Takayoshi Tachibana, Akihiko Izumi, Susumu Tanoue, Emiko Sakaida, Takuya Miyazaki, Katsuhiko Shono, Kota Yoshifuji, Shinichiro Machida, Takashi Toya, Noriko Doki, Satoru Takada, Karoru Hatano, Jun Kato, Satoshi Takahashi, Jun Taguchi, Shingo Yano, Yoshinobu Kanda. Ph-negative B-cell ALL relapsed after allo-SCT in the era of novel immunochemotherapeutic agents. The 46th annual meeting of Japanese Society for Transplantation and Cellular Therapy 2024.03.23
25. Kota Yoshifuji, Yuri Takimoto, Marie yagi, Fumihiko Ouchi, Hikari Kanai, Momoko Chiba, Takuma Harada, Hiroki Hatsusawa, Keisuke Tanaka, Ayako Nogami, Yoshihiro Umezawa, Akiko Uchiyama, Toshikage Nagao, Masahide Yamamoto, Takehiko Mori. Outbreak and infection control of BK polyomavirus hemorrhagic cystitis. The 46th annual meeting of Japanese Society for Transplantation and Cellular Therapy 2024.03.23
26. Nagisa Chyubachi, Yuri Takimoto, Kumi Kashiwagi, Yuko Momose, Akiko Uchiyama, Yasumasa Nakata, Fumihiko Ouchi, Toshikage Nagao, Noriko Uemura, Takehiko Mori. Remission of severe skin acute GVHD by long-term care provided by multi-disciplinary collaboration. The 46th annual meeting of Japanese Society of Transplantation for Cellular Therapy 2024.03.22
27. Kota Yoshifuji. Impact of prebiotics intake for allogeneic stem cell transplantation. The 46th annual meeting of Japanese Society for Transplantation and Cellular Therapy 2024.03.22

Department of Molecular Endocrinology and Metabolism

Professor: Tetsuya Yamada

Associate Professor: Kenji Ikeda

Associate professor/lecturer : Chikara Komiya

Assistant Professor: Kazutaka Tsujimoto, Masanori Murakami

Clinical Fellow: Kuniyuki Taguchi, Yusuke Imamura, Yusuke Kiyokawa, Shintaro Iguchi, Mana Kuroda

Resident: Mizuki Kawashima, Hazumi Yoshikata

Graduate Students (Doctor' s course): Akira Takeuchi, Kazunari Hara, Masato Horino, Jun Aoki, Rei Okazaki, Ryo Kaneda, Ryoko Ishii

Department of Medical Education Research and Development Project Associate professor/lecturer: Mitsuyuki Numasawa

Center for Personalized Medicine for Healthy Aging: Shoko Kawami

(1) Outline

1. Purpose of Education

Our training program enables postdoctoral trainees to prepare for the future academic careers and the clinical practice in the broad discipline of diabetes, endocrinology and metabolism. The research program provides mentor-based training in experimental design, laboratory and clinical research techniques and methodology, and interpretation and analysis of the results obtained from cellular and molecular biology, physiology, clinical physiology, clinical therapeutics, and health sciences. This training program is designed to educate and establish 'physician-scientist' in the field of endocrinology and metabolism.

2. Research Subjects

- 1) Mechanisms and development of new therapeutic strategies of diabetes and metabolic syndrome
- 2) Thermogenesis and energy metabolism
- 3) Induced molecular mechanism of thermogenic fat
- 4) Role of epigenetic regulation in metabolism
- 5) Mechanism of pathogenesis in endocrine tumors

3. Clinical Services

Comprehensive inpatient and outpatient services in the area of endocrine and metabolic disorders, including:

- 1) diabetes mellitus, diabetic complications, metabolic syndrome, and obesity
- 2) diseases of the thyroid, pituitary and adrenal glands.
- 3) primary and secondary hypertension
- 4) disorders of calcium metabolism

(2) Publications

[Original Articles]

1. Numasawa M, Nawa N, Yamaguchi K, Akita K, Yamawaki M. Association between grit and depressive symptoms among medical students, moderated by academic performance. *Medical education online*. 2024.07; 29(1); 2373523
2. Hiroki Kobayashi, Yoshihiro Nakamura, Masanori Abe, Toshifumi Nakamura, Yoichi Nozato, Shoichiro Izawa, Miki Kakutani, Takuyuki Katabami, Norio Wada, Katsutoshi Takahashi, Takashi Yoneda, Ryuji Okamoto, Masanori Murakami, Shintaro Okamura, Mitsuhide Naruse, Kenichi Yokota, Masakatsu Sone, . Prevalence of unilateral hyperaldosteronism in primary aldosteronism: impact of a novel chemiluminescent immunoassay for measuring plasma aldosterone in Japan. *Hypertens Res*. 2024.11; 47(11); 3035-3044
3. Yuya Maezawa, Masaki Kobayashi, Masanori Murakami, Ayumi Yamamura, Shotaro Naito, Hajime Tanaka, Soichiro Yoshida, Tetsuya Yamada, Yasuhisa Fujii. Prolonged hypoglycemia after the resection of pheochromocytoma in a hemodialysis patient. *IJU Case Rep*. 2024.11; 7(6); 431-433
4. Taito Miyoshi, Tetsuya Yamada, Kazuki Ota. Prognostic factors for hospitalization for severe hypoglycemia without diabetes mellitus: a retrospective study. *Diabetol Int*. 2024.10; 15(4); 837-844
5. Kei Ito, Shoko Hara, Motoki Inaji, Junshi Cho, Masanori Murakami, Tetsuya Yamada, Tadashi Nariai, Takethosi Maehara. Routine screening serum tests to detect underlying thyroid and autoimmune diseases in patients with moyamoya disease. *Clin Neurol Neurosurg*. 2024.08; 243; 108403
6. Suzuki E, Nawa N, Okada E, Akaishi Y, Kashimada A, Numasawa M, Yamaguchi K, Takada K, Yamawaki M. Mixed-methods study of medical students' attitudes toward peer physical examinations in Japan. *BMC medical education*. 2024.06; 24(1); 681
7. Tatsuya Fukuda, Takahiro Okamoto, Takahiro Fukaishi, Akio Kawakami, Makoto Tanaka, Tetsuya Yamada, Koshiro Monzen. Extent to which weight loss contributes to improving metabolic dysfunction-associated and metabolic and alcohol related/associated steatotic liver disease: a study on Japanese participants undergoing health checkups. *Front Endocrinol (Lausanne)*. 2024.05; 15; 1392280
8. Eriko Adachi, Ryuichi Nakagawa, Atsumi Tsuji-Hosokawa, Maki Gau, Shizuka Kirino, Analia Yogi, Hisae Nakatani, Kei Takasawa, Tomomi Yamaguchi, Tomoki Kosho, Masanori Murakami, Toshihiro Tajima, Tomonobu Hasegawa, Tetsuya Yamada, Tomohiro Morio, Osamu Ohara, Kenichi Kashimada. A MinION-based Long-Read Sequencing Application With One-Step PCR for the Genetic Diagnosis of 21-Hydroxylase Deficiency. *J Clin Endocrinol Metab*. 2024.02; 109(3); 750-760
9. Murakami M, Hara K, Ikeda K, Horino M, Okazaki R, Niitsu Y, Takeuchi A, Aoki J, Shiba K, Tsujimoto K, Komiya C, Nakamura Y, Kurata M, Akashi T, Fujii Y, Yamada T. Single-Nucleus Analysis Reveals Tumor Heterogeneity of Aldosterone-Producing Adenoma. *Hypertension (Dallas, Tex. : 1979)*. 2024.02; 81(2); 361-371
10. Beppu H, Fukuda T, Otsubo N, Akihisa T, Kawanishi T, Ogawa T, Abe Y, Endo M, Hanawa T, Sugita C, Kikkawa Y, Yamada T, Wakai S. Comparative outcomes of hemodialysis patients facing pre-Omicron and Omicron COVID-19 epidemics. *Therapeutic apheresis and dialysis : official peer-reviewed journal of the International Society for Apheresis, the Japanese Society for Apheresis, the Japanese Society for Dialysis Therapy*. 2024.02; 28(1); 51-60

[Conference Activities & Talks]

1. Masanori Murakami. Screening and confirmatory testing in mild PA. Progress in Primary Aldosteronism 8 2024.10.22 Munich, Germany
2. Masanori Murakami, Mitsuhide Naruse, Hiroki Kobayashi, and the EC-PASC Investigators. A Newly Developed Severity Classification and its Strategic Application in the Clinical Practice of Primary Aldosteronism. The Joint 23rd ENS@T and 3rd Cost Harmonis@tion Meeting 2024.10.04 Palma de Mallorca, Spain

3. Masanori Murakami, Kazunari Hara, Ryo Kaneda, Rei Okazaki, Jun Aoki, Masato Horino, Akira Takeuchi, Kumiko Shiba, Kazutaka Tsujimoto, Chikara Komiya, Kenji Ikeda, Tetsuya Yamada.. Single-Nucleus RNA Sequencing Reveals The Impact of High-Fat Diet on Mouse Adrenal Gland.. The Joint 23rd ENS@T and 3rd Cost Harmonis@tion Meeting 2024.10.03 Palma de Mallorca, Spain
4. Kumiko Yamaguchi, Chiharu Kawakami, Nobutoshi Nawa, Mitsuyuki Numasawa, Kanako Noritake, Janelle Moross. What Medical Students Should Learn for Medical-Dental Collaboration in a Super-aged Society. AMEE 2024 2024.08.29 The Virtual Conference

[Works]

1. Excel VBA macros for building adjacency matrix, Software, GitHub, 2021.08 - Now

Hepatobiliary and Pancreatic Surgery

Director & Professor

Minoru Tanabe MD, PhD(until March)

Daisuke Ban MD, PhD(from October)

Junior Associate Professor

Keiichi Akahoshi MD, PhD

Hiroaki Ono MD, PhD

Assistant Professor

Hiroki Ueda MD, PhD

Yoshiya Ishikawa MD, PhD

Shuichi Watanabe MD, PhD

Daisuke Asano MD, PhD

Toshitaka Sugawara MD, PhD(until March)

Graduate School Students

Kohei Yagi MD(until March)

Koichiro Morimoto MD(until March)

Hironari Yamashita MD

Munetaka Kimura MD

Akira Ito MD

Shotaro Gan MD

Atsushi Nara MD

Masaru Takeuchi MD

Masahiro Yamane MD

Teruchika Koyama MD

Suguru Miyazawa MD

Shohei Motohashi MD

Yohei Tabe MD(from April)

Hanako Tamura MD(from April)

Junichiro Yoshii MD(from April)

(1) Outline

The department of Hepatobiliary and Pancreatic Surgery at the Institute of Science Tokyo focuses on the liver, biliary tract, and pancreas with benign and malignant disorders. We constantly strive to provide the highest level of complex and innovative surgical care, comprehensive surgical training for tomorrow's leaders, and groundbreaking basic science and clinical research.

(2) Research

We conduct medical research in both clinical and laboratory settings and develop novel ideas in research that impact patient outcomes, teaching, and clinical care.

Our research programs encompass:

- Biomolecular mechanisms of carcinogenesis, cancer growth, invasion and metastasis
- Molecular target therapy for malignant diseases

- Cancer stem cell
- Extended indication for hepatectomy
- The system of liver microcirculation
- Laparoscopic surgery for hepatobiliary and pancreatic cancers
- Treatments for neuroendocrine tumor
- Innovation of imaging modality for hepatobiliary and pancreatic cancers
- Establishment of PDX model in hepatobiliary and pancreatic cancer
- Research on strategies for managing short- and long-term complications after hepatobiliary and pancreatic surgery
- Research aiming to Maintain Activities of Daily Living (ADL) and Quality of Life (QOL) after hepatobiliary and pancreatic surgery

(3) Education

Medical students program:

We conduct the various experiences of hepatobiliary and pancreatic diseases, diagnosis and management, through lectures, pre-clinical clerkship and clinical clerkship. Clinical clerkship exposes students to the surgical patients and basic surgical techniques. It also provides opportunities to participate in peri-operative care as well as operative procedures. Students learn interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates.

Surgical training program:

The aim of our surgical training program cultivates not only training for certified board surgeons, but also the future surgical leaders, through experiences from the academic, the operative, and the outpatient aspects of management in university hospital and affiliated hospitals. Clinically, the trainees receive training and experience in the preoperative, operative, and post-operative care of patients, and basic science and clinical research in our training programs strive to help young surgeons develop both technical and cognitive expertise.

(4) Lectures & Courses

Undergraduate education: Educate and acquire knowledge as a surgeon in general and basic knowledge, then more practical knowledge and stages, in accordance with the actual case as much as possible in a one-on-one system with a supervising doctor. At the same time, they will teach you how to be a doctor and learn morals according to specific cases such as how to treat patients and issues of illness notification. Basic surgical procedures will be entrusted to postgraduate education, but the aim is to gain many clinical experiences by assisting many patients with hepatobiliary and pancreatic surgery as high-assistance surgery.

Post-graduate education: The primary purpose is to develop surgeons with a high level of consulting skills in cooperation with related hospitals. Instruct students to have a viewpoint. Not only do we provide training that enables participants to obtain certifications such as Board-Certified Surgeon by the Japan Surgical Society, Board-Certified Gastrointestinal Surgeon by the Japanese Society of Gastroenterological Surgery, Expert Surgeon in Hepato-Pancreato-Biliary Surgery by the Japanese Society of Hepato-Biliary-Pancreatic Surgery, and Endoscopic Surgical Skill Qualification by the Japan Society for Endoscopic Surgery, but we also aim to inspire trainees with the ambition to become internationally competitive specialists and surgical researchers.

(5) Clinical Services & Other Works

Diseases of hepatobiliary, pancreatic, and splenic areas are the targets of our department, and we mainly focus on multidisciplinary treatments for malignant tumors centering on surgical treatment. The mission of the university is to push the limits of surgical indications for highly advanced and refractory cancers, using preoperative simulation using aworkstation and resection / reconstruction with vascular complications. In addition, arthroscopic surgery will be developed as a minimally invasive treatment. As an important treatment option for patients with end-stage liver disease, we also make indications for living donor liver transplantation. In laparoscopic surgery, we will develop new surgical instruments and procedures to promote safer, reduced port surgery that minimizes abdominal wall destruction, and expand the indication of minimally invasive operations.

(6) Clinical Performances

In 2024, the total number of surgeries was 245 (184 in 2023), 80 hepatectomy and 67 pancreatic resection. It is one of the top-class high volume facilities in Japan and covers a wide variety of surgical procedures from characteristic minimally invasive surgery to extended surgery.

Advanced Therapeutic Sciences Laparoscopic surgery accounts for more than half of all cases, and minimally invasive surgery is about half for both hepatectomy and pancreatic resection, and the number of cases is increasing year by year. We started to perform the robotic surgery in 2020. In 2024, 24 robotic pancreatic resections and 25 robotic hepatectomies were performed.

Neuroendocrine tumors (NETs) are rare diseases, but our hospital established Japan's first specialized outpatient clinic for NETs in 2011. Since then, we have seen over 700 new patients.

Guided by our philosophy of "never giving up on treatment," we provide comprehensive care aimed at long-term prognosis. This includes accurate diagnosis, minimally invasive yet appropriate surgical procedures, pharmacotherapy and resection for recurrent cases, as well as palliative care.

We have been involved in peptide receptor radionuclide therapy (PRRT) since its domestic clinical trials. As of this year, we have expanded our capacity for PRRT to ensure timely access for patients who require it.

Currently, a new set of national NET guidelines is being developed, and eight members from our department are participating in this project, reflecting our central role in NET care in Japan.

(7) Publications

[Original Articles]

1. Tsukihara S, Akiyama Y, Shimada S, Hatano M, Igarashi Y, Taniai T, Tanji Y, Kodera K, Yasukawa K, Umeura K, Kamachi A, Nara A, Okuno K, Tokunaga M, Katoh H, Ishikawa S, Ikegami T, Kinugasa Y, Eto K, Tanaka S. Delactylase effects of SIRT1 on a positive feedback loop involving the H19-glycolysis-histone lactylation in gastric cancer. *Oncogene*. 2024; in press
2. Igarashi Y, Akiyama Y, Shimada S, Watanabe S, Hatano M, Kodera K, Okazaki K, Tanji Y, Tsukihara S, Taniai T, Nara A, Yamane M, Kamachi A, Umemura K, Yasukawa K, Ono H, Akahoshi K, Tanabe M, Haruki K, Furukawa K, Ikegami T, Tanaka S. Identification and clinical implications of endogenous retrovirus elements suppressed by SETDB1 in hepatocellular carcinoma. *JHEP Reports*. 2024; in press
3. Taniai T, Shimada S, Akiyama Y, Hatano M, Yasukawa K, Igarashi Y, Tsukihara S, Tanji Y, Kodera K, Okazaki K, Haruki K, Nara A, Yagi K, Akahoshi K, Ban D, Asahina Y, Ikegami T, Tanabe M, Tanaka S. Integrative transcriptome profiling elucidates molecular and immunovascular characteristics of macrotrabecular hepatocellular carcinoma. *Hepatology*. 2024; in press
4. Yasukawa K, Shimada S, Akiyama Y, Taniai T, Igarashi Y, Tsukihara S, Tanji Y, Umemura K, Kamachi A, Nara A, Yamane M, Akahoshi K, Shimizu A, Soejima Y, Tanabe M, Tanaka S. ACVR2A attenuation impacts lactate production and hyperglycolytic conditions attracting regulatory T cells in hepatocellular carcinoma. *Cell Reports Medicine*. 2024; in press
5. Yamane M, Ishikawa Y, Yamashita H, Morimoto K, Asano D, Sugawara T, Watanabe S, Ueda H, Akahoshi K, Ono H, Tanaka S, Tanabe M. Middle segment preserving pancreatectomy versus total pancreatectomy: a comparative analysis of short- and long-term outcomes. *Surgery Today*. 2024.12; Online ahead of print
6. Rho SY, Choi M, Kim SH, Hong SS, Poh Goh BK, Nagakawa Y, Tanabe M, Asano D, Kang CM. ArtiSential laparoscopic cholecystectomy: a comparative analysis with robotic single-port cholecystectomy. *Annals of Surgical Treatment and Research*. 2024.12; 107(6); 336-345
7. Sugawara S, Sone M, Umino R, Ban D, Itou C, Kimura S, Oshima T, Ozawa M, Tanishima T, Nakama R, Murakami S, Kusumoto M, Mizui T, Takamoto T, Nara S, Esaki M. Safety and feasibility of percutaneous abdominal lavage cytology screening (PACS) prior to surgical resection for pancreatic cancer. *Abdominal Radiology (NY)*. 2024.12; 49(12); 4365-4372

8. Takamoto T, Nara S, Ban D, Mizui T, Miyata A, Esaki M. Neoadjuvant gemcitabine and S-1 in pancreatic ductal adenocarcinoma: Effects on nutritional status and pancreaticoduodenectomy outcomes. *Surgery*. 2024.12; Online ahead of print
9. Ishida H, Watanabe S, Rodriguez Franco S, Franklin O, Stoop TF, Kirsch MJ, Schulick RD, Del Chiaro M. Portomesenteric Venous Thrombosis after Pancreatic Cancer Surgery with Venous Resection and Reconstruction: Timing, Incidence, and Risk Factors. *Annals of Surgery*. 2024.12; Online ahead of print
10. Murase Y, Esaki M, Mizui T, Takamoto T, Nara S, Ban D, Hiraoka N, Shimada K. Optimal lymph node dissection area for pancreatic neuroendocrine neoplasms by tumor location, size, and grade. *Surgery*. 2024.12; Online ahead of print
11. Sugawara T, Rodriguez Franco S, Sherman S, Kirsch MJ, Colborn K, Franklin O, Ishida J, Grandi S, Al-Musawi MH, Gleisner A, Schulick RD, Del Chiaro M. Characteristics and prognosis of patients with pancreatic adenocarcinoma not expressing CA19-9: Analysis of the National Cancer Database. *Pancreatology*. 2024.12; 24(8); 1340-1347
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14. Hirose S, Ban D, Matsui Y, Mizui T, Miyata A, Nara S, Esaki M. Laparoscopic liver resection with retroperitoneoscopy for the treatment of right dorsal liver tumors (with video). *Surgery Today*. 2024.11; Online ahead of print
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18. Kobayashi M, Katsuda H, Maekawa A, Akahoshi K, Watanabe R, Kinowaki Y, Nishimura H, Fujiwara T, Tanabe M, Okamoto R. Development of an intraductal papillary mucinous neoplasm malignancy prediction scoring system. *PLoS One*. 2024.10; 19(10); e0312234
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20. Uemura S, Ban D, Esaki M, Nara S, Takamoto T, Mizui T, Shimada K. Risk factor analysis of postoperative pancreatic fistula after distal pancreatectomy with a focus on the peritoneum to portal vein distance on computed tomography. *World Journal of Surgery*. 2024.10; 48(10); 2496-2504
21. Baba H, Oba A, Tanaka K, Miura T, Ban D, Edanami M, Ishikawa Y, Ohgi K, Tanaka H, Shintakuya R, Ikenaga N, Ijichi T, Kiya Y, Muranushi R, Yamaki S, Miyazaki N, Takeuchi S, Aoki S, Mizui T, Tanaka M, Ueda H, Dei H, Takami H, Okada K, Nakata K, Mataka Y, Osakabe H, Shibuya K, Hashimoto D, Inoue Y, Hirano S, Unno M, Esaki M, Kitago M, Akahoshi K, Sugiura T, Ebata T, Uemura K, Nakamura

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[Conference Activities & Talks]

1. Daisuke Asano. My ArtiSential Story in HBP Clinical Practice. Yonsei ArtiSential HBP Symposium 2024.12.14 Seoul, Korea
2. Keiichi Akahoshi. Liver Session: Robotic S7/8 Resection Same As Laparoscopic Approach?. JSHBPS International Web Seminar PAM-HBP Surgery 2024 2024.10.07 WEB
3. Masahiro Yamane, Shohei Motohashi, Daisuke Asano, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Hiroaki Ono, Keiichi Akahoshi, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. The value of ablation therapy combined with surgical resection for neuroendocrine liver metastasis. ILLS 2024 in Kyoto 2024.10.01 Kyoto
4. Suguru Miyazawa, Hiroaki Ono, Daisuke Asano, Toshitaka Sugawara, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Keiichi Akahoshi, Atsushi Kudo, Sadakatsu Ikeda, Minoru Tanabe. Therapeutic strategy of gastroenteropancreatic neuroendocrine neoplasms(GEP-NENs) based on comprehensive genomic profiling tests. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.29 Hiroshima
5. Keiichi Akahoshi. The Value of Oncological Resectability Criteria for Hepatocellular Carcinoma. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.29 Hiroshima
6. Shuichi Watanabe, Daisuke Asano, Toshitaka Sugawara, Yoshiya Ishikawa, Hiroki Ueda, Keiichi Akahoshi, Hiroaki Ono, Shinji Tanaka, Minoru Tanabe. Metastatic Forms of Hepatocellular Carcinoma from Longitudinal Genomic Analysis. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.29 Hiroshima
7. Atsushi Nara, Keiichi Akahoshi, Hiroki Ueda, Koichiro Morimoto, Daisuke Asano, Shuichi Watanabe, Yoshiya Ishikawa, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. Usefulness of the Novel Rupture Severity Score (NRSS) in Determining the Timing of Transarterial Embolization (TAE) for Ruptured Hepatocellular Carcinoma. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.29 Hiroshima
8. Akira Ito, Keiichi Akahoshi, Daisuke Asano, Yoshiya Ishikawa, Shuichi Watanabe, Hiroki Ueda, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. Hepatectomy After Pancreatoduodenectomy Has a High Risk of Postoperative Complications. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.29 Hiroshima
9. Masahiro Yamane, Yoshiya Ishikawa, Toshitaka Sugawara, Daisuke Asano, Shuichi Watanabe, Hiroki Ueda, Keiichi Akahoshi, Hiroaki Ono, Shinji Tanaka, Minoru Tanabe. Incidence, risk factors, and managements of late-onset POPF after distal pancreatectomy. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
10. Hiroaki Ono, Daisuke Asano, Toshitaka Sugawara, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Keiichi Akahoshi, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. Investigation of the usefulness of TNMG classification in pancreatic neuroendocrine tumors. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
11. Hiroki Ueda, Atsushi Nara, Daisuke Asano, Toshitaka Sugawara, Shuichi Watanabe, Yoshiya Ishikawa, Keiichi Akahoshi, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. How does ADL/QOL change before and after liver resection in the elderly?. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
12. Toshitaka Sugawara, Oskar Franklin, Salvador Rodriguez Franco, Daisuke Ban, Minoru Tanabe, Richard Schulick, Marco Del Chiaro. Therapeutic strategies for primary resectable pancreatic cancer. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima

13. Keiichi Akahoshi, Junichi Shindoh, Minoru Tanabe, Shunichi Ariizumi, Susumu Eguchi, Yukiyasu Okamura, Masaki Kaibori, Shoji Kubo, Mitsuo Shimada, Akinobu Taketomi, Nobuyuki Takemura, Hiroaki Nagano, Masafumi Nakamura, Kiyoshi Hasegawa, Etsuro Hatano, Tomoharu Yoshizumi, Itaru Endo, Norihiro Kokudo. Proposal Process of Oncological Resectability Criteria for Hepatocellular Carcinoma in the Era of Novel Systemic Therapies.. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
14. Daisuke Asano, Keiichi Akahoshi, Yoshiya Ishikawa, Toshitaka Sugawara, Shuichi Watanabe, Hiroki Ueda, Hiroaki Ono, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. What is the safe and shortest way to learn laparoscopic liver surgery? DSS-based training system and safety use of CUSA. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
15. Shouhei Motohashi, Daisuke Asano, Toshitaka Sugawara, Shuichi Watanabe, Yoshiya Ishikawa, Hiroki Ueda, Hiroaki Ono, Keiichi Akahoshi, Atsushi Kudo, Shinji Tanaka, Minoru Tanabe. The optimal surgical treatment strategy in patients of pancreatic body/tail NETs with liver metastases. The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery 2024.06.28 Hiroshima
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18. Hiroaki Ono, Minoru Tanabe. Analysis of Risk Factors for Recurrence after Hepatopancreatectomy for Pancreatic Neuroendocrine Tumors with Concurrent Liver Metastases. 16th IHPBA 2024 WORLD CONGRESS 2024.05.16 Cape Town, South Africa
19. Toshitaka Sugawara, T.F. Stoop, A. Oba, I.M. Feld, A. Alseidi, A. Kokkola, B. Groot Koerkamp, D. Pietrasz, D.B. Kleve, I. Frigerio, J. Gagniere, J.M. Ramia, J. Kleeff, K.J. Roberts, M.V. Marino, M. Falconi, P. Pfeiffer, R. Salvia, S. Dokmak, T. Hackert, W. Messersmith, J.W. Wilmink, R. Burkhart, M. Del Chiaro, M.G. Besselink. The Value of Adjuvant Chemotherapy in Patients after Resection of Pancreatic Adenocarcinoma Following Preoperative FOLFIRINOX: An International Multicenter Study. 16th IHPBA 2024 WORLD CONGRESS 2024.05.16 Cape Town, South Africa
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1. Asano Daisuke, Kudo Yujin, Kobayashi Satoshi, Narita Shintaro, Morizane Shuichi, Eto Masatoshi, Ikeda Norihiko, Tanabe Minoru. Current status and future of 3D image reconstruction, VR, and MR in the fields of liver surgery, respiratory surgery, and urology. 2024.12.06
2. Shimada S, Akiyama Y, Akahoshi K, Tanaka S. Loss of SFXN1 mitigates lipotoxicity and predicts poor outcome in non-viral hepatocellular carcinoma. The 83rd Annual Meeting of the Japanese Cancer Association 2024.09.21 Fukuoka

[Others]

1. Keiichi Akahoshi, Faculty, PANCREATIC DISEASES II, 2024.05
65th Annual Meeting SOCIETY FOR SURGERY OF THE ALIMENTARY TRACT, 2024.05.20, Washington DC
2. Daisuke Ban, Moderator, Next Generation Program 4, Pancreatic resection by the surgeons of the next generation, 2024.06
The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery, 2024.06.29, Hiroshima

3. Daisuke Ban, Moderator, Luncheon Seminar 10, Learning Strategies and Initiatives of the Leading institutions in Charging Technologies and Trends, 2024.06
The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery, 20240629, Hiroshima
4. Minoru Tanabe, Moderator, Symposium 3 Med- and long-term results of laparoscopic anatomical liver resection, 2024.06
The 36th Meeting of Japanese Society of Hepato-Biliary-Pancreatic Surgery, 20240629, Hiroshima
5. Keiichi Akahoshi, Chair, Mini Oral 19 Teaching and Training in RLR 2, 2024.10
ILLS 2024 in Kyoto, 20241002, Kyoto
6. Daisuke Ban, Chair, Sponsored Symposium 3 Laparoscopic waterjet method and robotic clamp-crush method with VIO 3, 2024.10
ILLS 2024 in Kyoto, 20241001, Kyoto

Department of Orthopaedic and Spinal Surgery

Professor: Toshitaka Yoshii
Associate Professor: Takashi Hirai
Junior Associate Professor: Yuko Segawa, Yu Mtsukura
Assistant Professor: Yuki Funauchi, Reiko Yamaguchi,
Tomoyuki Kuroiwa, Hiroaki Onuma,
Takumi Kaku, Kentaro Yamada
Specially Appointed Assistant Professor: Yusuke Amano, Shouichi Hasegawa

「Department of Advanced Technology in Medicine」
Professor: Shigenori Kawabata
Junior Associate Professor: Yuko Hoshino
Assistant Professor: Jun Hashimoto
Adjunct Lecturer : Kensuke Sekihara, Nobuhiro Genma

「Department of Orthopaedic and Trauma Research」
Associate Professor: Yoto Oh
Junior Associate Professor: Satoru Egawa

(1) Outline

This section, "orthopedics" in conjunction with the department of Joint Surgery and Sports Medicine, is involved in clinical activities, education, and research. Orthopedics conducts clinical and basic research on the musculoskeletal system, such as bones, cartilage, joints, tendons, ligaments, muscles, the spinal cord, and peripheral nerves, and treats various injuries and illnesses such as trauma, degenerative diseases, tumors, and bone disorders.

Correspondingly, extensive basic and clinical research are being conducted, including the reconstruction of the motor function of the spine and joints, clinical applications of regenerative medicine techniques, development of artificial materials and joints, biomechanical approaches, motion analysis, pain control and application of AI. In order to elucidate the pathophysiology of rare diseases and to develop state-of-the-art diagnostic testing methods, research is actively conducted not only by each specialty section but also in collaboration with related departments and external research facilities.

(2) Research

1. Research on osteochondral metabolism and regeneration
2. Research for clinical application of artificial materials (bone, nerve)
3. Elucidation of the mechanism of spinal ligament ossification
4. Development of spinal cord magnetic field measuring instrument
5. Research on metastatic tumors
6. Clinical Study of Ossification of Posterior Longitudinal Ligament
7. Clinical research on spinal cord function monitoring
8. Development of finger function analysis methods
9. Pathophysiology of atypical femoral fractures
10. Hyperbaric oxygen therapy for muscle trauma (hyperbaric therapy)
11. Radiological analysis using AI
12. Motion analysis in kyphotic patients
13. Development of antibiotic implant

(3) Education

Journal Club (JC) is held three times a week on Tuesday, Thursday, and Friday at 7:30 am. On Tuesday, we cover clinical research papers in the field of orthopedic surgery and hold joint sessions with the department of Joint Surgery and Sports Medicine. On Thursday, we discuss basic research papers, and on Friday, we conduct Research Progress sessions related to clinical research. During the RP sessions, we also provide opportunities for graduate students to present their research and receive feedback from others than their direct supervisors. The RP sessions are primarily conducted in English to ease writing research papers.

As part of clinical education in orthopedics, we hold a monthly initial training seminar for residents, providing hands-on surgical training and lectures on basic research activities. We also mandate case presentation in English at the biannual in-house symposium. For lifelong education, we hold biannual post-graduate seminars and provide opportunities for post-graduate education from within and outside the institution.

(4) Lectures & Courses

Research in the field of orthopedics in our country is characterized by orthopedic specialists engaging in basic research while also practicing clinical medicine. As the name "surgeon scientist" suggests, many achievements related to bones, cartilage, and nerves have been accomplished through studying clinical problems rooted in practice. Our department has also created unique artificial bones and spinal function diagnostic equipment and publishes more than 50 English papers annually. Graduate students are taught basic research methods and directed towards these research directions. Even after graduating from graduate school to engage in clinical medicine, they can acquire an attitude towards conducting clinical research that summarizes treatment outcomes and will be useful for future medical care.

(5) Clinical Services & Other Works

The orthopaedic department, consisting of the fields of orthopaedics and sports medicine, provides highly specialized outpatient and surgical treatment for spinal surgery, hand surgery, bone and soft tissue tumors, knee surgery, hip surgery, orthopedic trauma surgery, and pediatric orthopedics. There are more than 40 orthopaedic specialists on staff. Regarding cervical ossification of the posterior longitudinal ligament, our facility is one of the few in the country that has achieved good results through anterior decompression and fixation surgery. In this field, we have also served as the research representative in the Ministry of Health, Labour and Welfare's survey on intractable diseases and are collaborating with researchers in the spinal cord and spine field nationwide to advance clinical research.

(6) Clinical Performances

In spinal surgery, our goal is to achieve safe and reliable decompression and fixation, early mobilization, and a definite surgical outcome by introducing navigation surgery and spinal cord evoked potential measurement. We are focusing on cervical OPLL anterior surgery, corrective fixation for adult spinal deformities and osteoporotic vertebral fractures, and spinal cord tumor resection. In addition, we have an outpatient clinic for bone metastases, and we are focusing on systematizing the treatment of terminal cancer patients and surgical treatment of multi-trauma patients. Hand group tries to develop early diagnosis system using AI, and musculoskeletal tumor group performs extensive tumor removal surgeries for malignancy. Joint group conducts many tibial osteotomies and robot joint arthroplasty surgeries

(7) Publications

[Original Articles]

1. Khangarid Tenger, Keiichiro Komori, Ami Maehara, Kyosuke Miyazaki, Eriko Marukawa, Toshitaka Yoshii, Kunikazu Tsuji. High molecular weight hyaluronic acid alleviates ovariectomy-induced bone loss in mice. *BMC Musculoskelet Disord.* 2024.12; 25(1); 1048
2. Takayuki Motoyoshi, Takahisa Ogawa, Kazuyuki Fukushima, Satoshi Kutsuna, Haggai Schermann, Kiyohide Fushimi, Toshitaka Yoshii. Seasonal trends of pyogenic spondylodiscitis in Japan: a nationwide inpatient database study. *Int J Infect Dis.* 2024.12; 153; 107767
3. Satoshi Takagi, Mikako Nakajima, Sumie Koike, Miho Takami, Yoshiya Sugiura, Seiji Sakata, Satoko Baba, Ai Takemoto, Tianyi Huang, Yosuke Seto, Masanori Saito, Yuki Funauchi, Keisuke Ae, Kengo Takeuchi, Naoya Fujita, Ryohei Katayama. Frequent copy number gain of MCL1 is a therapeutic target for osteosarcoma. *Oncogene.* 2024.12;
4. Kenji Nakano, Naomi Hayashi, Xiofei Wang, Akihiro Ohmoto, Tetsuya Urasaki, Naoki Fukuda, Yasuyoshi Sato, Makiko Ono, Junichi Tomomatsu, Mayu Yunokawa, Yuki Funauchi, Keiko Hayakawa, Taisuke Tanizawa, Keisuke Ae, Seiichi Matsumoto, Shunji Takahashi. Gemcitabine-Based Chemotherapy for Advanced Soft Tissue Sarcoma: Identifying the Appropriate Dose and Schedule. *Cureus.* 2024.12; 16(12); e76149
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[Misc]

1. Akimoto Nimura, Haruhiko Shimura, Shota Hoshika, Atsuhiko Fukai, Keiichi Akita. Elbow anatomy in perspective of joint capsule and surrounding aponeuroses: a narrative review. *JSES Int.* 2024.05; 8(3); 654-660

[Conference Activities & Talks]

1. Yoto Oh. Tips and tricks for reduction techniques for diaphyseal injuries with articular extension. AO Trauma Masters Course - Lower Extremity with Anatomical Specimens 2024.11.07 Nagoya
2. Yoto Oh. Comminuted distal fibular and medial malleolus fracture. AO Trauma Masters Course - Lower Extremity with Anatomical Specimens 2024.11.07

3. Yoto Oh, Kouhei Yamamoto, Takumi Kaku, Satoru Egawa, Atsushi Okawa, Toshitaka Yoshii. Development of a CT-based finite element analysis model for verifying the effect of shock-absorbing floors on fragility hip fracture prevention: an industry-academia-government collaboration project in a super-aging country. 40th OTA Annual Meeting 2024 2024.10.23
4. Akimoto Nimura, Keiichi Akita. Anatomical Study about Stabilizing Structures in the Trapeziometacarpal Joint. The 21st Congress of the International Federation of Associations of Anatomists (IFAA) 2024.09.08 Gwangju, Korea
5. Yoto Oh. Principles of external fixation. AO Trauma Course - Basic Principles of Fracture Management 2024.08.22 Yokohama
6. Yoto Oh. Emergency management of pelvic fractures—a critical skill can save lives. AO Trauma Course - Basic Principles of Fracture Management 2024.08.22 Yokohama
7. Yoto Oh. Perioperative infection—prevention, evaluation and management. AO Trauma Course - Basic Principles of Fracture Management 2024.08.22 Yokohama
8. Toshitaka Yoshii. Treatment Strategies for Metastatic Spine Tumors : Trends of Surgeries for Metastatic Spine Tumors from Japanese In-Hospital Database. Spine Across the Sea 2024 2024.07.31 Kauai, Hawaii
9. Yamada K, Toba M, Egawa S, Morishita S, Matsukura Y, Hirai T, Fushimi K, Yoshii T, . Trends in the surgical treatment for metastatic spinal tumor in Japanese administrative data between 2012 and 2020.. Spine Across the Sea 2024 2024.07.28 Kauai, Hawaii
10. Kentaro Yamada, Hiromitsu Toyoda, Takahiko Hyakumachi, Shinji Takahashi, Akinobu Suzuki, Hidetomi Terai, Yuichiro Abe, Hiroaki Nakamura . Less-Invasive Decompression Procedures Can Reduce Risk of Reoperation for Lumbar Spinal Stenosis With Diffuse Idiopathic Skeletal Hyperostosis Extended to the Lumbar Segment Risk factors for postoperative unexpected ambulatory status after spinal surgery for metastatic spinal tumor . Spine Across the Sea 2024 2024.07.28 Kauai, Hawaii
11. Toru Sasaki, Kazuya Tsukamoto, Koji Fujita. Comparison between Outcomes of Carpal Tunnel Release and Opponensplasty for Severe Carpal Tunnel Syndrome. Federation of European Societies for Surgery of the Hand (FESSH 2024) 2024.06.26 Rotterdam, Netherlands
12. Kazuya Tsukamoto, Toru Sasaki, Koji Fujita. Carpal tunnel syndrome detection using smartphone video analysis and machine learning. Federation of European Societies for Surgery of the Hand (FESSH 2024) 2024.06.26 Rotterdam, Netherlands
13. Toshitaka Yoshii. Surgical Treatment of Cervical OPLL. 17th Korean Cervical Spine Research Society 2024.06.08 Seoul, Korea
14. Akane Ariga, Yuki Funauchi, Yukari Kobayashi, Koji Nagaoka, Yasuyoshi Sato, Shingo Sato, Toshitaka Yoshii, Keisuke Ae, Shunji Takahashi, Kazuhiro Kakimi. A potential novel therapeutic target for invasive soft tissue sarcoma detected through tumor immune microenvironment and genetic profile analyses.. 2024 American Society of Clinical Oncology (ASCO) Annual Meeting 2024.06.01 Chicago IL USA
15. Yuki Funauchi, Satoshi Tsukushi, Hiroaki Hiraga, Akio Sakamoto, Toshiyuki Kunisada, Akihito Nagano, Koji Hiraoka, Kazutaka Kikuta, Tsukasa Yonemoto, Keisuke Ae, Akira Kawai, Tetsuya Sekita, Ryunosuke Machida, Yuta Sekino, Haruhiko Fukuda, Yoshinao Oda, Toshifumi Ozaki, Kazuhiro Tanaka, JCOG Bone and Soft Tissue Tumor Study Group. Randomized phase III trial of neo-adjuvant and adjuvant chemotherapy vs adjuvant chemotherapy alone for localized soft tissue sarcoma (NACLESS, JCOG2102).. 2024 American Society of Clinical Oncology (ASCO) Annual Meeting 2024.06.01 Chicago IL USA
16. Hisato Higashikawa, Shigenori Kawabata, Yuta Tanaka, Miho Akaza, Yoshiaki Adachi, Taishi Watanabe, Yuki Miyano, Saeri Kaminaka, Yusuke Yamamoto, Toshitaka Yoshii. Evaluation of upper lumbar neural activity using magnetoneurography. 19th Asian Oceanian Congress of Neurology 2024.05.29 Tokyo
17. Yamada K, Toba M, Egawa S, Morishita S, Matsukura Y, Hirai T, Fushimi K, Yoshii T, . Trends in the surgical treatment for metastatic spinal tumor in Japanese administrative data between 2012 and 2020.. ISSLS 2024.05.27 Milano

18. Kentaro Yamada, Hiromitsu Toyoda, Takahiko Hyakumachi, Shinji Takahashi, Akinobu Suzuki, Hidetomi Terai, Yuichiro Abe, Hiroaki Nakamura . Less-Invasive Decompression Procedures Can Reduce Risk of Reoperation for Lumbar Spinal Stenosis With Diffuse Idiopathic Skeletal Hyperostosis Extended to the Lumbar Segment: Analysis of Two Retrospective Cohorts . ISSLS 2024.05.27 Milano
19. Toshitaka Yoshii. Pathophysiology of cervical OPLL . The 97th Annual Meeting of the Japanese Orthopaedic Association 2024.05.25 Fukuoka
20. Stephens Byron F., Waddell William H., Weisenthal Benjamin M., Golinvaux Nicholas, Henry Abigal L., Pennings Jacquelyn, Wanner John P., Gupta Rishabh, Toshitaka Yoshii, Zhou Feifei. Comparative utilization of laminoplasty in the United States and Japan. The 97th Annual Meeting of the Japanese Orthopaedic Association 2024.05.25 Fukuoka
21. Yoto Oh, Kouhei Yamamoto, Atsushi Okawa, Toshitaka Yoshii. Development of a CT-based finite element analysis model for verifying the effect of shock-absorbing floors on hip fracture prevention. 50th Annual Meeting of the Korean Fracture Society 2024.04.26 Busan, Korea
22. Yoto Oh. Screws—Form and Function . AO Trauma Webinar-Resident 2024.04.12
23. Go Uesugi, Takashi Hirai, Toshitaka Yoshii, Jun Hashimoto, Masashi Yamazaki, Atsushi Okawa, Yoshiharu Kawaguchi . The influence of the coexistence of ankylosing spinal disorders in patients with cervical ossification of the posterior longitudinal ligament on health-related quality of life . 14th Annual Meeting CSRS-AP· 7th Annual Meeting SSS 2024.03.23 SINGAPORE
24. Jun Hashimoto, Shigenori Kawabata, Takashi Hirai, Yu Matsukura, Satrou Egawa, Toshitaka Yoshii . Incidence and Timing of Spontaneous Electromyographic Activity Alerts during Cervical Ossification of the Posterior Longitudinal Ligament Surgery: A Prospective Observational Study. 14th Annual Meeting CSRS-AP· 7th Annual Meeting SSS 2024.03.23 SINGAPORE
25. Motonori Hashimoto, Toshitaka Yoshii, Satoru egawa, Takashi Hirai, Kenichiro Sakai. Comparing CSM and OPLL for Complications after Anterior Cervical Spine Surgery. 14th Annual Meeting CSRS-AP· 7th Annual Meeting SSS 2024.03.23 SINGAPORE
26. Kanji Mori, Masayuki Miyagi, Hiroaki Nakashima, Tsutomu Endo, Kenichiro Sakai, Satoshi Kato, Satoshi Maki, Shunji Tsutsui, Norihiro Nishida, Kazuo Kusano, Toshitaka Yoshii, Yoshiharu Kawaguchi, Hiroshi Takahashi, Masao Koda, Masashi Yamazaki, Japanese Multicenter Research Organization for Ossification of the Spinal Ligament. Return to work of patients after cervical OPLL surgery based on a multicenter survey. 14th Annual Meeting CSRS-AP· 7th Annual Meeting SSS 2024.03.23 SINGAPORE
27. Yoshii Toshitaka. Special Attention to Cervical Myelopathy Management Strategies in OPLL. 14th Annual Meeting CSRS-AP· 7th Annual Meeting SSS 2024.03.22 SINGAPORE
28. Kenichiro Sakai, Yoshiyasu Arai, Fujiki Numano, Masaki Tomori, Kyohei Sakaki, Hiroaki Onuma , Yutaka Kobayashi , Toshitaka Yoshii . Is a Lamina Spacer Necessary in Cervical Laminoplasty for Compressive Myelopathy with Non-kyphotic Alignment? - Comparison Between Kirita-Miyazaki Method and Metal Spacer Method. 14th Annual Meeting CSRS-AP· 7th Annual Meeting SSS 2024.03.22 SINGAPORE
29. Hiroaki Onuma, Kenichiro Sakai, Fujiki Numano, Masaki Tomori, Kyohei Sakaki, Yutaka Kobayashi, Yoshiyasu Arai, Takashi Hirai, Yu Matsukura, Satoshi Egawa, Motonori Hashimoto, Toshitaka Yoshii, Shuta Ushio, Shigeo Shindo . Occurrence and course of postoperative nerve palsy in anterior cervical spine surgery: a multicenter study of 1434 cases -. 14th Annual Meeting CSRS-AP· 7th Annual Meeting SSS 2024.03.22 SINGAPORE
30. Yu Matsukura, Takashi Hirai, Shingo Morishita, Satoru Egawa, Kentaro Yamada, Jun Hashimoto, Takuya Takahashi, Motonori Hashimoto, Go Uesugi, Toshitaka Yoshii. Investigation of Risk Factors of C5 Palsy After Anterior Cervical Spine Surgery. 14th Annual Meeting CSRS-AP· 7th Annual Meeting SSS 2024.03.22 SINGAPORE
31. Takashi Hirai, Satoru Egawa, Hiroaki Onuma, Yu Matsukura, Shingo Morishita, Kentaro Yamada, Jun Hashimoto, Takuya Takahashi, Kenichiro Sakai, Toshitaka Yoshii.. Novel technique of anterior decompression based on Augmented Reality with computed tomography navigation system. 14th Annual Meeting CSRS-AP· 7th Annual Meeting SSS 2024.03.22 SINGAPORE

32. Yoto Oh. Complex malleolar fractures. AO Trauma Course - Advanced Principles of Fracture Management 2024.02 Yokohama
33. Yoto Oh. Management of multiple-injured patients (ETC/DCO/EAC). AO Trauma Course - Advanced Principles of Fracture Management 2024.02 Yokohama
1. Kiminori Hori, Makoto Konishi, Makiko Yamashita, Takashi Kamatani, Kyoko Yamashita, Yuki Funauchi, Keisuke Ae, Shigehisa Kitano, Kengo Takeuchi, Koichi Matsuda, Tatsuhiko Tsunoda, Koji Ueda. Proteogenomic analysis reveals the molecular features associated with poor prognosis in myxoid liposarcoma. 2024.07.19

[Patents]

1. NERVE STIMULATING APPARATUS, BIOMETRIC INFORMATION MEASURING SYSTEM, AND METHOD OF SETTING STIMULUS GENERATING TIMINGS OF BIOMETRIC INFORMATION MEASURING SYSTEM, Patent Number : EP 3808263
2. IMAGE PROCESSING APPARATUS, IMAGING SYSTEM, IMAGE PROCESSING METHOD, AND STORAGE MEDIUM, Patent Number : US 11980493

[Awards & Honors]

1. 14th CSRS-AP FIRST PRIZE for the Best E-poster (Hiroaki Onuma), 2024.03
2. Korean Fracture Society and Japanese Society for Fracture Repair Exchange Traveling Fellowship (Yoto Oh), Japanese Society for Fracture Repair, 2024.04

Department of Human Genetics and Disease Diversity

Professor, Toshihiro Tanaka
 Assistant professor, Yuki Nagata
 Assistant professor, Kentaro Takahashi
 Assistant professor, Yosuke Tanaka

(1) Research

- 1) Elucidation of genetic architecture of human metabolic diseases using genome and meta-genome information
- 2) Identification of biomarkers for personalized medicine
- 3) Pharmacogenomics
- 4) Functional genomics
- 5) Statistical genetics and genome drug discovery

(2) Lectures & Courses

As we say “Every human is different” , human genetic diversity has essential impacts on clinical fields, e.g. disease risk, clinical efficacy, and drug responses. Our laboratory aims to elucidate the diversity of human being through comprehensive research activities including genome and epi-genome analyses of human diseases, methodological development of statistical genetics, and human resources cultivation to achieve personalized medicine.

(3) Publications

[Original Articles]

1. Miyako Murakawa, Mina Nakagawa, Hisaaki Nishimura, Shun Kaneko, Masato Miyoshi, Fukiko Kawai-Kitahata, Sayuri Nitta, Jun Tsuchiya, Taro Shimizu, Keiya Watakabe, Tomohiro Mochida, Kento Inada, Yasuhiro Iizuka, Hideki Sakai, Yuki Sakurai, Ayako Sato, Seishin Azuma, Takahiro Kawamura, Chiaki Maeyashiki, Masayuki Kurosaki, Fumihiko Kusano, Hideki Watanabe, Hitoshi Kurata, Yuko Karakama, Takeo Fujiwara, Yuki Nagata, Toshihiro Tanaka, Sei Kakinuma, Ryuichi Okamoto, Yasuhiro Asahina. High serum gamma-glutamyltransferase level after hepatitis C virus elimination is a risk factor for the development of hepatocellular carcinoma. *Hepatol Res.* 2024.12; 54(12); 1128-1138
2. Yasushi Imai, Kengo Kusano, Takeshi Aiba, Junya Ako, Yoshihiro Asano, Mariko Harada-Shiba, Masaharu Kataoka, Tomoki Kosho, Toru Kubo, Takayoshi Matsumura, Tetsuo Minamino, Kenji Minatoya, Hiroyuki Morita, Masakazu Nishigaki, Seitaro Nomura, Hitoshi Ogino, Seiko Ohno, Masayuki Takamura, Toshihiro Tanaka, Kenichi Tsujita, Tetsuro Uchida, Hiroyuki Yamagishi, Yusuke Ebana, Kanna Fujita, Kazufumi Ida, Shunsuke Inoue, Kaoru Ito, Yuki Kuramoto, Jun Maeda, Keiji Matsunaga, Reiko Neki, Kenta Sugiura, Hayato Tada, Akihiro Tsuji, Takanobu Yamada, Tomomi Yamaguchi, Eiichiro Yamamoto, Akinori Kimura, Koichiro Kuwahara, Koji Maemura, Tohru Minamino, Hiroko Morisaki, Katsushi Tokunaga,

- . JCS/JCC/JSPCCS 2024 Guideline on Genetic Testing and Counseling in Cardiovascular Disease. *Circ J*. 2024.11; 88(12); 2022-2099
3. Yasuyuki Kurihara, Takayuki Honda, Akira Takemoto, Katsutoshi Seto, Satoshi Endo, Kousuke Tanimoto, Susumu Kirimura, Masashi Kobayashi, Shunichi Baba, Yasuhiro Nakashima, Ryo Wakejima, Rie Sakakibara, Hironori Ishibashi, Johji Inazawa, Toshihiro Tanaka, Yasunari Miyazaki, Kenichi Okubo. Immunohistochemistry of p53 surrogates TP53 mutation as an accurate predictor for early-relapse of surgically resected stage I-III lung adenocarcinoma *JTCVS Open*. 2024.08;
4. Ishikawa T, Masuda T, Hachiya T, Dina C, Simonet F, Nagata Y, Tanck MWT, Sonehara K, Glinge C, Tadros R, Khongphatthanayothin A, Lu TP, Higuchi C, Nakajima T, Hayashi K, Aizawa Y, Nakano Y, Nogami A, Morita H, Ohno S, Aiba T, Krijger Juárez C, Mauleekoonphairoj J, Poovorawan Y, Gourraud JB, Shimizu W, Probst V, Horie M, Wilde AAM, Redon R, Juang JJ, Nademanee K, Bezzina CR, Barc J, Tanaka T, Okada Y, Schott JJ, Makita N.. Brugada syndrome in Japan and Europe: a genome-wide association study reveals shared genetic architecture and new risk loci *European Heart Journal*. 2024.07; 9(45); 2320-2332
5. Fukuda H, Arai K, Mizuno H, Nishito Y, Motoi N, Arai Y, Hiraoka N, Shibata T, Sonobe Y, Kayukawa Y, Hashimoto E, Takahashi M, Fujii E, Maruyama T, Kuwabara K, Nishizawa T, Mizoguchi Y, Yoshida Y, Watanabe SI, Yamashita M, Kitano S, Sakamoto H, Nagata Y, Mitsumori R, Ozaki K, Niida S, Kanai Y, Hirayama A, Soga T, Tsukada K, Yabuki N, Shimada M, Kitazawa T, Natori O, Sawada N, Kato A, Yoshida T, Yasuda K, Ochiai A, Tsunoda H, Aoki K.. Molecular subtypes of lung adenocarcinoma present distinct immune tumor microenvironments *CANCER SCIENCE*. 2024.06; 115(6); 1763-1777

[Conference Activities & Talks]

1. Yuki Nagata. The First Step Towards High-Quality Biological Sample Management: Self-Check Using a Self-Assessment Checklist. Society of Clinical Biobank 2024.08.03 Sendai, Miyagi

Applied Regenerative Medicine

Professor: Ichiro SEKIYA
 Associate Professor: Hisako KATANO
 Junior Associate Professor: Nobutake OZEKI
 Assistant Professor: Mitsuru MIZUNO
 Project Assistant Professor: Kentaro ENDO
 Graduate Student: Hideto FURUOKA, Takahiro TANIMOTO,
 Seiya MATSUTA, Yusuke AIMONO,
 Hayato KODAMA, Yuki HIDAKA, Yusuke FUCHIOKA,
 Tomoko MEGURO, Takuya KITAMURA, Yuto KAYAMA,
 Takuya TAKAKUWA, LEE SUNGHYUN, Kurea SAKUMA
 Assistant Researcher : Asuka ASAMI, Sayaka KOMURA
 Technical Assistant: Junko MIURA
 Staff Assistant: Chiaki OKUMURA

(1) Outline

Stem cell medicine and regenerative medicine have made remarkable progress in recent years, and there is growing competition in the development of regenerative medicine products aimed at capturing the global market. In this field, we conduct basic research in stem cell medicine and regenerative medicine with the goal of developing and implementing regenerative therapies that demonstrate high efficacy compared to existing treatments for osteoarthritis of the knee. We aim to enhance translational research, apply the results clinically, and ultimately achieve industrialization.

(2) Research

- (1) Development of Regenerative Medicine Using Stem Cells
- (2) Practical Application and Industrialization of Cell Therapy and Regenerative Medicine
- (3) Safety Testing of Stem Cells
- (4) Translational Research
- (5) Development of Software for Three-dimensional Analysis of Knee MRI

(3) Education

We conduct Research Progress (RP) meetings jointly with the Department of Musculoskeletal Surgery every Tuesday at 7:30 AM, where graduate students present their research progress. On Thursdays at 7:30 AM, we hold Journal Club (JC) meetings jointly with the Department of Orthopedic Surgery, where English research papers are presented and discussed. On Mondays, we conduct face-to-face RP meetings, providing opportunities for students to receive feedback from faculty members other than their direct supervisors through discussions.

Graduate students are assigned individual research projects from their first year, where they learn to identify problems and develop solution strategies. They are required to give regular research presentations in seminar format. Research findings are disseminated through presentations at domestic and international conferences

and publications in peer-reviewed journals.

Additionally, students participate in research projects and clinical studies using the three-dimensional MRI knee joint analysis software developed through industry collaboration. By working at the forefront of regenerative medicine implementation where academia, industry, and government converge, we aim to cultivate multifaceted perspectives in our students.

(4) Lectures & Courses

We aim to cultivate professionals who can systematically understand and implement the entire process from basic research in regenerative medicine to clinical application and industrialization. Graduate students are expected to acquire specialized knowledge in stem cell biology and regenerative medicine while developing scientific thinking skills that form the foundation of research. They learn to identify research questions and verify them through experimental work. Furthermore, we encourage conference presentations and manuscript writing to strengthen their ability to disseminate information internationally. Through our educational program, we expect graduate students to develop into professionals who possess both expertise and practical skills that can contribute to the advancement of regenerative medicine, whether in basic research, clinical research, or medical practice. We set a goal for first-year students to submit an English manuscript, and in recent years, at least one student per year has achieved this goal.

(5) Clinical Services & Other Works

We are promoting research from basic studies to translational and practical research, aiming to establish new treatments for knee osteoarthritis. From 2000 to 2010, we discovered that synovial stem cells possess differentiation potential for cartilage and meniscus, promoting natural healing through transplantation, and developed a minimally invasive cell transplantation method using arthroscopic surgery. This research was highly acclaimed and was selected for the national project "Highway Program for Realization of Regenerative Medicine" in 2013. Following translational research supported by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), and with support from the Ministry of Health, Labour and Welfare, we initiated an investigator-initiated clinical trial for "Autologous Synovial Stem Cells for Meniscal Injury" in 2017, concluded a patent license agreement with a company in 2019, and began company-sponsored clinical trials (Phase III) in 2023.

Subsequently, aiming to expand treatment applications to a broader patient population, we developed an intra-articular injection therapy using synovial stem cells and conducted clinical research from 2017 to 2020 with support from the Japan Agency for Medical Research and Development (AMED). Based on these results, we initiated an investigator-initiated double-blind controlled trial in 2023.

In the practical implementation of regenerative medicine and cell therapy, we are addressing operational challenges including ensuring safety, optimizing work efficiency, and standardizing manufacturing processes. Through industry-academia collaboration, we are steadily resolving these challenges and paving the way for practical application. Meanwhile, in basic research, we focus on understanding the mechanisms of cellular senescence in knee osteoarthritis, aiming to develop a fundamental understanding of the disease and construct effective treatment strategies.

Furthermore, we have been developing MRI image analysis technology, and since 2015, with AMED support, we have collaborated with industry to develop artificial intelligence (AI)-based three-dimensional MRI (3D-MRI) knee joint analysis software. In 2018, we launched a community-based epidemiological cohort study, the "Kanagawa Knee Study," collecting MRI data from Japanese osteoarthritis patients. Since 2022, we have been conducting multi-center research with five major domestic universities to verify inter-device variations. Quantitative evaluation of cartilage thickness is essential for objective assessment of regenerative medicine, and we aim for this software to be widely used in orthopedic research and clinical practice through improved accuracy and standardization.

(6) Publications**[Original Articles]**

1. Mitsuru Mizuno, Yoshitaka Maeda, Sho Sanami, Takahisa Matsuzaki, Hiroshi Y Yoshikawa, Nobutake Ozeki, Hideyuki Koga, Ichiro Sekiya. Noninvasive total counting of cultured cells using a home-use scanner with a pattern sheet. *iScience*. 2024.03; 27(3); 109170
2. Yusuke Fuchioka, Kentaro Endo, Yuriko Sakamaki, Takahiro Tanimoto, Nobutake Ozeki, Yusuke Nakagawa, Hideyuki Koga, Makoto Tomita, Ichiro Sekiya. Scanning electron microscopy analysis of synovial and adipose mesenchymal stem cells adhering to cartilage. *Regen Ther*. 2024.12; 27; 488-495
3. Hayato Kodama, Kentaro Endo, Ichiro Sekiya. Macrophage depletion in inflamed rat knees prevents the activation of synovial mesenchymal stem cells by weakening Nampt and Spp1 signaling. *Inflamm Regen*. 2024.11; 44(1); 47
4. Yusuke Aimono, Kentaro Endo, Ichiro Sekiya. Cellular senescence contributes to spontaneous repair of the rat meniscus. *Aging Cell*. 2024.10; e14385
5. Hisako Katano, Nobutake Ozeki, Mitsuru Mizuno, Kentaro Endo, Hideyuki Koga, Jun Masumoto, Ichiro Sekiya. Femoral cartilage defects initiate from medial meniscus extrusion or tibial cartilage lesions and expand in knee osteoarthritis as revealed by 3D MRI analysis. *Sci Rep*. 2024.10; 14(1); 25937
6. Naoko Araya, Hideyuki Koga, Yusuke Nakagawa, Mikio Shioda, Nobutake Ozeki, Yuji Kohno, Tomomasa Nakamura, Ichiro Sekiya, Hiroki Katagiri. Risk factors for delayed bone union in opening wedge high tibial osteotomy. *Jt Dis Relat Surg*. 2024.08; 35(3); 546-553
7. Seiya Matsuta, Kentaro Endo, Nobutake Ozeki, Yusuke Nakagawa, Hideyuki Koga, Ichiro Sekiya. Synovial mesenchymal stem cells secrete more lubricin than adipose mesenchymal stem cells after injection into rat osteoarthritis knees. *Biochem Biophys Res Commun*. 2024.07; 729; 150354
8. Tetsuya Tachibana, Hiroki Katagiri, Junpei Matsuda, Nobutake Ozeki, Toshifumi Watanabe, Ichiro Sekiya, Tetsuya Jinno. Biomechanical analysis of load distribution in porcine hip joints at different acetabular coverages. *BMC Musculoskelet Disord*. 2024.07; 25(1); 576
9. Nobutake Ozeki, Hideyuki Koga, Tomomasa Nakamura, Hiroki Katagiri, Yusuke Nakagawa, Takashi Hoshino, Mai Katakura, Masaki Amemiya, Aritoshi Yoshihara, Hisako Katano, Mitsuru Mizuno, Kentaro Endo, Jun Masumoto, Ichiro Sekiya. Cartilage thickness in the medial compartment of the knee joint evaluated by MRI three-dimensional analysis correlates with weight-bearing line ratio and joint line convergence angle. *J Orthop Sci*. 2024.07;
10. Nakagawa Y, Koga H, Sekiya I, Hasegawa S, Katagiri H, Watanabe T. Equivalent clinical outcomes between anatomical alignment versus mechanical alignment of simultaneous bilateral total knee arthroplasty using a posterior-stabilized prosthesis during an average follow-up of five years: a prospective randomized clinical trial. *The Journal of arthroplasty*. 2024.07;
11. Shoichi Hasegawa, Riko Yamashita, Yusuke Nakagawa, Kazumasa Miyatake, Hiroki Katagiri, Tomomasa Nakamura, Hideyuki Koga, Ichiro Sekiya, Toshitaka Yoshii, Vicki Rosen, Kunikazu Tsuji. A novel methodology utilizing microchip implants to monitor individual activity and body temperature for assessing knee pain in group-housed rats. *Sci Rep*. 2024.07; 14(1); 16909
12. Nobutake Ozeki, Hideyuki Koga, Tomomasa Nakamura, Hiroki Katagiri, Yusuke Nakagawa, Takashi Hoshino, Mai Katakura, Masaki Amemiya, Aritoshi Yoshihara, Hisako Katano, Mitsuru Mizuno, Kentaro Endo, Jun Masumoto, Ichiro Sekiya. The association of the medial meniscus covering ratio with knee cartilage thickness at 15 medial compartment subregions as found by three-dimensional analysis using MRI. *J Exp Orthop*. 2024.07; 11(3); e70005
13. Ryu Yoshida, Hideyuki Koga, Tomomasa Nakamura, Yusuke Nakagawa, Mai Katakura, Masaki Amemiya, Takashi Hoshino, Aritoshi Yoshihara, Shoichi Hasegawa, Yasumasa Tokumoto, Ichiro Sekiya, Nobutake Ozeki. Steep medial posterior tibial slope angle and ramp lesion are independent risk factors for an increase in quantitatively measured pivot shift in patients with ACL-deficient knees. *J Exp Orthop*. 2024.07; 11(3); e70011

14. Ryu Yoshida, Hideyuki Koga, Junpei Matsuda, Tomomasa Nakamura, Kazumasa Miyatake, Hiroki Katagiri, Mai Katakura, Aritoshi Yoshihara, Ryota Seki, Toyohiro Katsumata, Mitsuru Mizuno, Ken Watanabe, Ichiro Sekiya, Kunikazu Tsuji, Yusuke Nakagawa. Presoaking grafts in vancomycin does not impair graft-bone healing in a rat anterior cruciate ligament reconstruction model. *Am J Sports Med.* 2024.06; 52(7); 1784-1793
15. Hiroki Katagiri, Yusuke Nakagawa, Toshiyuki Ohara, Tomomasa Nakamura, Aritoshi Yoshihara, Masaya Hayashi, Hideya Yoshimura, Tsuyoshi Nagase, Ichiro Sekiya, Hideyuki Koga. Serial assessment of factors associated with patient-reported outcomes up to 2 years after ACL reconstruction using autologous hamstring tendon: results from the TMDU MAKS study. *Orthop J Sports Med.* 2024.06; 12(6); 23259671241254105
16. Mitsuru Mizuno, Kouichirou Yori, Toshikazu Takeuchi, Takaaki Yamamoto, Natsumi Ishikawa, Megumi Kobayashi, Miwako Nishio, Ichiro Sekiya. Evaluation of cleaning methods for change-over after the processing of cell products to avoid cross-contamination risk. *Regen Ther.* 2024.06; 26; 489-495
17. Mitsuru Mizuno, Koki Abe, Takashi Kakimoto, Hisashi Hasebe, Ichiro Sekiya. Decreasing electricity costs of clean room for cell products during non-operation. *Regen Ther.* 2024.06; 26; 1117-1123
18. Hisako Katano, Kanto Nagai, Haruka Kaneko, Eiji Sasaki, Naofumi Hashiguchi, Ryosuke Kuroda, Muneaki Ishijima, Yasuyuki Ishibashi, Nobuo Adachi, Makoto Tomita, Jun Masumoto, Ichiro Sekiya. Variations in knee cartilage thickness: Fully automatic three-dimensional analysis of MRIs from five manufacturers. *Eur J Radiol.* 2024.05; 176; 111528
19. Tagawa Y, Saito T, Iwai H, Sato M, Noda S, Yamamoto A, Ota M, Endo K, Koga H, Takahara Y, Sugimoto K, Sekiya I, Fujio K, Kawakami E, Mizoguchi F, Yasuda S. ARID5B is a negative modulator of IL-6 production in rheumatoid arthritis synovial fibroblasts. *Immunological medicine.* 2024.05; 47(3); 1-10
20. Nobutake Ozeki, Hideyuki Koga, Tomomasa Nakamura, Yusuke Nakagawa, Takashi Hoshino, Masaki Amemiya, Ichiro Sekiya. Real-time virtual sonography-guided ossicle removal in unresolved Osgood-Schlatter disease. *Arthrosc Tech.* 2024.04; 13(4); 102897
21. Mitsuru Mizuno, Koki Abe, Takashi Kakimoto, Hisashi Hasebe, Naoki Kagi, Ichiro Sekiya. Operator-derived particles and falling bacteria in biosafety cabinets. *Regenerative Therapy.* 2024.03; 25; 264-272
22. Yugo Miura, Kentaro Endo, Ichiro Sekiya. Histological and biochemical changes in a rat rotator cuff tear model with or without the subacromial bursa. *Tissue Cell.* 2024.03; 88; 102370
23. Sayaka Nagasawa, Yuichiro Hirata, Sho Miyamoto, Seiya Ozono, Shun Iida, Harutaka Katano, Shigeki Tsuneya, Kei Kira, Susumu Kobayashi, Makoto Nakajima, Hiroyuki Abe, Masako Ikemura, Isao Yamamoto, Kimiko Nakagawa, Kazumi Kubota, Shinji Akitomi, Iwao Hasegawa, Tetsuo Ushiku, Tadaki Suzuki, Hiroto Iwase, Yohsuke Makino, Hisako Saitoh. Changes in SARS-CoV-2 viral load and titers over time in SARS-CoV-2-infected human corpses. *PLoS One.* 2024.03; 19(3); e0287068
24. Yang Yang, Hideyuki Koga, Yusuke Nakagawa, Tomomasa Nakamura, Hiroki Katagiri, Ryohei Takada, Mai Katakura, Kunikazu Tsuji, Ichiro Sekiya, Kazumasa Miyatake. Characteristics of the synovial microenvironment and synovial mesenchymal stem cells with hip osteoarthritis of different bone morphologies. *Arthritis Res Ther.* 2024.01; 26(1); 17

[Conference Activities & Talks]

1. Nobutake Ozeki. The association of the medial meniscus covering ratio with knee cartilage thickness by 3D MRI. IWOAI 2024 2024.06.25 Morocco
2. Nobutake Ozeki, Tomomasa Nakamura, Yusuke Nakagawa, Takashi Hoshino, Masaki Amemiya, Aritoshi Yoshihara, Ichiro Sekiya, Hideyuki Koga. Reduction of medial meniscus extrusion by centralization with medial meniscus root tear repair.. 21st ESSKA Congress 2024.05.08 Milano, Italy
3. Yuki Hidaka, Kentaro Endo, Ichiro Sekiya. Single Cell RNA Sequencing analysis of human synovial and adipose mesenchymal stem cells for knee osteoarthritis treatment. ORS 2024 Annual Meeting 2024.02.06 Long Beach, Los Angeles, United States

4. Hideto Furuoka, Kentaro Endo, Ichiro Sekiya. Mesenchymal stem cells in synovial fluid increase in number in response to synovitis and display more tissue-reparative phenotypes in osteoarthritis. Orthopaedic Research Society 2024 Annual Meeting 2024.02.02 California,USA
5. Kentaro Endo, Ichiro Sekiya. Piperlongumine Attenuates Osteoarthritis Progression By Clearing Senescent Chondrocytes And Meniscus Cells. Orthopaedic Research Society 2024 Annual Meeting 2024.02.02 California,USA
6. Hisako Katano. Morphological analysis of three-dimensional MR images of patellofemoral joints in asymptomatic subjects. Orthopaedic Research Society 2024 Annual Meeting 2024.02.02 California,USA

Department of Organogenesis and Neogenesis

Takanori Takebe, MD, PhD, Professor
Sachiko Sekiya, PhD, Assistant Professor
Norikazu Saiki, PhD, Project Assistant Professor
Yosuke Yoneyama, PhD, Part-time Lecturer
Yoshihiro Shimada, Part-time Lecturer
Takuma Iguchi, Part-time Lecturer
Hirofumi Nagai, Part-time Lecturer
Yukinori Kanekawa, PYukinori Kanekawa,
Mari Maezawa, Research Assistant
Kanae Ohtsu, Research Assistant
Akiko Kinebuchi, Research Assistant
Mayuko Matsushima, Technical Assistant
Michiko Mori, Technical Assistant
Ikuko Yamamoto, Administrative Assistant
Ryota Ishii, Administrative Assistant
Xu Zeyu, Graduate Student
Zhang Jianchun, Graduate Student
Hitomi Yamaguchi, Graduate Student
Shuntaro Kawamura, Graduate Student
Asei Hirai, Graduate Student
Yasuyuki Kurihara, Graduate Student
Kentaro Ichimura, Graduate Student
Masaru Takeuchi, Graduate Student
Kei Ishihara, Graduate Student

(1) Outline

The Takebe Lab enjoys developing new technology and implementing fresh outlooks on discoveries that may be ignored, under-appreciated and overlooked by the traditional scientific community. The Takebe Lab takes a creative lead for the exploitation and dissemination of unpredictable, extraordinary and crazy paradigm by integrating discovery and technology, eventually revolutionizing science, and medico-health-care paradigm. The Takebe Lab is also lending its support to commercial execution to move forward.

The self-organizing tissue-based approach coupled with induced pluripotent stem cell (iPSC) technology has just begun as a promising field for designing a miniature organ, aka an organoid, in culture and is expected to achieve valuable outcomes in ‘(re-) generative medicine’ and ‘drug development’ . However, how the complex but stereotyped tissue shapes self-organize still remains largely unknown. To understand such complex self-organizing mechanisms, Dr Takebe’ s lab proposes to take a ‘reverse reductionism approach’ for a holistic mechanistic understanding of the dynamic nature of a self-developing system. We also seek to translate knowledge of living systems into a revolutionary technology platform towards practical biomedical use in clinics.

(2) Research

Organoids are multicellular structures that can be derived from adult organs or pluripotent stem cells. Early versions of organoids range from simple epithelial structures to complex, disorganized tissues with large cellular diversity. The current challenge is to engineer cellular complexity into organoids in a controlled manner that results in organized assembly and acquisition of tissue function. These efforts have relied on studies of organ assembly during embryonic development and have resulted in development of organoids with multilayer tissue complexity and higher order functions. To advance the field forward, Takebe Lab would like to achieve three interactive and complementary goals:

1. The deductive development of a complex human organoid model
2. The multidisciplinary dissection of self-driven mechanisms of organogenesis
3. The technology prototyping towards biomedical applications

Our early efforts are being made on liver organoid (liver bud or miniature liver) systems using human iPSC. For example, we have demonstrated successful integration of endothelial cells (Nature, 2013), mesenchymal cells (Cell Stem Cell, 2015) and macrophages (Cell Metab, 2019) into human liver organoids, allowing for the study of drug testing and transplant applications. More recently, we showed the inter-coordinated specification and invagination of the human hepato-biliary-pancreatic system from human pluripotent stem cells, thereby, connecting multi-organ systems in a dish (Nature, 2019). Thus we are tackling the questions how the next generation of organoids can be designed by utilizing an engineering-based narrative design, and what promise and impact will be brought towards future biomedical applications (Science, 2019). Our interested expertise includes cell biology, mathematics, bioinformatics, morphogenesis, genomics, bioengineering, chemistry or biomechanics. In a longer term, we seek to realize “organoid medicine” applications through human implementation of extracorporeal device, precision medicine, drug discovery and organ replacement therapy. We are accelerating such biomedical applications of organoids by collaborating with international and diverse industry collaborators, such as the Cincinnati Children’s Hospital and the Takeda-CiRA program.

(3) Publications

[Original Articles]

1. Sheth M, Sharma M, Lehn M, Reza HA, Takebe T, Takiar V, Wise-Draper T, Esfandiari L. Three-dimensional matrix stiffness modulates mechanosensitive and phenotypic alterations in oral squamous cell carcinoma spheroids APL Bioengineering. 2024.09; 8(3); 036106
2. Lutolf MP, Radisic M, Beekman J, Huh DD, Huch M, Turco MY, Niloofar Z, Birgani T, Gao D, Yao R, Lin H, Takebe T. In vitro human cell-based models: What can they do and what are their limitations? Cell. 2024.08;
3. Liu YJ, Kimura M, Li X, Sulc J, Wang Q, López SR, Scantlebury AML, Strotjohann K, Ayala HG, Vijayakumar A, Myers RP, Ivanisevic J, Houtkooper RH, Subramanian GM, Takebe T, Auwerx J. ACMSD inhibition corrects fibrosis, inflammation, and DNA damage in MASLD/MASH Journal of Hepatology. 2024.08;
4. Quach S, Lewis K, Iwasawa K, Milton Y, Guillot Ahmed YA, Takebe T, Behncke RY, Rezvani M. SAT-180 Targeting neutrophil injury-pathways and fibrogenesis in nonparenchymal immune tissue-like liver organoids generated from human induced pluripotent stem cells Journal of Hepatology. 2024.06; 80; S302-S303
5. Miao Y, Tan C, Pek NM, Yu Z, Iwasawa K, Kechele DO, Sundaram N, Pastrana-Gomez V, Kishimoto K, Yang M, Jiang C, Tchieu J, Whitsett JA, McCracken KW, Rottier RJ, Kotton DN, Helmrath MA, Wells JM, Takebe T, Zorn AM, Chen Y, Guo M, Gu M. Deciphering Endothelial and Mesenchymal Organ Specification in Vascularized Lung and Intestinal Organoids bioRxiv. 2024.02;
6. Naraoka Y, Mabuchi Y, Kiuchi M, Kumagai K, Hisamatsu D, Yoneyama Y, Takebe T, Akazawa C. Quality Control of Stem Cell-Based Cultured Meat According to Specific Differentiation Abilities Cells. 2024.01; 13(2); 135

7. Jurickova I, Dreskin BW, Angerman E, Bonkowski E, Tominaga K, Iwasawa K, Braun T, Takebe T, Helmrath MA, Haberman Y, Wells JM, Denson LA. Eicosatetraenoic Acid Regulates Pro-Fibrotic Pathways in an Induced Pluripotent Stem Cell Derived Macrophage: Human Intestinal Organoid Model of Crohn's Disease bioRxiv. 2024.01;

[Misc]

1. Toshiya Nishimura, Takanori Takebe. Synthetic human gonadal tissues for toxicology Reproductive Toxicology. 2024.04; 108598
2. Masaki Kimura, Takanori Takebe. Cellotype-phenotype associations using 'organoid villages Trends in Endocrinology & Metabolism. 2024.04; 35(6); 462-465
3. Sho Osonoi, Takanori Takebe. Organoid-guided precision hepatology for metabolic liver disease Journal of Hepatology. 2024.01; 80(5); 805-821
1. Asei Hirai, Takanori Takebe. Frontiers in Hepatocyte and Organoid Research for Steatotic Liver Diseases Clinical Immunology & Allergology. 2024.05; 81(5);

[Conference Activities & Talks]

1. Takanori Takebe. Promise and Impact of Organoid Medicine. 16th US-JAPAN DDS SYMPOSIUM 2024.12.19 Hawaii
2. 武部貴則. 肝胆脾臓領域におけるオルガノイド工学の可能性. 国際バイオフィアブリケーション学会 2024 2024.11.13
3. 武部貴則. 代謝疾患におけるオルガノイド医療. FFDR2024第13回研究発表会(日本応用酵素協会) 2024.11.09
4. 肝疾患を対象としたオルガノイド医療の展望. 第50回日本臓器保存生物医学会学術集会 2024.11.08
5. 武部貴則. オルガノイド医学の適応修復研究への展開. 第97回日本生化学会大会 2024.11.07
6. 武部貴則. ストリートメディカルによる疾病予防の可能性. JDDW2024 サテライトシンポジウム 2024.11.01
7. 武部貴則. ストリートメディカルー生活の現場へ繋がる医療. 第83回日本公衆衛生学会総会 2024.10.30
8. Takanori Takebe. Organoid based Therapeutics for the Management of Liver Failure. Liver cancer conference in India 2024.09.28 Web
9. Takanori Takebe. Organoid Medicine for Hepatology. Korean Society for Stem Cell Research (KSSCR) 2024.08.26 Seoul
10. Takanori Takebe. Hepato-Biliary-Pancreatic Organogenesis in a Dis. IUPAB Congress Kyoto2024 and 62nd Annual Meeting of the Biophysical Society of Japan (BSJ) 2024.06.24 京都
11. Takanori Takebe. Organoids for Precision Hepatology . The Science-in-Japan Forum 2024.06.13 Washington
12. Takanori Takebe. Complementing Human Organoids for Vascular Discovery. Vascular Discovery 2024.05.16 Chicago
13. Cheng Wang, Yuichiro Hayashi, Masahiro Oda, Yunheng Wu, Shuntaro Kawamura, Takanori Takebe, Kensaku Mori. Anatomical structure-constrained thrombus region segmentation and measurement using confocal laser scanning microscopic images. Proc. SPIE 12930, Medical Imaging 2024: Clinical and Biomedical Imaging, 129300H (2 April 2024) 2024.04.02
14. Takanori Takebe. Organoid-guided Precision Hepatology. Stem Cell Seminar Series at UCLA 2024.03.07 Los Angeles

[Awards & Honors]

1. 2024 Vilcek Prize for Creative Promise, Vilcek Foundation, 2024.04
2. 2024 Ig Nobel physiology Prize , 2024.09

Department of Biostatistics

Professor TAKAHASHI Kunihiro
Associate Professor ANZAI Tatsuhiko
Assistant Professor NISHIDA Yuki

(1) Outline

Biostatistics has a central role in medical research. We aim to develop methodologies for data analysis focused on medical, dental and healthcare applications, and will collaborate on practical research.

(2) Research

1) Methodology development for data analysis in M&D field

We are developing biostatistical methodologies for data analysis in the field of M&D. Our focus includes methodologies and applications for spatial epidemiological research with geographic and temporal data, disease surveillance and monitoring, real-world data (RWD) analysis, meta-analysis, dynamic modeling, and their implementation in software.

2) Practical research on M&D field

Another focus is joint research in the field of M&D with medical, dental, and healthcare professionals. Some of our contributions include the design and analysis of any types of medical/clinical, health related studies.

(3) Education

【Undergraduate】 Biostatistics:Basic, Biostatistics:Advance I, Biostatistics:Advance II, Introduction to AI and Big Data in Health Sciences,Public Health.

【Graduate】 Medical Data Science, Data Science I, Biostatistics I, Clinical Biostatistics and Statistical Genetics, Biostatistics: Basic, Biostatistics: Advance I, Biostatistics: Advance II, Big Data Analytics, Preemptive Medicine Basic Course, Lecture of Biostatistics, Research for Thesis.

(4) Lectures & Courses

The objective of this course is to master methodologies in biostatistics, and will be able to interpret the results of data analysis in medical research.

(5) Publications

[Original Articles]

1. Asuka Hirose, Masakazu Terauchi, Tamami Odai, Ayako Fudono, Kotoi Tsurane, Masaki Sekiguchi, Misako Iwata, Tatsuhiko Anzai, Kunihiro Takahashi, Naoyuki Miyasaka. Postpartum hair loss is associated with anxiety. J Obstet Gynaecol Res. 2024.12; 50(12); 2239-2245

2. Naoki Uemura, Yuki Nishida, Satoshi Sasaki, Yosuke Yamada, Tatsuhiko Anzai, Kunihiro Takahashi, Keita Yamauchi, Fuminori Katsukawa. BMI trajectory of 8,155,894 Japanese adults from exhaustive health checkup data: the contributions of age-related changes in height and weight. *Int J Obes (Lond)*. 2024.12;
3. Junki Ishii, Mitsuaki Nishikimi, Kazuya Kikutani, Shingo Ohki, Kohei Ota, Tatsuhiko Anzai, Kunihiro Takahashi, Masashi Okubo, Shinichiro Ohshimo, Taku Iwami, Nobuaki Shime. Resuscitation Attempt and Outcomes in Patients With Asystole Out-of-Hospital Cardiac Arrest. *JAMA Netw Open*. 2024.11; 7(11); e2445543
4. Atsuko Murashima, Kayoko Kaneko, Hiroshi Oguro, Yukiko Mori, Mikako Goto, Shuko Mishima, Tatsuhiko Anzai, Kunihiro Takahashi. Pregnancy-related issues from the perspective of patients with inflammatory rheumatic diseases - Results from a survey of the members of the National Association for Inflammatory Rheumatic Diseases. *Mod Rheumatol*. 2024.10; 34(6); 1162-1169
5. Nobuyuki Nosaka, Tatsuhiko Anzai, Kenji Wakabayashi. Height status matters for risk of mortality in critically ill children. *J Intensive Care*. 2024.10; 12(1); 42
6. Mitsuaki Nishikimi, Shinichiro Ohshimo, Giacomo Bellani, Wataru Fukumoto, Tatsuhiko Anzai, Keibun Liu, Junki Ishii, Michihito Kyo, Kazuo Awai, Kunihiro Takahashi, Nobuaki Shime, J-CARVE registry group.. Identification of novel sub-phenotypes of severe ARDS requiring ECMO using latent class analysis. *Crit Care*. 2024.10; 28(1); 343
7. Mikako Goto, Tatsuhiko Anzai, Ritsuko Yamane, Naho Yakuwa, Kunihiro Takahashi, Atsuko Murashima. Pregnancy outcomes after first-trimester exposure to fluoroquinolones: Findings based on an integrated database from two Japanese institutions. *Congenit Anom (Kyoto)*. 2024.09; 64(5); 199-206
8. Hideto Takahashi, Seiji Yasumura, Kunihiro Takahashi, Tetsuya Ohira, Hiroki Shimura, Hitoshi Ohto, Satoru Suzuki, Shinichi Suzuki, Tetsuo Ishikawa, Satoshi Suzuki, Enbo Ma, Masanori Nagao, Susumu Yokoya, Kenji Kamiya. Detection of thyroid cancer among children and adolescents in Fukushima, Japan: a population-based cohort study of the Fukushima Health Management Survey. *EClinicalMedicine*. 2024.09; 75; 102722
9. Kasumi Ikuta, Maiko Noguchi-Watanabe, Miya Aishima, Tatsuhiko Anzai, Kunihiro Takahashi, Sakiko Fukui. Physical Function Trajectory among High-Functioning Long-Term Care Facility Residents: Utilizing Japanese National Data. *Geriatrics (Basel)*. 2024.09; 9(5);
10. Yoshihiko Tomofuji, Ryuya Edahiro, Kyuto Sonehara, Yuya Shirai, Kian Hong Kock, Qingbo S Wang, Shinichi Namba, Jonathan Moody, Yoshinari Ando, Akari Suzuki, Tomohiro Yata, Kotaro Ogawa, Tatsuhiko Naito, Ho Namkoong, Quy Xiao Xuan Lin, Elicia Violain Buyamin, Le Min Tan, Radhika Sonthalia, Kyung Yeon Han, Hiromu Tanaka, Ho Lee, Asian Immune Diversity Atlas (AIDA) Network, Japan COVID-19 Task Force, Biobank Japan Project, Tatsusada Okuno, Boxiang Liu, Koichi Matsuda, Koichi Fukunaga, Hideki Mochizuki, Woong-Yang Park, Kazuhiko Yamamoto, Chung-Chau Hon, Jay W Shin, Shyam Prabhakar, Atsushi Kumanogoh, Yukinori Okada. Quantification of escape from X chromosome inactivation with single-cell omics data reveals heterogeneity across cell types and tissues. *Cell Genom*. 2024.08; 4(8); 100625
11. Nobuhisa Morimoto, Hasan Jamil, Mohab Alakkari, Yuki Joyama, Tatsuhiko Anzai, Kunihiro Takahashi, Soichiro Iimori. Associations between dietary potassium intake and urinary potassium excretion: a protocol for systematic review and meta-analysis. *Syst Rev*. 2024.07; 13(1); 185
12. Nobuhisa Morimoto, Shingo Shioji, Yuichiro Akagi, Tamami Fujiki, Shintaro Mandai, Fumiaki Ando, Takayasu Mori, Koichiro Susa, Shotaro Naito, Eisei Sohara, Tatsuhiko Anzai, Kunihiro Takahashi, Wataru Akita, Akihito Ohta, Shinichi Uchida, Soichiro Iimori. Associations between dietary potassium intake from different food sources and hyperkalemia in patients with chronic kidney disease. *Journal of Renal Nutrition*. 2024.04;
13. Hiroyuki Maruoka, Takaaki Hattori, Takeshi Hase, Kunihiro Takahashi, Masahiro Ohara, Satoshi Orimo, Takanori Yokota. Aberrant morphometric networks in Alzheimer's disease have hemispheric asymmetry and age dependence. *Eur J Neurosci*. 2024.03; 59(6); 1332-1347

14. Takuya Takahashi, Hiroyuki Inose, Takashi Hirai, Yu Matsukura, Shingo Morishita, Satoru Egawa, Jun Hashimoto, Kunihiro Takahashi, Toshitaka Yoshii. Factors associated with the time required for CRP normalization in pyogenic spondylitis: A retrospective observational study. *N Am Spine Soc J.* 2024.03; 17; 100301
15. Yuta Matsubara, Hiroki Kiyohara, Yohei Mikami, Kosaku Nanki, Ho Namkoong, Shotaro Chubachi, Hiromu Tanaka, Shuhei Azekawa, Shinya Sugimoto, Yusuke Yoshimatsu, Tomohisa Sujino, Kaoru Takabayashi, Naoki Hosoe, Toshiro Sato, Makoto Ishii, Naoki Hasegawa, Yukinori Okada, Ryuji Koike, Yuko Kitagawa, Akinori Kimura, Seiya Imoto, Satoru Miyano, Seishi Ogawa, Koichi Fukunaga, Takanori Kanai, Japan COVID-19 Task Force. Gastrointestinal symptoms in COVID-19 and disease severity: a Japanese registry-based retrospective cohort study. *J Gastroenterol.* 2024.03; 59(3); 195-208
16. Kaneko S, Asahina Y, Murakawa M, Azuma S, Inada K, Mochida T, Watakabe K, Shimizu T, Tsuchiya J, Miyoshi M, Kawai-Kitahata F, Nitta S, Takahashi M, Fujioka T, Kishino M, Anzai T, Kakinuma S, Nakagawa M, Okamoto R. Analysis of prognosis and background liver disease in non-advanced hepatocellular carcinoma in two decades. *PLoS ONE.* 2024.03; 19(3); e0297882
17. Maiko Noguchi-Watanabe, Kasumi Ikuta, Miya Aishima, Kunihiro Takahashi, Tatsuhiko Anzai, Sakiko Fukui. Reply to: Effect of COVID-19 on physical function decline predictors in nursing home residents *Geriatrics & Gerontology International.* 2024.03;
18. Kayo Hirooka, Hiroki Fukahori, Ayako Ninomiya, Sakiko Fukui, Kunihiro Takahashi, Tatsuhiko Anzai, Tomoaki Ishibashi. Impact of family involvement and an advance directive to not hospitalize on hospital transfers of residents in long-term care facilities. *Arch Gerontol Geriatr.* 2024.02; 117; 105183
19. Yuki Nishida, Yosuke Yamada, Satoshi Sasaki, Eiichiro Kanda, Yoshihiko Kanno, Tatsuhiko Anzai, Kunihiro Takahashi, Keita Yamauchi, Fuminori Katsukawa. Effect of overweight/obesity and metabolic syndrome on frailty in middle-aged and older Japanese adults. *Obes Sci Pract.* 2024.02; 10(1); e714
20. Kazuki Takahashi, Miho Kobayashi, Hisae Katsumata, Shiori Tokizaki, Tatsuhiko Anzai, Yukinori Ikeda, Daniel M Alcaide, Kentaro Maeda, Makoto Ishihara, Katsutoshi Tahara, Yoshiaki Kubota, Fumiko Itoh, Jihwan Park, Kunihiro Takahashi, Yukiko T Matsunaga, Yasuhiro Yoshimatsu, Katarzyna A Podyma-Inoue, Tetsuro Watabe. CD40 is expressed in the subsets of endothelial cells undergoing partial endothelial-mesenchymal transition in tumor microenvironment. *Cancer Sci.* 2024.02; 115(2); 490-506
21. Iijima Y, Ejima M, Yamana T, Sonoda S, Shibata S, Shirai T, Okamoto T, Furusawa H, Tateishi T, Adachi T, Mori M, Kirimura S, Anzai T, Takahashi K, Miyazaki Y. Assessment of clinical relevance of antigen improves diagnostic accuracy of hypersensitivity pneumonitis. *BMC pulmonary medicine.* 2024.02; 24(1); 84
22. Hikaru Aoki, Yasunari Miyazaki, Tatsuhiko Anzai, Kota Yokoyama, Junichi Tsuchiya, Tsuyoshi Shirai, Sho Shibata, Rie Sakakibara, Takahiro Mitsumura, Takayuki Honda, Haruhiko Furusawa, Tsukasa Okamoto, Tomoya Tateishi, Meiyo Tamaoka, Masahide Yamamoto, Kunihiro Takahashi, Ukihide Tateishi, Tetsuo Yamaguchi. Deep convolutional neural network for differentiating between sarcoidosis and lymphoma based on 18F-FDG maximum-intensity projection images. *Eur Radiol.* 2024.01; 34(1); 374-383
23. Tomomi Sakano, Tatsuhiko Anzai, Kunihiro Takahashi, Sakiko Fukui. Impact of home-visit nursing service use on costs in the last 3 months of life among older adults: A retrospective cohort study. *J Nurs Scholarsh.* 2024.01; 56(1); 191-201
24. Maiko Noguchi-Watanabe, Takako Ishikawa, Kasumi Ikuta, Miya Aishima, Sayuri Nonaka, Kunihiro Takahashi, Tatsuhiko Anzai, Sakiko Fukui. Physical function decline predictors in nursing home residents using new national quality indicators. *Geriatr Gerontol Int.* 2024.01; 24(1); 123-132
25. Mitsuaki Nishikimi, Shinichiro Ohshimo, Wataru Fukumoto, Jun Hamaguchi, Kazuki Matsumura, Kenji Fujizuka, Yoshihiro Hagiwara, Ryuichi Nakayama, Naofumi Bunya, Junichi Maruyama, Toshikazu Abe, Tatsuhiko Anzai, Yoshitaka Ogata, Hiromichi Naito, Yu Amemiya, Tokuji Ikeda, Masayuki Yagi, Yutaro Furukawa, Hayato Taniguchi, Tsukasa Yagi, Ken Katsuta, Daisuke Konno, Ginga Suzuki, Yuki Kawasaki, Noriyuki Hattori, Tomoyuki Nakamura, Natsuki Kondo, Hitoshi Kikuchi, Shinichi Kai, Saaya Ichiyama, Kazuo Awai, Kunihiro Takahashi, Nobuaki Shime; J-CARVE registry group. Chest CT findings in severe acute respiratory distress syndrome requiring V-V ECMO: J-CARVE registry. *J Intensive Care.* 2024.01; 12(1); 5

26. Suzuki A, Tani Y, Anzai T, Isumi A, Doi S, Ogawa T, Moriyama K, Fujiwara T. Association between Short Stature at Grade 1 and Permanent Teeth Caries at Grade 6 in Elementary School Children in Japan: A Population-Based Cohort Study. *International Journal of Environmental Research and Public Health*. 2024.01; 21(1); 105
27. Yogi S, Shirahata T, Sato H, Nishida Y, Inoue K, Niitsu M, Akagami T, Masaki K, Nagata M, Tanaka S, Katsukawa F, Nakamura H. Non-exercise Activity Thermogenesis Correlated With Clinical Parameters in Patients With or At-Risk for Chronic Obstructive Pulmonary Disease (COPD): A Pilot Study. *Cureus*. 2024.01; 16(1); e53019

[Misc]

1. Masataka Taguri, Kunihiro Takahashi, Sho Komukai, Yuri Ito, Satoshi Hattori, Ikuko Funatogawa, Tomohiro Shinozaki, Michio Yamamoto, Kenichi Hayashi. Advancements of Biometrics in the Field of Epidemiology. *Japanese Journal of Biometrics*. 2024.03; 44(2); 129-200

[Conference Activities & Talks]

1. Tatsuhiko Anzai, Kunihiro Takahashi. A multivariate model in longitudinal meta-analysis of omega-3 fatty acid supplementation for major depressive disorder. XXXII International Biometric Conference 2024.12.13
2. Kunihiro Takahashi, Hideyasu Shimadzu. A spatial detection test for multiple adjacent hotspot clusters of diseases. 32nd International Biometric Conference (IBC2024) 2024.12.10 Atlanta, USA
3. Michio Yamamoto, Tatsuhiko Anzai, Kunihiro Takahashi. A spatial scan statistic based on partially linear functional additive models. 32nd International Biometric Conference (IBC2024) 2024.12.10
1. Li Yajie, Yuka Inamochi, Tatsuhiko Anzai, Noriyuki Wakabayashi, Kunihiro Takahashi, Kenji Fueki. An Explainable Artificial Intelligence for Designing Removable Partial Denture Framework. The 89th Annual Meeting of the Stomatological Society, Japan 2024.12.07 Institute of Science Tokyo
2. Kazuki Takahashi, Miho Kobayashi, Hisae Katsumata, Mizuki Tanaka, Yukinori Ikeda, Tatsuhiko Anzai, Katarzyna A. Podyma-Inoue, Jihwan Park, Kunihiro Takahashi, Yasuhiro Yoshimatsu, Yukiko T. Matsunaga, Tetsuro Watabe. CD40 is expressed in the subsets of endothelial cells undergoing partial EndoMT in tumor microenvironment. The 83rd Annual Meeting of the Japanese Cancer Association 2024.09.19 Fukuoka
3. Li Yajie, Yuka Inamochi, Tatsuhiko Anzai, Kazuki Sakamoto, Eung-Yeol Kim, Hirokazu Sato, Taku Nemoto, Noriyuki Wakabayashi, Kunihiro Takahashi, Kenji Fueki. An Explainable Artificial Intelligence for Designing Removable Partial Denture Framework. The 14th Biennial Congress of the Asian Academy of Prosthodontics 2024.07.06 Makuhari Messe
4. Yuka Inamochi, Tatsuhiko Anzai, Toshihiro Takahashi, Kenji Fueki. An Explainable Artificial Intelligence for Designing Removable Partial Denture Framework using Convolutional Neural Network. The 6th Annual Meeting of Japanese Association for Medical Artificial Intelligence 2024.06.21 Nagoya

神経炎症修復学分野
Neuroinflammation and Repair

Professor	Takashi Shichita
Assistant professor	Seiichiro Sakai
Assistant professor	Jun Tsuyama
Assistant professor	Koushi Irisa
Graduate student	Kento Otani
Graduate student	Ryuki Koyama
Research student	Ayaka Nakamura
Research student	Eri Tanaka
Research student	Kouki Igari
Technical assistant staff	Yoshiko Yogiashi
Technical assistant staff	Kumiko Kurabayashi
Administration assistant staff	Mariko Yoshimura

(1) Outline

This year, as part of the Ministry of Education, Culture, Sports, Science and Technology's Joint Use and Research System Formation Project and Interdisciplinary Area Development Hub "Overcoming Multi-level Stress Diseases," Assistant Professor Hiroshi Irisa was appointed to train young researchers who will practice modern social stress research. In the second year since the establishment of our department, the reparative brain cells and their molecular mechanisms underlying gene expression necessary for stroke recovery have been clarified. These results have made it possible to develop therapeutics that sustain functional recovery after stroke, and practical research is progressing.

(2) Research

Around the infarcted brain tissue, one week after the onset of cerebral infarction, brain cells that express genes necessary for neural repair associated with brain function recovery appear. Using a mouse model of cerebral infarction, brain cells with such reparative function were isolated, and comprehensive gene expression analysis was performed to identify the pivotal genes that control their reparative functions. We are developing therapeutics that sustain brain function recovery by creating antisense oligonucleotides and chemical compounds that target these. In addition, we are progressing with practical research based on the patents we have acquired and aiming to establish a university-based startup.

(3) Education

We provide research guidance to undergraduate students, graduate students, and training staff. We teach pharmacology, immunology, and neuroscience to our university's medical and dental schools and also hold seminars for undergraduate students to promote their research activities.

(4) Educational Policy

We are cultivating talented individuals who have the ability to put basic science into practice and who can create groundbreaking ideas based on original perspectives and give back to society. We gather funds and human resources based on ideas, and while cultivating them, we work together to tackle projects and pass on the methodology to achieve groundbreaking accomplishments.

(5) Publications

[Articles]

- 1) Zoledronic acid attenuates ischemic brain injury by promoting ETS2 and MSR1 expression to International Immunology. *Int Immunol* (2025) *in press*.
- 2) Nakamura A*, Sakai S*, Taketomi Y, Tsuyama J, Miki Y, Hara Y, Arai N, Sugiura Y, Kawaji H, Murakami M, Shichita T. (*Equal contribution) PLA2G2E-mediated lipid metabolism triggers brain-autonomous neural repair after ischemic stroke. *Neuron* 111, 2995-3010 (2023)

[Reviews]

- 1) Koyama R, Shichita T. Role of myeloid cells in neural repair after brain tissue injury. *Clin Exp Neuroimmunol.* **15**, 215–221 (2024)
- 2) Sakai S, Shichita T. Role of alarmins in poststroke inflammation and neuronal repair. *Seminars in Immunopathology* 45, 427-435 (2023)
- 3) Koyama R, Shichita T. Glial roles in sterile inflammation after ischemic stroke. *Neurosci Res.* **187**, 67–71 (2023)
- 4) Shichita T, Ooboshi H, Yoshimura A. Neuroimmune mechanisms mediating post-ischemic brain injury and repair. *Nat Rev Neurosci.* 24(5):299-312 (2023)

NIID Integrative Microbiology

NIID 統合微生物学

Guest Professor (Field Director) Akihide RYO (June ~)

Guest Professor Motoi SUZUKI (June ~)

Guest Professor Yoshitsugu MIYAZAKI (June ~)

Guest Associate Professor Takuya YAMAGI (June ~)

Guest Associate Professor Saya MORIYAMA (June ~)

(Guest Professor Hiroyuki YAMAMOTO (Next FY~))

(1) Department Overview

On May 27, 2024, Tokyo Medical and Dental University (now Tokyo University of Science) and the National Institute of Infectious Diseases (NIID) established a partnership agreement for education and research collaboration. Based on this agreement, in June 2024, we established a new collaborative graduate school department called "NIID Integrative Microbiology," which is based at the National Institute of Infectious Diseases.

The distinctive feature of this department lies in its comprehensive approach to developing future leaders in basic and clinical research in microbiology and infectious diseases. This is achieved by integrating diverse research areas, including:

- Studies on various pathogenic organisms
- Research on infectious diseases in general
- Epidemiological studies
- Development of prevention and treatment methods

Students will systematically learn about pathogen characteristics, molecular mechanisms of infection and disease development, principles of diagnosis and treatment, and fundamentals of public health measures. This curriculum builds the essential foundation for future infectious disease researchers and practitioners. The main research topics are as follows:

1. Master theoretical foundations and methodologies of molecular phylogenetic analysis to conduct practical analyses of molecular evolution and phylogenetic relationships among diverse pathogens. Acquire expertise in multi-omics analysis concepts and fundamental techniques to investigate molecular mechanisms underlying pathogen-host interactions.
2. Study genetic polymorphisms governing pathogen-host interactions, with particular emphasis on hereditary human immunological disorders. Master fundamental techniques for functional experimental evaluation and conduct comprehensive analyses.
3. Investigate infection pathophysiology using animal models of fungal infections caused by eukaryotic pathogens, employing comprehensive omics analyses of both fungal-derived molecules and host immune cells to elucidate disease mechanisms.

4. Develop proficiency in cellular biology and immunological experimental techniques to analyze host immune responses against pathogens, with emphasis on practical application and theoretical understanding.
5. Study rationale and methodology of field epidemiology and outbreak response. Develop skills in interpreting infectious disease epidemiology derived from field epidemiology and outbreak investigations.
6. Study the fundamentals of epidemiology and biostatistics, with focus on mastering data analysis techniques specific to infectious disease epidemiology. Develop competency in applying these analytical tools to real-world scenarios.

(2) Research Activities

Specific research activities are scheduled to begin in the next fiscal year.

(3) Educational Activities

Students will be recruited in the next fiscal year.

(4) Educational Policy

This course provides a comprehensive foundation in infectious disease control through a systematic exploration of the field, bridging fundamental principles with practical applications. Students will develop expertise in pathogen biology, mechanisms of infection and pathogenesis, diagnostic and therapeutic approaches, and essential public health interventions. This integrated understanding will establish the intellectual framework necessary for advancing infectious disease research and implementing evidence-based practices in the field.

(5) Research Achievements

None for the current fiscal year. (Activities are scheduled to begin next year.)

Department of Biomedical Devices and Instrumentation

Professor: Kohji Mitsubayashi
Junior Associate Professor: Kenta Iitani
Assistant Professor: Kenta Ichikawa

(1) Outline

Our research is based on a broad range of areas such as electrochemistry, mechanical engineering, electrical engineering, material science and biochemistry. The group aims to pursue interdisciplinary research in bio-MEMS, bio-optics, bio-electronics or bioinformatics by combining biotechnology and information technology.

(2) Research

1. Detachable “Cavitas sensors” as bioinformation monitoring systems in body cavities
”Cavitas sensors” such as a soft contact-lens biosensor and a mouth guard biosensor have been developed for novel biomonitoring methods by using advanced polymer microelectromechanical systems (MEMS) techniques.
2. Biochemical gas sensor ”Bio-sniffers” and spatiotemporal gas visualization system ”Sniff-camera” for volatile organic compounds from human body
Highly selective gas sensors ”Bio-sniffers” and gas visualization systems ”Sniff-camera” for acquiring spatiotemporal information of distribution of volatile chemicals have been developed by exploiting metabolizing enzymes in human liver. Potential applications of these gas sensors include halitosis analysis, breath alcohol and aldehyde measurement, medical screening or dental health, etc.
3. Immunosensors for medical treatment and environmental medicine
Development of optical or surface acoustic wave immunosensors have been pursued for semi-continuous (rapid and repeated) measurement of antigens in body and airborne allergens in living environment.
4. “Organic engine” and “Air bio-battery” based on chemo-mechanical energy conversion
Novel chemo-mechanical energy conversion systems (Organic engine and Air bio-battery) that utilize enzyme reactions and active transport of chemicals has been constructed. Biomedical applications (chemical pumps, drug release systems, etc.) are also investigated.

(3) Education

In advanced medicine, technologies enabling to accurately measure biological information are highly demanded. The development of “human-friendly” non-invasive measurement methods could release patients from the pain and the risks of sampling. The students will learn the basic knowledge and skills of biological information measurement through the lectures (e.g., “Biomedical Engineering”, “Biomedical Device Science and Engineering”, “Wearable & IoT Devices and Applications”, “Advanced Biomedical Devices”, and “Integrative Biomedical Sciences for Preemptive Medicine”), seminars and practical training. Especially research including biochemical measurement, the development of biosensing devices and their applications to medicine will be carried out based on “sensor and biomedical engineering.

(4) Lectures & Courses

The students will learn the basic technology related to advanced medicine and biological information measurement. Through practical training, they will also engage in research activities for biochemical measurement, the development of biosensing devices and their applications to medicine based on “sensor and biomedical engineering”. The objective of this course is to help the students be able to think about and conduct a research by themselves throughout the activities with academic researches.

(5) Publications

[Original Articles]

1. Iitani K, Miura R, Jim J, Ishida R, Ichikawa K, Toma K, Arakawa T, Mitsubayashi K. Tandem Imaging of Breath Ethanol and Acetaldehyde Based on Multiwavelength Enzymatic Biofluorometry ACS Sensors. 2024.12; 9(12); 6741-6749
2. Iitani K, Ishizuki N, Matsubashi Y, Yokota K, Ichikawa K, Toma K, Arakawa T, Iwasaki Y, Mitsubayashi K. Biofluorometric Acetone Gas Sensor of Sub-ppbv Level Sensitivity Analytical Chemistry. 2024.12; 96(51); 20197-20203
3. Zhang G, Ichikawa K, Iitani K, Iwasaki Y, Mitsubayashi K. A handheld biofluorometric system for acetone detection in exhaled breath condensates Analyst. 2024.12; 150; 505-512
4. Zhang G, Ichikawa K, Iitani K, Iwasaki Y, Mitsubayashi K. Headset biofluorometric system for acetone vapor from the ear canal Sensors and Actuators: B. Chemical. 2024.12; 427; 137220
5. Taguchi Y, Toma K, Iitani K, Arakawa T, Iwasaki Y, Mitsubayashi K. Long-range surface plasmon hydrogel aptasensor for sensitive, selective, and continuous measurement of vancomycin Sensors and Actuators: B. Chemical. 2024.08; 413; 135882
6. Kenta Iitani, Mika Suzuki, Kenta Ichikawa, Koji Toma, Takahiro Arakawa, Kohji Mitsubayashi. Image Sensing of Gaseous Acetone Using Secondary Alcohol Dehydrogenase-Immobilized Mesh for Exhaled Air Analytical Chemistry. 2024.07; 96(28); 11549-11556
7. Kenta Iitani, Kenta Ichikawa, Koji Toma, Takahiro Arakawa, Kohji Mitsubayashi. Biofluorometric Gas-Imaging System for Evaluating the Ripening Stages of “La France” Pear Based on Ethanol Vapor Emitted via the Epicarp ACS Sensors. 2024.06;
8. Kenta Ichikawa, Kenta Iitani, Gentaro Kawase, Koji Toma, Takahiro Arakawa, Dzung Viet Dao, Kohji Mitsubayashi. Real-time salivary turbidity measurement with a mouthguard-type wearable sensor Sensors and Actuators A: Physical. 2024.06; 376; 115660
9. Nagasawa M, Onuki M, Imoto N, Tanaka K, Tanaka R, Kawada M, Imoto K, Iitani K, Tsuchido Y, Takeda N. Fabrication of 3D engineered intestinal tissue producing abundant mucus by air-liquid interface culture using paper-based dual-layer scaffold Biofabrication. 2024.06; 16(3); 035029
10. Taguchi Y, Toma K, Iitani K, Arakawa T, Iwasaki Y, Mitsubayashi K. In Vitro Performance of a Long-Range Surface Plasmon Hydrogel Aptasensor for Continuous and Real-Time Vancomycin Measurement in Human Serum ACS Applied Materials & Interfaces. 2024.05; 16(22); 28162-28171
11. Kenta Ichikawa, Kenta Iitani, Gentaro Kawase, Koji Toma, Takahiro Arakawa, Dzung Viet Dao, and Kohji Mitsubayashi. Mouthguard-Type Wearable Sensor for Monitoring Salivary Turbidity to Assess Oral Hygiene Sensors. 2024.02; 24; 1436

[Books etc]

1. Kenta Iitani, Kenta Ichikawa, Koji Toma, Takahiro Arakawa, Kohji Mitsubayashi. Comprehensive Analytical Chemistry ”Biofluorometric sniffing technologies for measuring and imaging of human-borne volatile markers”. Elsevier, 2024.12
2. Kohji Mitsubayashi. Wearable Biosensing in Medicine and Healthcare. 2024.01 (ISBN : 978-981-99-8121-2)

3. Takahiro Arakawa, Kenta Iitani, Koji Toma, Kohji Mitsubayashi. Wearable Biosensing in Medicine and Healthcare "Cavitas Biosensors (Body Cavity Sensors)". 2024.01
4. Koji Toma, Kenta Iitani, Takahiro Arakawa, Kohji Mitsubayashi. Wearable Biosensing in Medicine and Healthcare "Continuous Monitoring of Volatile Organic Compounds in the Ear: The Development of a Headphone-Type Biosensor". 2024.01
5. Kenta Iitani, Koji Toma, Takahiro Arakawa, Kohji Mitsubayashi. Wearable Biosensing in Medicine and Healthcare "Biofluorometric Gas Imaging for Wearable Human-Borne VOCs Monitoring". 2024.01
6. Wataru Hijikata, Kenta Ichikawa. Wearable Biosensing in Medicine and Healthcare "Energy Harvesting from Bite Force Using Electret Sheet". 2024.01
1. Recent Trends in Volatile Biomarker Sensing. 2024.06

[Conference Activities & Talks]

1. Mitsubayashi K, Zhang G, Ichikawa K, Iitani K. Biofluorometric Sensor and Imaging System for Volatile Chemicals (Acetone and Ethanol). 2024 17th International Conference on Sensing Technology (ICST2024) 2024.12.09
2. Mitsubayashi K. Biofluorometric gas-sensing & -imaging of human volatile chemicals. the 10th International Conference on BioSensors, BioElectronics, BioMedical Devices, BioMEMS/NEMS & Applications (Bio4Apps 2024) 2024.12.02
3. Iitani K, Ichikawa K, Toma K, Arakawa T, Mitsubayashi K. Visual sensing of fruit-emitted ethanol distribution for evaluation of spontaneous fermentation inside La France pears. the 10th International Conference on BioSensors, BioElectronics, BioMedical Devices, BioMEMS/NEMS & Applications (Bio4Apps 2024) 2024.12.02
4. Ichikawa K, Kawase G, Iitani K, Mitsubayashi K. Intraoral salivary turbidity measurement using a wireless mouthguard-type optical sensor. the 10th International Conference on BioSensors, BioElectronics, BioMedical Devices, BioMEMS/NEMS & Applications (Bio4Apps 2024) 2024.12.02
5. Ichikawa K, Fujino S, Iitani K, Hijikata W, Mitsubayashi K. Potential-Based Design of Electret- Dielectric Elastomer Laminated Energy Harvester. 2024 IEEE 23rd International Conference on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS) 2024.11.18
6. Iitani K, Ichikawa K, Mitsubayashi K. Imaging of Ethanol Vapor Emitted from Pear Fruits for Evaluation of Post-Harvest Maturation. The 15th ASIAN CONFERENCE ON Chemical SENSORS 2024 (ACCS 2024) 2024.11.17
7. Iitani K, Maeno Y, Zhang G, Ichikawa K, Toma K, Arakawa T, Mitsubayashi K. Highly Sensitive Biosensors for Chemicals of Alcohol Metabolism. IEEE Sensors 2024 2024.10.20
8. Mitsubayashi K, Ichikawa K, Iitani K. Real-time Imaging of Transcutaneous Volatile Chemicals Using a Gas-Phase Biofluorometric Camera. Imaging Sensing and Optical Memory 2024 (ISOM 2024) 2024.10.20
9. Mitsubayashi K, Ichikawa K, Iitani K. Biofluorometric Ear-Gas Sensing for Non-Invasive Monitoring of Blood EtOH. Pacific Rim Meeting on Electrochemical and solid-state Science (PRiME2024) 2024.10.06
10. Kenta Iitani, Kenta Ichikawa, Kohji Mitsubayashi. Enzyme-based Biofluorometric Gas Sensing Systems for Analysis of Human Metabolism. The 1st International Conference on AI Sensors & The 10th International Symposium on Sensor Science 2024.08.01
11. Kenta Ichikawa, Gentaro Kawase, Kenta Iitani, Koji Toma, Takahiro Arakawa, Dzong V. Dao, Kohji Mitsubayashi. Mouthguard Optical Turbidity Sensor for Oral Hygiene Assessment. 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society 2024.07.15
12. Kohji Mitsubayashi. Non-invasive gas sensing & imaging of blood volatile markers for development of novel wearable biosensors. The 11th Asia-Pacific Conference of Transducers and Micro-Nano Technology (APCOT 2024) 2024.06.23

13. Toma K, Taguchi Y, Iitani K, Arakawa T, Mitsubayashi K. Real-time monitoring of vancomycin in human serum by long-range surface plasmon hydrogel aptasensor. 8th International Conference on Bio-Sensing Technology 2024.05.12
14. Iitani K, Maeno Y, Zhang G, Toma K, Arakawa T, Mitsubayashi K. A Highly Sensitive Fluorometric Acetaldehyde Biosensor by Using Enzymatic Recycling Reactions for Signal Amplification. the 19th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS 2024) 2024.05.02
15. Mitsubayashi K, Ichikawa K, Iitani K. Headset type ear-gas biosensor for non-invasive blood volatile monitoring. 11th International Conference on Human Interaction & Emerging Technologies : Artificial Intelligence & Future Applications (IHET-AI 2024) 2024.04.25
16. Arakawa T, Ishikawa R, Iitani K, Toma K, Mitsubayashi K. A Headset-Type Gas Sensor for Continuous Monitoring of Ethanol Gas Emissions from Humans. International Meeting on Sensors and Microsystems for Sustainable Development Goals 2024 (IMSM-SDGs 2024) 2024.03.28
17. Toma K, Satomura Y, Iitani K, Arakawa T, Mitsubayashi K. Surface plasmon biosensor for drug monitoring in liquid phase. The 18th South East Asian Technical University Consortium (SEATUC) Symposium 2024 2024.02.27
18. Mitsubayashi K, Zhang G, Ichikawa K, Iitani K, Toma K, Arakawa T. Headset gas sensor for non-invasive biomonitoring of blood EtOH. 7th International Conference on Intelligent Human Systems Integration 2024.02.22
19. Kenta Ichikawa, Kohji Mitsubayashi. Biosensors and wearable devices for real-time monitoring of biochemicals in humans. The 10th Joint Symposium between IBB/TMDU and Chulalongkorn University on “Biomedical Materials and Engineering” 2024.01.19

[Awards & Honors]

1. Best Paper Award, 2024 17th International Conference on Sensing Technology (ICST2024) , 2024.12

Department of Material-based Medical Engineering

Prof. Akio Kishida
Assoc. Prof. Tsuyoshi Kimura
Assist. Prof. Yoshihide Hashimoto
Research Assistant Moeko Hagiwara
Secretary Naomi Hiwatari
Lecturer(part-time) Hisatoshi Kobayashi
Lecturer(part-time) Seiichi Funamoto
Lecturer(part-time) Akitatsu Yamashita
Lecturer(part-time) Masaki Tabuchi
Lecturer(part-time) Jun Negishi
Lecturer(part-time) Naoko Nakamura
Lecturer(part-time) Yongwei Zhang

Doctor Course Student
Kohei Yabuuchi
Shota Toda
Say Sreypich
Mika Suzuki

(1) Outline

Our laboratory has dealt with many research topics from the fundamental study of biomaterials in terms of material engineering to the application study of the medical devices.

The key words of our policy are "contribution to medical care" and "exploration of basic scientific principles".

(2) Research

In order to develop technologies that contribute to the medical and dental care, there is a need for a system to build up the design concepts at the molecular level and to realize it. Based on polymer chemistry, organic chemistry, and physical chemistry, we proceed a research aimed at specific clinical applications using cell engineering, genetic engineering techniques. Target area are new medical material development, regenerative medicine, gene therapy, and the treatment engineering.

(1) Regenerative medicine using decellularized biological tissues

In order to remove the xenogeneic cells, the living tissue is decellularized using a new processing method, high-hydrostatic pressure (HHP) method has been developed. Using this process, complete removal of infectious bacteria, viruses, and cells was accomplished.

(2) Development of processing and high-performance technology for biological materials

This research focuses on developing functional materials with novel functions by processing biological materials. Specifically, we are conducting research on processing into powders, fibers, and hydrogels, and hybrid technology with functional molecules.

(3) Development of inflammatory evaluation method for biomaterials

Macrophages are polarized into an inflammatory type (M1 type) that contributes to inflammation and an anti-inflammatory type (M2 type) that contributes to healing. We are developing an inflammatory evaluation method for biomaterials using macrophages polarization in vitro.

(4) Immune control system: technology of specific cell capture and release

In cancer immunotherapy, by removing regulatory T cells (Treg) that negatively regulates immune reactions, to be able to enhance the anti-tumor immune responses have been revealed. We are developing technologies to capture and recover Treg using interfacial science.

(3) Education

Our laboratory is in charge of lectures on "Medical Materials Engineering", "Applied Biomaterials", and "Medical, Dental and Pharmaceutical Industrial Engineering" in the graduate school, and "Biomedical Engineering" in the Faculty.

Through these lectures, we will explain from the basic knowledge of various materials to the molecular design theory required for device development.

(4) Publications

[Original Articles]

1. Yoshihide Hashimoto, Jun Negishi, Seiichi Funamoto, Tsuyoshi Kimura, Hisatoshi Kobayashi, Tetsuro Oshika, Akio Kishida. Preparation, physico-biochemical characterization, and proteomic analysis of highly transparent corneal extracellular matrices for lamellar keratoplasty and tissue-engineered cornea construction Materials Today Bio. 2024.09; 28;
2. Jun Negishi, Dan Tanaka, Yoshihide Hashimoto. Induction of osteogenic differentiation by the extracellular matrix of fetal bone tissues and adult cartilage Tissue Cell. 2024.07; 90; 102475
3. Ayana Yamaguchi, Yoshihide Hashimoto, Jun Negishi. Fabrication of a cell culture scaffold that mimic the composition and structure of bone marrow extracellular matrix J Biosci Bioeng. 2024.07; 138(1); 83-88
4. Sreypich Say, Mika Suzuki, Yoshihide Hashimoto, Tsuyoshi Kimura, Akio Kishida. Investigation of anti-adhesion ability of 8-arm PEGNHS-modified porcine pericardium Biomed Mater. 2024.03; 12(19(3));
5. Tsuyoshi Kimura, Hanako Maeda, Moeko Hagiwara, Yoshihide Hashimoto, Naoko Nakamura, Wataru Nomura, Tadao Tanabe, Mako Kobayashi, Masaya Yamamoto, Takahide Matsushima, Hiroshi Asahara, Akio Kishida. Evaluation of Proinflammatory Response to Polymeric Materials Using a Macrophage Cell Line Genetically Tagged with a Luminescent Peptide Advanced Biomedical Engineering. 2024.02; 13; 43-51
6. Kohei Yabuuchi, Toru Katsumata, Tsuyoshi Shimoboji, Yoshihide Hashimoto, Tsuyoshi Kimura, Kazunari Akiyoshi, Akio Kishida. Variable swelling behavior of and drug encapsulation in a maleimide-modified hyaluronic acid nanogel-based hydrogel Polymer Journal. 2024.01;
7. Shota Toda, Yoshihide Hashimoto, Naoko Nakamura, Masahiro Yamada, Ryusuke Nakaoka, Wataru Nomura, Masaya Yamamoto, Tsuyoshi Kimura, Akio Kishida. Characteristics of macrophage aggregates prepared by rotation culture and their response to polymeric materials Journal of Artificial Organs. 2024.01;
8. Shota TODA, Yoshihide HASHIMOTO, Naoko NAKAMURA, Masahiro YAMADA, Ryusuke NAKAOKA, Wataru NOMURA, Masaya YAMAMOTO, Tsuyoshi KIMURA, Akio KISHIDA. Effects of Polymeric Materials on Activation of THP-1 Cell-derived Macrophages during Differentiation Induced by PMA Advanced Biomedical Engineering. 2024.01; 13; 1-10

[Conference Activities & Talks]

1. Akio Kishida. Artificial Organs and Tissue Engineering. APSAO 2024 Annual Conference 2024.12.04 Australia

2. 鈴木美加, 木村剛, 橋本良秀, 岡田正弘, 松本卓也, 山田将博, 江草宏, 中村奈緒子, 岸田晶夫. 歯根膜応用を目指した石灰化脱細胞化組織の in vivo 骨親和性評価. LIFE2024 2024.09.13 東大本郷 (東京)
3. Mika Suzuki, Tsuyoshi Kimura, Yoshihide Hashimoto, Masahiro Okada, Takuya Matsumoto, Naoko Nakamura, Akio Kishida. Preparation of decellularized pericardium for soft and hard inter-regional tissue application. TERMIS 2024.06.27 Seattle
4. M. Kobayashi, K. Tsutahara, R. Kawabata, Z. Ng, Y. Hashimoto, T. Kimura, A. Kishida, M. Yamamoto. Characterization Of The Bioink Containing Decellularized Tissue Powder Mixed With Cancer Spheroids. TERMIS 2024 WORLD CONGRESS 2024.06.25 USA
5. S. Say, M. Suzuki, Y. Hashimoto, T. Kimura, A. Kishida. Study On The Post-anti-adhesion Of The 8-arm PEGNHSmodified Porcine Pericardium. TERMIS 2024 WORLD CONGRESS 2024.06.25 USA
6. K. Kaiden, T. Kimura, Y. Hashimoto, K. Akiyoshi, Y. Sasaki, A. Kishida. Preparation And Characterization Of Artificial Extracellular Vesicles Using High Hydrostatic Pressurized Cells.. TERMIS 2024 WORLD CONGRESS 2024.06.25 USA
7. M. Yamamoto, S. Hiranphinyophat, N. Washihira, T. Hiraoka, M. Murakami, A. Kishida, S. Fujii, T. Tanabe, T. Kimura. Investigation Of Immune Responses To Nano/microplastics Using A Genetically-engineered Human Macrophage. TERMIS 2024 WORLD CONGRESS 2024.06.25 USA
8. M. Suzuki, T. Kimura, M. Okada, T. Matsumoto, N. Nakamura, Y. Hashimoto, A. Kishida. Preparation Of Mineralized Decellularized Pericardium For Bone-ligament Tissue Application.. TERMIS 2024 WORLD CONGRESS 2024.06.25 USA
9. Sreypich Say, Mika Suzuki, Yoshihide Hashimoto, Tsuyoshi Kimura, Akio Kishida. Effect of 8-arm PEG functionalized porcine pericardium as the antiadhesion membrane in vivo. 第 73 回高分子学会年次大会 2024.06.05 宮城県
10. Sreypich Say, Mika Suzuki, Yoshihide Hashimoto, Tsuyoshi Kimura, Akio Kishida. Effect of 8-arm PEG functionalized porcine pericardium as the antiadhesion membrane in vivo. 第 73 回高分子学会年次大会 2024.06.05 宮城県
11. Akio Kishida. Decellularized tissue as a novel biomaterial. 10th Joint Symposium between Chulalongkorn University and IBB/TMDU. 2024.01.19 THAILAND
1. Evaluation of immunogenicity of various treated decellularized tissue using gene modified THP-1. 2024.03.08

Medicinal Chemistry

Professor Hirokazu TAMAMURA, Ph.D.
Associate Professor Kohei TSUJI, Ph.D.
Senior Assistant Professor Takuya KOBAYAKAWA, Ph.D.
Assistant Professor Takuya KOBAYAKAWA, Ph.D.
Technical Assistant Hiroko TAKAGI
Technical Assistant Maiko HIRAYAMA
Technical Assistant Tomoe KAMEI

Graduate students

D3 Takahiro ISHII, Peter Bolah
D2 Yutaro MIURA, Soshi NISHIMURA, Eric Coffie
D1 Kouki SHINOHARA, Kenichi YAMAMOTO, HUANG XUEYUAN
M2 Akito MOCHIZUKI, Yuki KURODA, Kaito HAYAKAWA, Saho MACHIDA
M1 Marisa ARIOKA, Atsushi HAYASHI, Kouki NOZAWA, Ryusei YAMAMOTO, Yoshitora WADAYAMA,
ZHANG YUMENG, BAI KENAN

Internal Collaborators
WEI YASHU

External Collaborators
Momoka HAMADA

(1) Outline

Research in the lab is mainly focused to two topics; 1) development of artificial enzymes for regulation of gene functions and (2) exploration and analyses of cellular functions by methods based on peptide chemistry. Students will learn how to design research, experimental techniques, and analysis methods of research data. Research themes are related to multiple research fields such as molecular biology, chemistry, chemical biology, and synthetic biology.

(2) Research

1. Development of conformational-constrained templates for drug discovery.
Drug-discovery templates for conformational restriction, which enable pharmacophores of bioactive compounds (ex. peptides) to be suitably disposed in three-dimensional space, are being developed. Drug discovery for the chemotherapy of cancer, AIDS, Alzheimer's disease, rheumatoid arthritis, SARS, etc. is being performed based on targeting several receptors, enzymes, etc.
2. Development of bio-probes, bio-sensing, medicinal chemistry towards chemical biology.
Bio-probes that specifically recognize each receptor or enzyme are being developed for research on chemical biology involving imaging and sensing.
3. Structural analysis of the interactions between receptors/enzymes and their ligands.

Using X-ray crystal structural analysis, the mechanism of signal transduction operated by binding of ligands to receptors/enzymes is being analyzed.

4. Development of applications of zinc finger proteins, TALEN and CRISPR-Cas9 for gene therapy and nanotechnology.

Utilizing DNA sequence-specific recognition of zinc finger proteins, TALEN and CRISPR-Cas9, technologies for DNA recombination, modifications and DNA labeling are being developed.

(3) Education

Practice

Goals/Outline:

Presenter reports about the recent topics related to molecular biomedicine from Journals. The report must come with the backgrounds and motivations of research fields. Research designs, experimental methods, data analyses, and perspectives for future development will be discussed about the topics. Students are also encouraged to attend to lectures for the graduate course and discuss about the topics with lecturers.

Available programs:

Lectures for the graduate course: as occasion

Journal Club: Every Thursday from 15:00 to 16:30

Lab

Goals/Outline:

Research in the lab is mainly focused to two topics; 1) development of artificial enzymes for regulation of gene functions and (2) exploration and analyses of cellular functions by methods based on peptide chemistry. Students will learn how to design research, experimental techniques, and analysis methods of research data. Research themes are related to multiple research fields such as molecular biology, chemistry, chemical biology, and synthetic biology.

Available program:

Lab meeting (progress report): every week, about 1 hour per person (will be announced)

(4) Lectures & Courses

Format:

Small group

Venue:

Practice: Third laboratory room (603) at Institute of Biomaterials and Bioengineering

Lab: Laboratory of Medicinal Chemistry (602) at Institute of Biomaterials and Bioengineering

Grading:

Practice: Attendance and report

Lab: Progress of research and report

(5) Publications

[Original Articles]

1. Tsuji K, Tamamura H, Burke TR. Fine-tuning probes for fluorescence polarization binding assays of bivalent ligands against polo-like kinase 1 using full-length protein. *Bioorganic & medicinal chemistry*. 2024.12; 119; 118055
2. Shinohara K, Kobayakawa T, Tsuji K, Takamatsu Y, Mitsuya H, Tamamura H. Naphthalen-1-ylethanamine-containing small molecule inhibitors of the papain-like protease of SARS-CoV-2. *European journal of medicinal chemistry*. 2024.12; 280; 116963

3. Hattori SI, Bulut H, Hayashi H, Kishimoto N, Takamune N, Hasegawa K, Furusawa Y, Yamayoshi S, Murayama K, Tamamura H, Li M, Wlodawer A, Kawaoka Y, Misumi S, Mitsuya H. Structural and virologic mechanism of the emergence of resistance to Mpro inhibitors in SARS-CoV-2 Proc. Natl. Acad. Sci. USA. 2024.09; 121(37);
4. Kobayakawa T, Tsuji K, Tamamura H. Design, synthesis and evaluation of bioactivity of peptidomimetics based on chloroalkene dipeptide isosteres. Bioorganic & medicinal chemistry. 2024.08; 110; 117811
5. Tsuji K, Tamamura H, Burke TR Jr. Affinity enhancement of polo-like kinase 1 polo box domain-binding ligands by a bivalent approach using a covalent kinase-binding component. RSC chemical biology. 2024.07; 5(8); 721-728
6. Ishii T, Kobayakawa T, Matsuda K, Nigorikawa K, Bolah P, Noborio A, Tsuji K, Ohashi N, Yoshimura K, Nomura W, Mitsuya H, Maeda K, Tamamura H. Discovery of Potent DAG-Lactone Derivatives as HIV Latency Reversing Agents. ACS infectious diseases. 2024.05; 10(6); 2250-2261
7. Kobayakawa T, Yokoyama M, Tsuji K, Boku S, Kurakami M, Fujino M, Ishii T, Miura Y, Nishimura S, Shinohara K, Yamamoto K, Bolah P, Kotani O, Murakami T, Sato H, Tamamura H. Development of Small-Molecule Anti-HIV-1 Agents Targeting HIV-1 Capsid Proteins. Chemical & pharmaceutical bulletin. 2024; 72(1); 41-47
8. Kobayakawa T, Takano H, Ishii T, Bolah P, Tsuji K, Ohashi N, Nomura W, Furuta T, Tamamura H. Effect of Two-Photon Excitation to 8-Azacoumarin Derivatives as Photolabile Protecting Groups. Chemical & pharmaceutical bulletin. 2024; 72(3); 311-312
9. Tsuji K, Tamamura H, Burke TR Jr. Application of a Fluorescence Recovery-Based Polo-Like Kinase 1 Binding Assay to Polo-Like Kinase 2 and Polo-Like Kinase 3. Biological & pharmaceutical bulletin. 2024; 47(7); 1282-1287

[Conference Activities & Talks]

1. Tsuji K, Huang X, Kobayakawa T, Burke TR Jr., Tamamura H. Development of high-affinity polo-like kinase 1 polo-box domain binding peptides by bivalent approaches. The 61st Japanese Peptide Symposium 2024.10.29 Nagoya
2. Shinohara K, Kobayakawa T, Takamatsu Y, Tsuji K, Mitsuya H, Tamamura H. Structure-activity relationship studies of novel SARS-CoV-2 papain-like protease inhibitors and their application as anti-Mpox agents. The 61st Japanese Peptide Symposium 2024.10.29 Nagoya
3. Yamamoto K, Kobayakawa T, Tsuji K, Tamamura H. Development of chloroalkene-type dipeptide isosteres for amyloid-beta aggregation inhibitors. The 61st Japanese Peptide Symposium 2024.10.29 Nagoya
4. Huang X, Tsuji K, Kobayakawa T, Tamamura H. Investigation on degrader peptides targeting the polo-box domain for degradation of polo-like kinase 1. The 61st Japanese Peptide Symposium 2024.10.29 Nagoya
5. Tamamura H. New horizon of drug discovery for anti-HIV drugs. The 82nd FIP World Congress of Pharmacy and Pharmaceutical Sciences, HIV treatment: the future of preventative care and management 2024.09.01 Cape Town, South Africa
6. Tamamura H. Development of anti-HIV agents targeting HIV-Gag proteins using in silico screening . The 37th European Peptide Symposium (EPS) & 14th International Peptide Symposium (IPS) Satellite Workshops, Applications of computational AI/ML in peptide research with a roadmap to peptide drug and material development 2024.08.30 Florence, Italy
7. Miura Y, Tsuji K, Kobayakawa T, Kuwata T, Matsushita S, Tamamura H. Development of antibody drug conjugates as HIV entry inhibitors. 37th European peptide symposium 2024.08.26 Florence, Italy
8. Kobayakawa T, Azuma C, Yamamoto K, Tsuji K, Tamamura H. Convergent synthesis of peptidomimetic based on a chloroalkene dipeptide isostere and its application to inhibition against amyloid β aggregation. 14th International Peptide Symposium 2024.08.26 Florence, Italy
9. Miura Y, Tsuji K, Kobayakawa T, Kuwata T, Matsushita S, Tamamura H. Development of hybrid-molecules as HIV entry inhibitors. 18th Chinese international peptide symposium 2024.07.01 Hong Kong

10. Tamamura H. Tripeptide-mimic Inhibitors against a Main Protease of SARS-CoV-2. The 18th Chinese International Peptide Symposium 2024.06.30 Hong Kong
11. Miura Y, Tsuji K, Kobayakawa T, Kuwata T, Matsushita S, Tamamura H. Antibody drug conjugates as HIV entry inhibitors. 27th Korean Peptide Protein Symposium 2024.06.24 Busan, South Korea
12. Tamamura H. Medicinal chemistry derived from peptides and peptidomimetics. The 10th Joint Symposium between IBB/TMDU and Chulalongkorn University on Biomedical Materials and Engineering 2024.01.19 Thailand
1. Kobayakawa T, Ishii T, Matsuda K, Tsuji K, Yoshimura K, Mitsuya H, Maeda K, Tamamura H. Development of DAG- γ -lactone derivatives for latency-reversing agent. The 41st Medicinal Chemistry Symposium 2024.11.21 Kyoto
2. Shinohara K, Kobayakawa T, Takamatsu Y, Tsuji K, Mitsuya H, Tamamura H. Structure-activity relationship studies of novel SARS-CoV-2 papain-like protease inhibitors with evaluation of their anti-SARS-CoV-2 and anti-Mpox activities. The 41st Medicinal Chemistry Symposium 2024.11.21 Kyoto
3. Yamamoto K, Kobayakawa T, Tsuji K, Tamamura H. Development of dipeptide mimetics for amyloid-beta aggregation inhibitors. The 41st Medicinal Chemistry Symposium 2024.11.21 Kyoto
4. Kobayakawa T, Machida S, Yokoyama M, Tsuji K, Murakami T, Sato H, Tamamura H. Development of anti-HIV-1 agents based on a capsid protein of HIV-1. The 18th Annual Meeting of Japanese Society for Chemical Biology 2024.05.28 Tokyo
5. Nishimura S, Kobayakawa T, Tsuji K, Murakami T, Tamamura H. Development of dimerized fusion inhibitors targeting the HIV-1 gp41 protein. The 18th Annual Meeting of Japanese Society for Chemical Biology 2024.05.28 Tokyo
6. Shinohara K, Higashi-Kuwata N, Tsuji K, Ishii T, Kobayakawa T, Hattori S, Kishimoto N, Takamune N, Misumi S, Bulut H, Hayashi H, Mitsuya H, Tamamura H. Development of novel SARS-CoV-2 main protease inhibitors with potent antiviral activity for treatment of COVID-19. The 18th Annual Meeting of Japanese Society for Chemical Biology 2024.05.28 Tokyo
7. Tsuji K, Huang X, Kobayakawa T, Burke TR Jr., Tamamura H. Development of high affinity polo-like kinase 1 inhibitors based on bivalent inhibitor strategy. The 18th Annual Meeting of Japanese Society for Chemical Biology 2024.05.27 Tokyo
8. Miura Y, Wang R, Tsuji K, Liu Y, Kobayakawa T, Harada S, Tamamura H. Hybrids of small CD4 mimics and gp41-inhibition peptides as dual-target HIV-1 entry inhibitors. The 18th Annual Meeting of Japanese Society for Chemical Biology 2024.05.27 Tokyo
9. Huang X, Tsuji K, Kobayakawa T, Tamamura H. Exploratory study of polo-box domain-targeting polo-like kinase 1 degrader peptides. The 18th Annual Meeting of Japanese Society for Chemical Biology 2024.05.27 Tokyo
10. Yamamoto K, Kobayakawa T, Tsuji K, Tamamura H. Development of peptidomimetics toward inhibition against amyloid-beta aggregation. The 18th Annual Meeting of Japanese Society for Chemical Biology 2024.05.27 Tokyo
11. Yamamoto K, Kobayakawa T, Azuma C, Watanabe Y, Tsuji K, Tamamura H. Development of chloroalkene type peptidomimetics for amyloid-beta aggregation inhibitors. The 144th annual meeting of the pharmaceutical society of Japan 2024.03.31 Yokohama
12. Machida S, Kobayakawa T, Yokoyama M, Fujino M, Kaneko M, Kurakami M, Boku S, Onishi T, Kotani O, Tsuji K, Murakami T, Sato H, Tamamura H. Development of low molecular anti-HIV-1 agents based on HIV-1 capsid protein. The 144th annual meeting of the pharmaceutical society of Japan 2024.03.30 Yokohama
13. Kuroda Y, Kobayakawa T, Tsuji K, Konno K, Ohashi N, Masuda A, Miura Y, Kuwata T, Yoshimura K, Miura T, Harada S, Matsushita S, Tamamura H. Development of a hybrid compound of a small molecule CD4 mimic with a polyethylene glycol as an HIV entry inhibitor. The 144th annual meeting of the pharmaceutical society of Japan 2024.03.30 Yokohama

14. Shinohara K, Kuwata N, Tsuji K, Ishii T, Kobayakawa T, Hattori S, Kishimoto N, Takamune M, Misumi S, Bulut H, Hayashi H, Mitsuya H, Tamamura H. Discovery of small molecule inhibitor with high antiviral activity targeting SARS-CoV-2 main protease. The 144th annual meeting of the pharmaceutical society of Japan 2024.03.30 Yokohama
15. Nishimura S, Kobayakawa T, Tsuji K, Murakami T, Tamamura H. Development of bivalent fusion inhibitors targeting HIV-1 gp41 protein. The 144th annual meeting of the pharmaceutical society of Japan 2024.03.30 Yokohama

[Awards & Honors]

1. Research Award for Young Scientists, Kanto branch of the Pharmaceutical Society of Japan, The Pharmaceutical Society of Japan Kanto Branch, 2024.07

Soft Matter and Biomedical Engineering

Professor Ayae Sugawara-Narutaki
Junior Associate Professor Takaaki Miyamoto

(1) Outline

Our research targets are soft materials such as polymers, molecular assemblies, colloids, and gels. By utilizing the dynamic properties of these materials, we are engaged in research on “energy-saving production” of soft materials, “production of materials useful for medicine” and “obtaining electric power from environmental energy” using soft materials, and elucidating the phenomenon of self-organization of soft materials. Aiming to solve problems in the medical, environmental, and energy fields, we take on the challenge of cutting-edge research with an eye toward future society.

(2) Research

1. Synthesis of nanomaterials through energy-saving self-organization processes

It is theoretically predicted that arrays of inorganic nanoparticles (NPs) will exhibit functions that go beyond conventional principles. Self-assembly is an attracting approach for obtaining free-standing NP arrays in a large scale through energy-saving processes. We established techniques in which isotropic NPs self-assemble into 1D chain, 2D ring, and 3D vesicles in aqueous dispersions. Interplay between amphiphilic polymers and NPs is the key to these processes. We are trying to elucidate the mechanism of these phenomena and applying the nano-objects as advanced functional materials.

2. Application of self-assembled protein nanofibers in the fields of energy & biomaterials

We have developed artificial proteins that are inspired from elastin, an extracellular matrix protein that provide biological tissues with elasticity. The elastin-like proteins attract attention as scaffolds for regenerative medicine and as materials for small-diameter vascular grafts. We are also trying to add electron/ion transport functions to the well-defined nanofibers of the elastin-like proteins, aiming to develop flexible conductive materials and create interfaces between living body and machines.

3. Construction of wearable & implantable energy-harvesting devices

We are constructing triboelectric nanogenerators that convert mechanical energy into electrical energy. The developments of wearable and implantable nanogenerators are our main targets by using biodegradable polymers as dielectric layers.

(3) Lectures & Courses

Students can understand fabrication methods, evaluation methods, and the latest research trends in soft matter such as polymers, molecular assemblies, colloids, and gels, and to acquire the ability to promote biomaterials research based on soft matter.

(4) Publications

[Original Articles]

1. Tatsuki Oishi, Ayae Sugawara-Narutaki, Rintaro Takahashi. Supracolloidal step-growth polymerization of isotropic silica nanoparticles: a time-resolved small-angle X-ray scattering study *Polymer Journal*. 2024.11; 56(11); 1089-1092
2. Yokoi, T; Tomita, S; Nakamura, J; Sugawara-Narutaki, A; Matsukawa, Y; Kawashita, M; Ohtsuki, C. Apatite Formation on α -Tricalcium Phosphate Modified with Bioresponsive Ceramics in Simulated Body Fluid Containing Alkaline Phosphatase *BIOMIMETICS*. 2024.08; 9(8);
3. Yamada S, Yamada K, Sugawara-Narutaki A, Baba Y, Yukawa H. Near-infrared-II fluorescence/magnetic resonance double modal imaging of transplanted stem cells using lanthanide co-doped gadolinium oxide nanoparticles. *Analytical sciences : the international journal of the Japan Society for Analytical Chemistry*. 2024.06; 40(6); 1043-1050
1. Riku Yamanaka, Ayae Sugawara-Narutaki, Rintaro Takahashi. Microphase Separation and Gelation through Polymerization-Induced Self-Assembly Using Star Polyethylene Glycols *ACS Macro Letters*. 2024.07; 13(8); 1050-1055

[Books etc]

1. Ayae Sugawara-Narutaki, Jin Nakamura, Chikara Ohtsuki. Elastin-like hydrogels as tissue regeneration scaffolds in *Hydrogels for Tissue Engineering and Regenerative Medicine* (Eds J. M. Oliveira, J. Silva-Correia, R. L. Reis). 2024.01

[Conference Activities & Talks]

1. Ayae Sugawara-Narutaki. Design and Application of Self-Assembled Protein Nanofibers. TransMedMat Workshop, Institute of Science Tokyo & RWTH Aachen University 2024.12.02 RWTH Aachen University
2. Ayae Sugawara-Narutaki. Design and Biomaterial Applications of Self-Assembled Protein Nanofibers. The 4th International Symposium on Design & Engineering by Joint Inverse Innovation for Materials Architecture (DEJI2MA2024) 2024.10.03
3. Ayae Sugawara-Narutaki, Aya Akimoto, Yoshihiro Sasaki, Kazunari Akiyoshi. Development of polymer-based designer matrices. マルチモダル ECM 第3回領域会議 2024.07.24 ルスツ
4. Kensuke Kawasaki, Ayae Sugawara-Narutaki. Development of artificial proteins with elastin-like characteristics. マルチモダル ECM 第3回領域会議 2024.07.24 ルスツ
5. Md. Zahidul Islam, Yuichi Hori, Rintaro Takahashi, Ayae Sugawara-Narutaki. Enhanced electrical conductivity of elastin-like polypeptide nanofibers. マテリアル DX 若手研究者 WORKSHOP 2024.07.18 鶴岡
6. Ayae Sugawara-Narutaki. Development of designer matrix inspired from elastin. 第56回日本結合組織学会学術大会 2024.06.15

Diagnostic and Therapeutic Systems Engineering

Hirokazu Kaji, Professor
Yuji Nashimoto, Associate Professor
Takeshi Hori, Assistant Professor
Serge Ostrovidov, Technician
Akane Yamamoto, Technician
Maki Maejima, Technician

(1) Outline

We are developing micro/nanotechnologies minimally invasive to bio-derived materials and living bodiesbodies for next generation biomedical applications.

(2) Research

1. Biofabrication technology
2. Drug delivery system
3. Cell delivery system
4. Micropysiological system (MPS)

(3) Lectures & Courses

Students will learn the latest trends in medical devices and systems for diagnostic and therapeutic purposes and related research fields, as well as acquire fundamental knowledge and skills. In addition, students will aim to develop the ability to independently promote research in the field.

(4) Publications

[Original Articles]

1. Placental microphysiological systems: new advances on promising platforms that mimic the microenvironment of the human placenta. 2024.10;
2. Hiramoto, K; Konno, A; Nashimoto, Y; Hirano-Iwata, A; Ino, K; Shiku, H. Osteogenic differentiation of mesenchymal stem cell spheroids: A microfluidic device and electrochemiluminescence imaging study ELECTROCHIMICA ACTA. 2024.07; 491;
3. Shibata S, Endo S, Nagai LAE, H Kobayashi E, Oike A, Kobayashi N, Kitamura A, Hori T, Nashimoto Y, Nakato R, Hamada H, Kaji H, Kikutake C, Suyama M, Saito M, Yaegashi N, Okae H, Arima T. Modeling embryo-endometrial interface recapitulating human embryo implantation. Science advances. 2024.02; 10(8); eadi4819
4. Hori T, Okae H, Shibata S, Kobayashi N, Kobayashi EH, Oike A, Sekiya A, Arima T, Kaji H. Trophoblast stem cell-based organoid models of the human placental barrier. Nature communications. 2024.02; 15(1); 962

5. Carvalho V, Gonçalves IM, Rodrigues N, Sousa P, Pinto V, Minas G, Kaji H, Shin SR, Rodrigues RO, Teixeira SFCF, Lima RA. Numerical evaluation and experimental validation of fluid flow behavior within an organ-on-a-chip model. *Computer methods and programs in biomedicine*. 2024.01; 243; 107883
6. Nashimoto Y, Kanno Y, Ito H, Şen M. Editorial: Modelling and sensing platform for cancer and tumour microenvironment. *Frontiers in bioengineering and biotechnology*. 2024; 12; 1432352
1. 堀武志, 梶弘和. A placental barrier model constructed from human placental trophoblast stem cells 月刊細胞. 2024.03; 56(3); 163-166
1. 堀武志. Development of human blood-placental barrier MPS 日本再生医療学会総会 (Web). 2024; 23rd;
2. 堀武志, 梶弘和. A placental barrier model constructed from human placental trophoblast stem cells 月刊細胞. 2024; 56(3);

[Conference Activities & Talks]

1. Generation of in vitro blood-placental barrier (BPB) models using human placental stem cells. the 39th Japanese Society for the Study of Xenobiotics (JSSX) and 26th North American Meeting of International Society for the Study of Xenobiotics (ISSX) 2024.09.01
2. Chitosan Micro-Mesh Sheets for Sustainable Production of Cultured Fish Fillets. 2024.06.02
3. Development of human blood-placental barrier MPS. 2024.03.21

[Social Contribution]

1. Breaking through barriers, EurekAlert! AAAS, 2024.02.08
2. Researchers develop model to assess biology of human placental barrier, MDLinx, 2024.02.08
3. The Trophoblast Organoids Reinventing Fetal Safety, 2024.02.08
4. Novel In Vitro Model For Human Placental Barrier, 2024.02.09
5. Revolutionary Organoid Model of Human Placental Barrier Developed by Tokyo Medical and Dental University, 2024.02.09

Molecular Cell Biology

Professor Hiroshi Shibuya
Associate Professor Toshiyasu Goto
Assistant Professor Masahiro Shimizu

(1) Research

Overview

With No Lysine Kinase 1 (WNK1) phosphorylates and activates STE20/SPS1-related proline-alanine-rich protein kinase (SPAK) and oxidative stress-responsive kinase 1 (OSR1) to regulate ion homeostasis in the kidney. Mutations in WNK1 lead to dysregulation of the WNK1-SPAK/OSR1 pathway, resulting in pseudohypoaldosteronism type II (PHAII), a form of hypertension. Additionally, WNK1 is implicated in hereditary sensory and autonomic neuropathy type II (HSANII), an autosomal recessive neuropathy. Mutations in a neural-specific splice variant of WNK1, HSN2, cause HSANII. However, the molecular mechanisms regulating HSN2 in neurons and the functional effects of HSN2 mutants remain unclear.

Introduction

HSN2, a neuron-specific splice variant of WNK1, is expressed in the brain, dorsal root ganglia, and sciatic nerve. Mutations in a neural-specific exon of HSN2 result in HSANII, a neuropathy characterized by sensory dysfunction, including loss of pain, touch, and temperature sensation, as well as limb abnormalities such as finger deformities and Charcot's joint. While HSN2 is predicted to play an essential role in neurons, the precise mechanism by which HSN2 mutations cause HSANII remains unknown. To address this, we investigated the function of HSN2 mutants in neural development.

1. HSN2 mutants suppress the WNK1 signaling pathway by inhibiting interactions with WNK1, HSN2, and SPAK/OSR1.

Mutations in HSN2 have been identified in approximately 20 HSANII patients, with most occurring in the neural-specific HSN2 exon, leading to deletion of key domains. The C-terminal domain of WNK isoforms is critical for their interaction and auto-phosphorylation. Given this, we hypothesized that HSN2 mutants fail to interact with and activate WNK kinases, including WNK1, WNK4, SPAK, and OSR1.

To test this, we examined the binding of HSN2 mutants to these proteins. Immunoprecipitation assays revealed that HSN2 mutants failed to bind to WNK1, WNK4, SPAK, and OSR1, suggesting an inability to activate downstream signaling.

We further investigated the role of HSN2 in the activation of SPAK and OSR1. In Neuro2A cells treated with nerve growth factor (NGF), phosphorylation of SPAK and OSR1 was detected 10–15 minutes after NGF stimulation. Overexpression of HSN2 increased SPAK/OSR1 phosphorylation levels, similar to WNK1. However, HSN2 mutants suppressed NGF-induced SPAK/OSR1 phosphorylation. These findings indicate that HSN2 mutants disrupt the WNK1 signaling pathway by inhibiting interactions with key effectors.

2. HSN2 mutants inhibit neurite outgrowth and neural development.

Previous studies have demonstrated that WNK1 promotes neurite outgrowth and induces neural marker genes in Neuro2A cells (Sato A et al., PLoS One, 2013). We hypothesized that HSN2 shares a similar function, while HSN2 mutants may exhibit a loss of function.

To investigate this, we transiently expressed HSN2 in Neuro2A cells and observed that HSN2 induced neurite

outgrowth, similar to WNK1. In contrast, HSN2 mutants failed to promote neurite outgrowth. Additionally, NGF treatment enhanced neurite outgrowth, and this effect was further increased by WNK1 and HSN2. However, HSN2 mutants suppressed NGF-induced neurite outgrowth.

Consistent with these findings, in mouse primary cortical neurons, neurite outgrowth was enhanced by WNK1 and HSN2 but inhibited by HSN2 mutants.

We further examined the expression of neuronal marker genes—Lhx8 and Choline Acetyltransferase (ChAT) for cholinergic neurons and Glutamic Acid Decarboxylase 1 (Gad1) for GABAergic neurons—using qPCR. NGF treatment significantly upregulated Lhx8, ChAT, and Gad1 expression. Exogenous expression of WNK1 or HSN2 selectively induced Lhx8 and ChAT expression while suppressing Gad1 expression. In contrast, HSN2 mutants reduced Lhx8 and ChAT expression but increased Gad1 expression. These findings suggest that HSN2 is critical for neurite outgrowth, and HSN2 mutants fail to support neural development.

3. HSN2 mutants act as dominant-negative inhibitors of GSK3 β .

Our previous study identified GSK3 β as a positive downstream regulator of the WNK1-SPAK/OSR1 pathway, playing a role in neurite outgrowth (Sato A et al., PLoS One, 2018). To elucidate the function of HSN2 mutants in GSK3 β regulation, we analyzed their interaction with GSK3 β .

Co-immunoprecipitation assays revealed that HSN2 strongly interacts with GSK3 β compared to WNK1. Notably, HSN2 mutants bound GSK3 β more robustly than wild-type HSN2. This suggested that HSN2 mutants might competitively inhibit the binding of WNK1 and HSN2 to GSK3 β .

To confirm this hypothesis, we assessed the interactions of WNK1, HSN2, and GSK3 β in the presence of HSN2 mutants. Our results demonstrated that HSN2 mutants inhibited the binding of WNK1 and HSN2 to GSK3 β . Furthermore, these mutants also prevented the homo-dimerization of WNK1 and HSN2, further disrupting WNK signaling.

We next examined the impact of HSN2 mutants on GSK3 β -dependent neurite outgrowth. While transient expression of GSK3 β in Neuro2A cells enhanced neurite outgrowth and cholinergic marker gene (Lhx8, ChAT) expression, co-expression of HSN2 mutants suppressed these effects. Similar results were observed in mouse primary cortical neurons.

These findings suggest that HSN2 mutants preferentially bind GSK3 β and act as dominant-negative inhibitors, thereby suppressing GSK3 β 's function in neurite outgrowth and neural differentiation.

Conclusion

This study elucidates the biochemical function of HSN2 mutants in neural development, providing insight into the pathological mechanisms of HSANII. Our findings highlight that HSN2 mutants disrupt WNK1 signaling, inhibit neurite outgrowth, and act as dominant-negative regulators of GSK3 β . These insights pave the way for a deeper understanding of HSANII and may contribute to the development of potential therapeutic strategies.

(2) Lectures & Courses

Various signaling molecules that regulate cell growth and differentiation play a crucial role in morphogenesis and organogenesis in vertebrates. Disruptions in these signaling pathways can lead to the development of various diseases. Therefore, elucidating the signal transduction networks that govern cell generation and differentiation is essential for understanding the mechanisms underlying morphogenesis, organogenesis, and disease progression.

Our research aims to uncover the signal transduction networks that regulate morphogenesis and organogenesis during development. Through this research, we also provide comprehensive education and training to graduate students, equipping them with the knowledge and skills necessary to become leading scientists in the life sciences.

(3) Publications

Department of Advanced Nanomedical Engineering

Professor Satoshi Uchida
Junior Associate Professor Yuki Mochida

(1) Outline

The applications of mRNA therapeutics extend far beyond COVID-19 vaccines. They include preventive vaccines for other infectious diseases, cancer immunotherapy, protein replacement therapy for single-gene disorders, regenerative medicines, and genome editing. Nano-sized drug delivery systems (nano DDS) are crucial in these applications, as they enable safe, efficient, and selective delivery to target cells and tissues. Our laboratory focuses on developing nano DDS, exploring its therapeutic applications, and conducting clinical translational research.

(2) Research

1. Development of nano DDS

Our polymeric nano DDS is designed to be low immunostimulatory, allowing for mRNA delivery without causing unwanted inflammation. This is a significant advantage over commonly used lipid nanoparticles, which are highly inflammatory. For effective in vivo delivery, nano DDS must possess various functionalities, such as sufficient nuclease stability and the ability to selectively target specific organs. To achieve these functionalities, we are developing novel nano DDS through advanced polymer design and proprietary mRNA engineering techniques.

2. Applications of mRNA vaccines and therapeutics

Our research targets a wide range of applications, including vaccines for infectious diseases and cancers, as well as other therapeutic use beyond vaccines. Current mRNA vaccines for infectious diseases face safety concerns due to the use of lipid nanoparticles. To address this, we are developing “naked” mRNA vaccines that do not rely on lipid nanoparticles. In the field of cancer vaccines, we are working to enhance their efficacy through mRNA engineering, which can improve the adjuvanticity of the vaccines and enable selective mRNA delivery to lymphoid organs. Beyond vaccines, we are also exploring mRNA applications for single-gene disorders, genome editing, and antibody therapy.

(3) Lectures & Courses

The success of mRNA vaccines against COVID-19 was a result of the fusion of medical and engineering sciences. Our laboratory aims to learn and practice such interdisciplinary research. In this context, we place a strong emphasis on actively engaging in research.

(4) Publications

[Original Articles]

1. Yukine Ishibashi, Mitsuru Naito, Yusuke Watanuki, Mao Hori, Satomi Ogura, Kaori Taniwaki, Masaru Cho, Ryosuke Komiya, Yuki Mochida, Kanjiro Miyata. Size-Dependent Glioblastoma Targeting by Polymeric Nanoruler with Prolonged Blood Circulation. *Bioconjug Chem.* 2024.08; 35(8); 1154-1159

2. Joachim F R Van Guyse, Saed Abbasi, Kazuko Toh, Zlata Nagorna, Junjie Li, Anjaneyulu Dirisala, Sabina Quader, Satoshi Uchida, Kazunori Kataoka. Facile Generation of Heterotelechelic Poly(2-Oxazoline)s Towards Accelerated Exploration of Poly(2-Oxazoline)-Based Nanomedicine. *Angewandte Chemie International Edition* . 2024.07; 63(27); e202404972
3. Saed Abbasi, Miki Matsui-Masai, Fumihiko Yasui, Akimasa Hayashi, Theofilus A Tockary, Yuki Mochida, Shiro Akinaga, Michinori Kohara, Kazunori Kataoka, Satoshi Uchida. Carrier-free mRNA vaccine induces robust immunity against SARS-CoV-2 in mice and non-human primates without systemic reactogenicity. *Molecular Therapy*. 2024.05; 32(5); 1266-1283
4. Pengwen Chen, Wenqian Yang, Yuki Mochida, Shangwei Li, Taehun Hong, Hiroaki Kinoh, Kazunori Kataoka, Horacio Cabral. Selective Intracellular Delivery of Antibodies in Cancer Cells with Nanocarriers Sensing Endo/Lysosomal Enzymatic Activity. *Angewandte Chemie International Edition*. 2024.04; 63(14); e202317817
5. Miki Suzuki, Yuki Mochida, Mao Hori, Akimasa Hayashi, Kazuko Toh, Theofilus A. Tockary, Xueying Liu, Victor Marx, Hidetomo Yokoo, Kanjiro Miyata, Makoto Oba, Satoshi Uchida. Poly(ethylene Glycol) (PEG)-OligoRNA Hybridization to mRNA Enables Fine - Tuned Polyplex PEGylation for Spleen - Targeted mRNA Delivery *Small Science*. 2024.02;
6. Lucas Mixich, Eger Boonstra, Keita Masuda, Shang-Wei Li, Yuki Nakashima, Fanlu Meng, Momoko Sakata, Tatsuro Goda, Satoshi Uchida, Horacio Cabral. Ionizable Polymeric Micelles with Phenylalanine Moieties Enhance Intracellular Delivery of Self-Replicating RNA for Long-Lasting Protein Expression In Vivo. *Biomacromolecules*. 2024.02; 25(2); 1058-1067
7. Hidetomo Yokoo, Anjaneyulu Dirisala, Satoshi Uchida, Makoto Oba. Oligosarcosine Conjugation of Arginine-Rich Peptides Improves the Intracellular Delivery of Peptide/pDNA Complexes. *ACS Biomaterials Science & Engineering*. 2024.02; 10(2); 890-896
8. Yum J, Aulia F, Kamiya K, Hori M, Qiao N, Kim BS, Naito M, Ogura S, Nagata T, Yokota T, Uchida S, Obika S, Kim HJ, Miyata K. Hydrophobicity Tuning of Cationic Polyaspartamide Derivatives for Enhanced Antisense Oligonucleotide Delivery. *Bioconjugate chemistry*. 2024.01; 35(2); 125-131

[Books etc]

1. Ze Song, Muhammad Shafiq, Ruizhi Tian, Satoshi Uchida, Hangrong Chen, Ming Ma, Microfluidic Production of Inorganic Nanoparticles. *Microfluidics in Pharmaceutical Sciences: Formulation, Drug Delivery, Screening, and Diagnostics*. Springer Nature, 2024.06

[Misc]

1. Fangqiao Zheng, Ruizhi Tian, Hongxu Lu, Xiao Liang, Muhammad Shafiq, Satoshi Uchida, Hangrong Chen, Ming Ma. Droplet Microfluidics Powered Hydrogel Microparticles for Stem Cell-Mediated Biomedical Applications. *Small*. 2024.06; e2401400
2. Yuki Mochida, Satoshi Uchida. mRNA vaccine designs for optimal adjuvanticity and delivery. *RNA Biology*. 2024.01; 21(1); 1-27

[Conference Activities & Talks]

1. 内田智士. mRNA 単体からなる感染症予防ワクチンの開発. 第 19 回ナノ・バイオメディカル学会 2024.09.06
2. Satoshi Uchida. Cutaneous jet injection of naked mRNA for safe and effective vaccination against infectious diseases. World Vaccine Congress Washington 2024 2024.04.04
3. Yuki Mochida. PEGylation of Therapeutic Antibodies and Nucleic Acids for Improving their In Vivo Performance. Translational Cancer Research and Precision Oncology 2024.02.28 University of Cyprus

Department of Structural Biology

Professor Nobutoshi ITO
Associate Professor Yuya HANAZONO
Assistant Professor Masaki KIKUCHI

(1) Outline

The advance of genome science and proteomic analysis has produced a large amount of information about the primary structure of proteins and their spatial and temporal distributions. On the other hand, most of the proteins only function when they take certain three dimensional structures. As obviously seen in so-called prion diseases, proteins which are chemically correct but structurally incorrect not only fail to function properly but also can harm cells. Our laboratory aims to understand the function of biological macromolecules at atomic level through structure analysis and other methods of physical chemistry, in the hope that accumulation of such knowledge will eventually lead to development of drugs. We are also involved in providing database of such structural data to scientists through the activities of Protein Data Bank Japan.

(2) Research

Collaborating with groups within and outside of the university, we are engaged in various research projects including;

- 1) Structural analyses of B-cell coreceptors
- 2) Physicochemical analysis on the mechanism of the signal transduction for activation of T cells
- 3) Structural analyses of potential drug targets of nuclear receptors
- 4) Rational design of PDZ domain inhibitors involved in regulation of intracellular signaling
- 5) Structural analysis of histone acetylation
- 6) Molecular basis of suppression of HIV-1
- 7) Structure based drug design for protein kinases
- 8) Structural analysis including hydrogen atoms by ultra-high resolution crystallography
- 9) Improvement in Protein Data Bank

(3) Lectures & Courses

The students learn theoretical basis of structure determination, mainly X-ray crystallography, of proteins and other biological macromolecules. Recent advance in structural biology is also discussed in seminar. Students learn lab techniques related to large-scale production, purification and crystallization of protein samples. They also learn computational methods to determine and refine crystal structures.

(4) Publications

[Original Articles]

1. Imai D, Numoto N, Tokiwa H, Kakuta H, Ito N. Structural basis for the full and partial agonist activities of retinoid X receptor α ligands with an iso-butoxy and an isopropyl group. Biochemical and biophysical

research communications. 2024.08; 734; 150617

2. Yoshida M, Hanazono Y, Numoto N, Nagao S, Yabuno S, Kitagawa Y, Sekiguchi H, Ito N, Azuma T, Oda M. Affinity-matured antibody with a disulfide bond in H-CDR3 loop. Archives of biochemistry and biophysics. 2024.06; 758; 110068
3. Akatsu C, Tsuneshige T, Numoto N, Long W, Uchiumi T, Kaneko Y, Asano M, Ito N, Tsubata T. CD72 is an inhibitory pattern recognition receptor that recognizes ribosomes and suppresses production of anti-ribosome autoantibody. Journal of autoimmunity. 2024.05; 146; 103245
4. Omori S, Hanazono Y, Nishi H, Kinoshita K. The role of the STAS domain in SLC26A9 for chloride ion transporter function. Biophysical journal. 2024.05; 123(12); 1751-1762
5. Yuki S Tateishi, Tamasa Araki, Satoru Kawai, Shuhei Koide, Yuko Umeki, Takashi Imai, Yumiko Saito-Nakano, Masaki Kikuchi, Atsushi Iwama, Hajime Hisaeda, Cevayir Coban, Takeshi Annoura. Histone H3.3 variant plays a critical role on zygote-to-oocyst development in malaria parasites. Parasitology International. 2024.01;

[Conference Activities & Talks]

1. Yuya Hanazono. Structural analysis of amide protons using high-resolution neutron crystallography. Japan-Taiwan Bilateral Seminar on Crystallography: “Frontier of Crystallography” 2024.11.07
2. Hansaka N. Thilakarathne N. M., Takashi Misawa, Yosuke Demizu, Yuya Hanazono, Nobutoshi Ito, Hiroyuki Kagechika, Shinya Fujii. Structure-activity relationship (SAR) study of non-secosteroidal diphenyl-carborane based VDR ligands. 4th Switzerland-Japan Biomolecular Chemistry Symposium (SJBCS2024) 2024.11.07
3. Hansaka N. Thilakarathne N. M., Takashi Misawa, Yosuke Demizu, Yuya Hanazono, Nobutoshi Ito, Hiroyuki Kagechika, Shinya Fujii. Structure-activity relationship (SAR) study of hydrophobic moiety of nonsecosteroidal VDR ligands using diphenylsilane scaffold. 21st IUPAB Congress 2024 2024.06.25
1. Mutsumi Yoshida, Yuya Hanazono, Nobutoshi Ito, Takachika Azuma, Masayuki Oda. Changes in antigen recognition by antibodies during affinity maturation revealed by crystal structure and thermodynamic analysis. The 3rd Annual Meeting of The Antibody Society of Japan 2024.12.10
2. Saaya Yabuno, Yuya Hanazono, Nobutoshi Ito, Takachika Azuma, Masayuki Oda. Structure-based mutational analysis for trade-off between affinity and stability of antinitrophenyl antibodies during affinity maturation. The 3rd Annual Meeting of The Antibody Society of Japan 2024.12.10
3. Masaki Kikuchi. Structural basis for nucleosome acetylation by the acetyltransferase p300/CBP. The 27th Biomolecular interaction research association 2024.12.09
4. Natsuno Ando, Takeshi Tenno, Ryusei Hamajima, Haruka Takagi, Yuya Hanazono, Nobutaka Numoto, Youichi Suzuki, Nobutoshi Ito, Hidekazu Hiroaki. Design of dual PDZ domain inhibitor for the development of anti-coronavirus drugs. The 47th Annual Meeting of the Molecular Biology Society of Japan 2024.11.29
5. Yuya Hanazono. Elucidating the Diversity of Peptide Bonds through High-Resolution Neutron Crystallographic Analysis. CrSJ Annual Meeting and General Assembly 2024 2024.11.10
6. Natsuno Ando, Takeshi Tenno, Ryusei Hamajima, Haruka Takagi, Yuya Hanazono, Nobutaka Numoto, Nobutoshi Ito, Hidekazu Hiroaki. Design of PDZ domain inhibitor for anti-coronavirus drugs. The 24th Annual Meeting of the Protein Science Society of Japan 2024.06.12
7. Hansaka N. Thilakarathne N. M., Takashi Misawa, Yosuke Demizu, Yuya Hanazono, Nobutoshi Ito, Hiroyuki Kagechika, Shinya Fujii. Structure-activity relationship (SAR) study of hydrophobic moiety of nonsecosteroidal VDR ligands using diphenylsilane scaffold. The 24th Annual Meeting of the Protein Science Society of Japan 2024.06.11
8. Purnima Liyanage, Nobutaka Numoto, Yuya Hanazono, Takeshi Tsubata, Nobutoshi Ito. Crystal structure of B lymphocyte associated co-receptor human CD72-CTLD. The 24th Annual Meeting of the Protein Science Society of Japan 2024.06.11

9. Hansaka N. Thilakarathne N. M., Takashi Misawa, Yosuke Demizu, Yuya Hanazono, Nobutoshi Ito, Hiroyuki Kagechika, Shinya Fujii. Structure-activity relationship (SAR) study of hydrophobic moiety of nonsecosteroidal VDR ligands using diphenylsilane scaffold. The 144th Annual Meeting of the Pharmaceutical Society of Japan 2024.03.29
10. Yuya Hanazono, Yu Hirano, Kazuki Takeda, Katsuhiko Kusaka, Taro Tamada, Kunio Miki. Elucidation of the non-planarity of peptide bonds: A novel perspective from high-resolution neutron crystallography. Quantum Beam Science Festa FY2023 2024.03.06 Mito

Department of Biomolecular Pathogenesis

Noriyuki Matsuda
Koji Yamano
Fumika komatsuya (Koyano)
Waka Kojima
Aiko Watanabe
Reika Yamagishi (Kikuchi)

Shizuka Ogiwara
Ryu Endo
Momoha Sawada
Tomoyuki Hoshina
Hiroki Kinefuchi

Kai Kanematsu

Mirei Saito
Naru Suzuki

Hisako Hirano

(1) Outline

Note: Biomolecular Pathogenesis Laboratory was launched in 2022 and thus is a newly established young lab. Various functional biomolecules and organelles exist in cells. However, many of them are suffered from damage during their functional processes, and finally they are accumulated as the damaged form. To maintain normal cellular functions, it is crucial to selectively eliminate such "damaged biomolecules and organelles."

On the other hand, degradation of essential biomolecules and organelles is an extremely dangerous process. To make this process beneficial, it is imperative to correctly recognize and identify the targets for degradation under stringent control.

In recent years, factors involved in this process have been well understood, and their relevance to human diseases (i.e., pathophysiological significance) has become evident. Thus, we have been studying on (1) the molecular mechanisms for the selective recognition and degradation of damaged proteins and organelles within cells, and (2) the mechanisms underlying how the failure of this process leads to neurodegenerative disorders, with focusing on ubiquitin, autophagy, and Parkinson disease.

(2) Research

The main research themes of our laboratory (Biomolecular Pathogenesis Lab) are as follows:

1. Elucidation of the molecular mechanisms by which PINK1 and Parkin, the causative genes for hereditary

recessive Parkinson's disease, collaborate and ubiquitylate damaged mitochondria.

2. Elucidation of the molecular mechanisms by which ubiquitylated damaged mitochondria are directed to selective autophagic degradation (called mitophagy), and how this mitophagy process suppresses the onset of hereditary Parkinson's disease.
3. Elucidation of the molecular mechanisms of DJ-1, causative gene product of hereditary recessive Parkinson's disease, with focusing on post-translational modifications of amino groups.
4. Understanding the molecular mechanisms how the dysfunction of newly discovered autophagy-related factor, BCAS3-C16orf70 complex, leads to human hereditary neurodevelopmental disease.
5. Elucidation of the molecular mechanisms by which organelles other than damaged mitochondria (e.g., peroxisomes) are directed to autophagic degradation.
6. Identifying and characterization of novel factors involved in membrane trafficking process during the selective degradation of damaged organelles.

(3) Education

I am in charge of the following lectures for the undergraduate and graduate students.

Undergraduate Class/Faculty Lecture: Elective Subjects I/II - Life Science and Technology.

Graduate School Lecture: Introduction to Biomedical Sciences and Engineering, Biochemistry, and Biomedical Science.

(4) Lectures & Courses

Our goal in this lab is elucidation of the molecular mechanisms by which damaged biomolecules and damaged organelles are selectively recognized and degraded in cells. In pursuit of this goal, we utilize a wide range of research methodologies, such as cell biology, biochemistry, molecular biology, and developmental engineering. Additionally, by revealing the pathophysiological significances of this process, we aim to uncover the pathogenic mechanisms of several neurodegenerative diseases including hereditary Parkinson's disease.

(5) Publications

[Original Articles]

1. Koyano F, Yamano K, Hoshina T, Kosako H, Fujiki Y, Tanaka K, Matsuda N. AAA+ ATPase chaperone p97/VCP(FAF2) governs basal pexophagy. *Nature communications*. 2024.10; 15(1); 9347
2. Endo R, Kinefuchi H, Sawada M, Kikuchi R, Kojima W, Matsuda N, Yamano K. TBK1 adaptor AZI2/NAP1 regulates NDP52-driven mitochondrial autophagy. *The Journal of biological chemistry*. 2024.09; 300(10); 107775
3. Aiko Watanabe, Fumika Koyano, Kenichiro Imai, Yohei Hizukuri, Shizuka Ogiwara, Tomoya Ito, Jun Miyamoto, Chihiro Shibuya, Mayumi Kimura, Kazuya Toriumi, Chie Motono, Makoto Arai, Keiji Tanaka, Yoshinori Akiyama, Koji Yamano, Noriyuki Matsuda. The origin of esterase activity of Parkinson's disease causative factor DJ-1 implied by evolutionary trace analysis of its prokaryotic homolog HchA. *J Biol Chem*. 2024.06; 300(7); 107476
4. Kawasaki I, Sugiura K, Sasaki T, Matsuda N, Sato M, Sato K. MARC-3, a membrane-associated ubiquitin ligase, is required for fast polyspermy block in *Caenorhabditis elegans*. *Nature communications*. 2024.01; 15(1); 792
5. Yamano K, Sawada M, Kikuchi R, Nagataki K, Kojima W, Endo R, Kinefuchi H, Sugihara A, Fujino T, Watanabe A, Tanaka K, Hayashi G, Murakami H, Matsuda N. Optineurin provides a mitophagy contact site for TBK1 activation. *The EMBO journal*. 2024.01; 43(5); 754-779
6. Cui M, Yamano K, Yamamoto K, Yamamoto-Imoto H, Minami S, Yamamoto T, Matsui S, Kaminishi T, Shima T, Ogura M, Tsuchiya M, Nishino K, Layden BT, Kato H, Ogawa H, Oki S, Okada Y, Isaka Y, Kosako H, Matsuda N, Yoshimori T, Nakamura S. HKDC1, a target of TFEB, is essential to maintain both mitochondrial and lysosomal homeostasis, preventing cellular senescence. *Proceedings of the National Academy of Sciences of the United States of America*. 2024.01; 121(2); e2306454120

[Misc]

1. Yamano K, Kinefuchi H, Kojima W. Mitochondrial lipid dynamics regulated by MITOL-mediated ubiquitination. *Journal of biochemistry*. 2024.03; 175(3); 217-219

[Conference Activities & Talks]

1. Noriyuki Matsuda. Molecular mechanisms of mitophagy underlying Parkinson's disease pathogenesis. The 19th international symposium of the institute network for biomedical science in Sendai 2024.10.11 Institute of Development, Aging and Cancer, Tohoku University
2. Koji Yamano. Functional analysis of a folding chaperone for RAB GTPase to regulate their protein lifetime. 第 76 回日本細胞生物学会大会 2024.07.17
3. Waka Kojima, Noriyuki Matsuda, Koji Yamano. Functional analysis of BCAS3-C16orf70 complex. The 5th Sino-Japan Symposium on Autophagy 2024.06.19 Youngang Jianguo Hotel (雲岡賓館)
4. Koji Yamano. PINK1-Parkin-driven mitophagy molecular mechanisms and as a tool . The 5th Sino-Japan Symposium on Autophagy 2024.06.18
5. Noriyuki Matsuda. Molecular mechanisms of mitochondrial quality control and mitophagy underlying PD pathogenesis. 65th Annual Meeting of the Japanese Society of Neurology and 19th Asian Oceanian Congress of Neurology (AOCN2024) 2024.05.30 Tokyo International Forum
1. Ryu Endo, Mitsunori Fukuda, Noriyuki Matsuda, Koji Yamano. Functional analysis of RABIF/MSS4 in RAB protein quality control. The 47th Annual Meeting of the Molecular Biology Society of Japan 2024.11.27 Fukuoka International Congress Center, Marine Messe Fukuoka
2. Shizuka Ogiwara, Hidetaka Kosako, Aiko Watanabe, Fumika Koyano, Koji Yamano, Noriyuki Matsuda. DJ-1, a Parkinson's disease-associated factor, detoxifies cPGA for cytoprotection.. The 47th Annual Meeting of the Molecular Biology Society of Japan 2024.11.27 Fukuoka International Congress Center, Marine Messe Fukuoka
3. Hiroki Kinefuchi, Meng-Chieh Hsu, Richard J. Youle, Noriyuki Matsuda and Koji Yamano. TIMM17A, a subunit of mitochondrial inner membrane translocator, is degraded by YME1L1 when being unoccupied by precursors. The 47th Annual Meeting of the Molecular Biology Society of Japan 2024.11.27 Fukuoka International Congress Center, Marine Messe Fukuoka
4. Noriyuki Matsuda, Shizuka Ogiwara, Aiko Watanabe, Mirei Saito, Yoshitaka Moriwaki, Ryuichiro Ishitani, Hidetaka Kosako. Molecular function of Parkinson's disease-associated factor DJ-1 and its role on organelle. The 47th Annual Meeting of the Molecular Biology Society of Japan 2024.11.27 Fukuoka International Congress Center, Marine Messe Fukuoka
5. Fumika Koyano, Koji Yamano, Tomoyuki Hoshina, Hidetaka Kosako, Yukio Fujiki, Keiji Tanaka, and Noriyuki Matsuda. p97/VCP-FAF2 extracts PMP70 from peroxisome to prevent pexophagy .. The 47th Annual Meeting of the Molecular Biology Society of Japan 2024.11.27 Fukuoka International Congress Center, Marine Messe Fukuoka
6. Aiko Watanabe, Mirei Saito, Yoshitaka Moriwaki, Ryuichiro Ishitani, Noriyuki Matsuda. Molecular mechanism of cPGA degradation activity of Parkinson's disease causative factor DJ-1. The 47th Annual Meeting of the Molecular Biology Society of Japan 2024.11.27 Fukuoka International Congress Center, Marine Messe Fukuoka
7. Fumika Koyano, Koji Yamano, Tomoyuki Hoshina, Hidetaka Kosako, Yukio Fujiki, Keiji Tanaka, and Noriyuki Matsuda. p97/VCP regulates peroxisome homeostasis. The 23rd Conference of Japanese Society of Mitochondrial Research and Medicine 2024.11.22 Juntendo University
8. Noriyuki Matsuda. Molecular Mechanisms underlying TBK1 activation at the contact site between mitochondria and autophagic membrane. The 97th Annual Meeting of the Japanese Biochemical Society 2024.11.08 PACIFICO Yokohama North
9. Tomoyuki Hoshina, Noriyuki Matsuda, and Fumika Koyano. Analysis of the effect of Peroxin gene deficiency on peroxisome degradation. The 97th Annual Meeting of the Japanese Biochemical Society 2024.11.08 PACIFICO Yokohama North

10. Ken Sato, Ichiro Kawasaki, Kenta Sugiura, Taeko Sasaki, Shunichi Sudo, Noriyuki Matsuda, Hidetaka Kosako, and Miyuki Sato. The mechanisms of oocyte remodeling and its physiological function during the egg-to-embryo transition. The 97th Annual Meeting of the Japanese Biochemical Society 2024.11.07 PACIFICO Yokohama North
11. Momoha Sawada, Ryu Endo, Hiroki Kinefuchi, Noriyuki Matsuda, Koji Yamano. Regulation of selective autophagy by AZI2 and TBKBP1 that link autophagy adaptors to TBK1. The 97th Annual Meeting of the Japanese Biochemical Society 2024.11.06 PACIFICO Yokohama North
12. Aiko Watanabe, Kenichiro Imai, Yohei Hizukuri, Chie Motono, Yoshinori Akiyama, Noriyuki Matsuda. The origin of esterase activity inferred from analysis of the prokaryotic homolog of DJ-1, a causative factor of Parkinson's disease. The 97th Annual Meeting of the Japanese Biochemical Society 2024.11.06 PACIFICO Yokohama North
13. Noriyuki Matsuda, Koji Yamano, Tomoyuki Hoshina, Hidetaka Kosako, Yukio Fujiki, Keiji Tanaka, and Fumika Koyano. p97/VCP and its cofactor FAF2/UBXD8 suppress pexophagy through quality control of peroxisomal membrane proteins. The 16th Autophagy Meeting 2024.10.16 Tsumagoi Report Sai-No-Sato
14. Takuya Norizuki, Taeko Sasaki, Waka Kojima, Koji Yamano, Noriyuki Matsuda, Ken sato, Miyuki Sato. The functional analysis of the PI3P-binding protein BCAS3 homolog in paternal mitochondrial degradation in *C. elegans*. The 16th Autophagy Meeting 2024.10.14 Tsumagoi Report Sai-No-Sato
15. Waka Kojima, Noriyuki Matsuda, Naonobu Fujita, Koji Yamano . Functional analysis of BCAS3-C16orf70 complex that is relevant to the human neurodevelopmental disease. The 16th Autophagy Meeting 2024.10.14 Tsumagoi Report Sai-No-Sato
16. Hiroki Kinefuchi, Meng-Chie Hsu, Richard Youle, Noriyuki Matsuda, Koji Yamano. Molecular mechanisms for YME1L1-mediated degradation of the mitochondrial inner membrane translocase. The 3rd meeting for “Shin-biology regulated by protein lifetime” 2024.09.18 KKR Hotel Atami
17. Ryu Endo, Mitsunori Fukuda, Noriyuki Matsuda, Koji Yamano. Quality control of RAB proteins: analysis of molecular mechanisms for its stabilization and degradation. The 3rd meeting for “Shin-biology regulated by protein lifetime” 2024.09.18 KKR Hotel Atami
18. Fumika Koyano, Koji Yamano, Tomoyuki Hoshina, Hidetaka Kosako, Yukio Fujiki, Keiji Tanaka, and Noriyuki Matsuda . p97/VCP-FAF2 complex extracts PMP70 from peroxisomal membrane to prevent pexophagy.. The 3rd meeting for “Shin-biology regulated by protein lifetime” 2024.09.18 KKR Hotel Atami
19. Shizuka Ogiwara, Ozawa Azuna, Toriumi Kazuya, Wang Tianran, Matsuda Noriyuki, Arai Makoto. The intracellular degradation mechanism of pentosidine, one of the advanced glycation end product (AGEs) . 2024 Regular Meeting of the Japaneses Biochemical Society, Kantoh Branch 2024.06.15 Juntendo University

Department of Medical Chemistry

Professor: Katsumori Segawa, Ph.D.

Lecturer: Yugo Miyata, Ph.D.

Assistant Professor: Masahiro Nagata, Ph.D.

JSPS Research Fellow: Sultan Cheryl Sophia, Ph.D.

Technical Assistant: Risa Kuribayashi, Moe Nishimoto

Secretary: Chikako Sawada

(1) Outline

Although the discovery of DNA has significantly advanced our understanding of life, we still do not fully understand even a single "cell", the basic unit of multicellular organisms. How do cells react with myriad substances to maintain life in the tiny space of 1/100,000 to 1/10,000,000 microliters? What is life? It is very mysterious. Biochemistry is a chemical approach to these questions, and Molecular Genetics is an approach based on the genetic information encoded in DNA. We aim to understand cells and, beyond that, to understand life and disease using biochemistry and molecular genetics.

(2) Research

We aim to understand the biological functions of cells. Abnormalities in critical cellular processes are always associated with the development of disease. We conduct research to identify genes and molecules that are "actually" involved in cellular functions through non-bias screening using forward genetics and biochemistry and to clarify the functions of the identified molecules in vivo and their pathological significance through mutation analysis in mouse models and humans. We are currently conducting the following research.

(3) Publications

[Original Articles]

1. Miyata Y, Nishimura M, Nagata A, Jing X, Sultan C.S, Kuribayashi R, Takahashi K, Lee Y, Nishizawa T, Segawa K. Membrane structure-responsive lipid scramblase activity of the TMEM63/OSCA family FEBS Letters. 2024.12; doi: 10.1002/1873-3468.15084
2. Miyata Y, Takahashi K, Lee Y, Sultan CS, Kuribayashi R, Takahashi M, Hata K, Bamba T, Izumi Y, Liu K, Uemura T, Nomura N, Iwata S, Nagata S, Nishizawa T, Segawa K. Membrane structure-responsive lipid scrambling by TMEM63B to control plasma membrane lipid distribution Nat Struct Mol Biol. 2024.10; 32(1); 185-198

[Misc]

1. Segawa K, Nishizawa T. TMEM63B scrambles phospholipids in response to changes in membrane structure Nat. Struct. Mol. Biol. 2024.10; 32(1); 10-11

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[Conference Activities & Talks]

1. Katsumori Segawa. Phospholipid asymmetry in the plasma membrane and human diseases. The International Symposium on Microbiology and Immunology The 14th International Symposium of IFRcC 2024.11.12 OSAKA

RIKEN Molecular and Chemical Somatology

Visiting Professor	Ichiro Taniuchi
Visiting Professor	Koshi Imami
Visiting Professor	Kazuyoshi Ishigaki
Visiting Professor	Shinya Hagihara
Visiting Professor	Motomasa Tanaka
Visiting Professor	Rikiya Watanabe
Visiting Lecturer	Nobuhiko Miyasaka
Visiting Lecturer	Hiromasa Yoshioka
Visiting Lecturer	Masanori Izumi
Visiting Lecturer	Shusuke Egoshi
Visiting Lecturer	Ryo Endo
Visiting Lecturer	Riichi Hashimoto
Visiting Lecturer	Nicolas Gailhouste
Visiting Lecturer	Takashi Nomura
Visiting Lecturer	Shunsuke Tagami
Visiting Lecturer	Jun Ando
Visiting Lecturer	Keishi Shintomi
Graduate Students	D3 Shingo Tamai
	D2 Junji Harada
	D2 Qin Zhizhen
	D1 Yuxin Chen
	D1 Fatma Elsharkawy

(1) Research

Molecular and Chemical Somatology is an interdisciplinary field for understanding of the basis of Bio-organic Chemistry, Chemical Biology, Structural Biology, Molecular Immunology and Molecular Neuroscience, Human Genome Medicine, Structural Biology as well as interdisciplinary study for developing a new technology to measure bio-molecules at single molecular level. Our studies will also aim to apply our findings to Medicine by dealing with a variety of molecules that regulate cellular functions including low molecular weight organic compounds, proteins, sugars, and hormones. Students will learn and discuss about the outlines and/or the latest topics on discovery,

structure, synthesis, biology, and management of the key molecules/factors, and deepen their understanding of this new research field.

(2) Education

1) Chemical Biology

- Discovery, target identification and analyses of mechanism of action of bioactive compounds that regulate biological function.

2) Molecular Cellular Pathology

- Clarification of pathogenesis of diseases at molecular and cellular levels utilizing bioprobes.

3) Molecular Immunology

- Regulatory mechanisms for immune cell development

4) Molecular Neuropathology

- Molecular basis of neurodegenerative disorders and psychiatric diseases

5) Human Genome Medicine

- Identification of genomic variants regulating disease susceptibility.

6) Digital Biology

- Development of new technology to detect bio-molecules at single molecular level and its application for rapid disease diagnosis.

(3) Publications

[Original Articles]

1. Shen C.H., Komi Y., Nakagawa Y., Kamatari Y., Nomura T., Kimura H., Shida T., Burke J., Tamai S., Ishida Y., Tanaka M. Exposed Hsp70-binding site impacts yeast Sup35 prion disaggregation and propagation. *Proc. Natl. Acad. Sci. U. S. A.*, 121, e2318162121 (2024).
2. Inamo J, Suzuki A, Ueda MT, Yamaguchi K, Nishida H, Suzuki K, Kaneko Y, Takeuchi T, Hatano H, Ishigaki K, Ishihama Y, Yamamoto K, Kochi Y. Long-read sequencing for 29 immune cell subsets reveals disease-linked isoforms. *Nat Commun.* 15:4285 (2024)

[Review Articles]

[Books]

[Conference Activities & Talks]

1. Junji Harada and Ichiro Taniuchi. “The difference of Lck interactomes in CD4⁺CD8⁻ and CD4⁻CD8⁺ thymocytes”. The 53rd Annual Meeting of the Japanese Society for Immunology. December 4th, 2024. Nagasaki, Japan.
2. Motomasa Tanaka. “Dysregulation of ribosome-associated quality control elicits neurodevelopmental disorders”, MPA2024, March 9, 2024. Outrigger Kona Resort and Spa, USA.
3. Motomasa Tanaka. “PROTEIN AGGREGATION AND DISEASES”. IUPAB 2024, June 27, 2024. Kyoto International Conference Center, Kyoto, Japan,
4. Kenichiro Asahara and Kazuyoshi Ishigaki. “Polygenic risk of rheumatoid arthritis regulates the abundance of circulating regulatory T cells.” American Society of Human Genetics Annual Meeting 2024. November 9th, 2024. Denver, U.S.

[Poster presentation]

1. Zhizhen Qin, Ichiro Taniuchi. 「Unraveling relevance of phosphorylation on multiple tyrosine residues in Runx1 during thymocyte differentiation」 The 53rd Annual Meeting of the Japanese Society for Immunology . 2024 年 12 月 4 日 Nagasaki, Japan.

Department of NCC Cancer Science

Visiting Professor SUZUKI Hiromichi
 Visiting Professor YOSHIMI Akihide
 Visiting Professor YOSHIDA Kenichi
 Visiting Associate Professor TAKEDA Haruna
 Visiting Associate Professor OBATA Yuuki
 Visiting Associate Professor YOSHIOKA Ken-ichi

(1) Outline

The NCC Cancer Science is a department established at the National Cancer Center, a national institute that operates one of Japan's largest cancer-specialized hospitals and research institutes. With approximately 30 laboratories and research fields across the Tsukiji and Kashiwa campuses, it conducts cutting-edge cancer research, covering almost all aspects of cancer studies—from basic research to translational research bridging to clinical applications, as well as foundational studies for the development of new cancer prevention, diagnosis, and treatment methods. Students can freely choose their preferred laboratory within this exceptional cancer research environment and engage in specialized cancer research, gaining education on the latest knowledge, experimental techniques, and research presentation skills.

(2) Research

1. Genomic, transcriptomic, epigenomic, and proteomic analysis of cancer and personalized medicine
2. Genetic analysis in normal tissue and early carcinogenesis
3. Genome instability and their impact on carcinogenesis
4. Functions of cancer-associated genes and their alteration and therapeutic targets
5. Tumor microenvironment/Cancer stem cells/non-coding RNA/signaling pathway

(3) Education

To learn knowledge and skills for cancer research, students attend lectures and seminars and attend and/or practice research meetings, journal clubs, scientific meetings, etc. These practices will enable students to develop the ability to conduct their studies as independent cancer researchers in the future. To obtain good skills to carry out experiments that are required for cancer research, students belong to one of our research groups and conduct their own studies under the guidance of the instructor and/or staff. Students perform various experiments involved in genetics, gene technology, biochemistry, cellular biology, molecular biology, physiology, experimental animal, pathology, genomic/epigenomic/proteomic analysis, imaging, next-generation sequencing, machine learning, tumor immunology, etc.

(4) Lectures & Courses

Students will develop a fundamental understanding of cancer research, including basic knowledge and the latest advancements in the field while acquiring essential experimental techniques. This education lays the groundwork for their future roles as cancer researchers and specialists. Additionally, students will be trained to independently identify research questions, formulate working hypotheses, design experiments, analyze results,

and plan subsequent studies. Furthermore, the program aims to equip them with the skills necessary to compile their research findings and present them at academic conferences and scientific publications.

(5) Publications

[Original Articles]

1. Disruption of cotranscriptional splicing suggests that RBM39 is a therapeutic target in acute lymphoblastic leukemia. *Blood*. 2024.12;
2. Hirotaka Tsukamoto, Ryu Saito, Takahiro Shirakura, Takuma Nakashima, Ryo Yamamoto, Hirofumi Kazama, Mitsuto Hanihara, Hiromichi Suzuki, Sumihito Nobusawa, Hiroyuki Kinouchi. Astroblastoma with MN1::BEND2 in an elderly patient: A case report and review of the literature *Brain Tumor Pathology*. 2024.10;
3. Yoshiko Nakano, Sumihito Nobusawa, Aiko Sato-Otsubo, Takuma Nakashima, Hiromichi Suzuki, Kai Yamasaki, Takahiro Shirakura, Takeshi Inoue, Takahiro Okuno, Motohiro Kato, Koichi Ichimura, Hiroaki Sakamoto. TCF3:: BEND2 in paediatric supratentorial tumour with carcinoma-like epithelial features classifying as MN1-altered astroblastoma by DNA methylation profiling *Neuropathology and applied neurobiology*. 2024.10;
4. Mechanistic insights into lethal hyper progressive disease induced by PD-L1 inhibitor in metastatic urothelial carcinoma. *NPJ Precis Oncol*. 2024.09;
5. Abhirami Visvanathan, Olivier Saulnier, Chuan Chen, Parthiv Haldipur, Wilda Orisme, Alberto Delaidelli, Seungmin Shin, Jake Millman, Andrew Bryant, Namal Abeysundara, Xujia Wu, Liam D Hendrikse, Vikas Patil, Zahedeh Bashardanesh, Joseph Golser, Bryn G Livingston, Takuma Nakashima, Yusuke Funakoshi, Winnie Ong, Alexandra Rasnitsyn, Kimberly A Aldinger, Cory M Richman, Randy Van Ommeren, John JY Lee, Michelle Ly, Maria C Vladoiu, Kaitlin Kharas, Polina Balin, Anders W Erickson, Vernon Fong, Jiao Zhang, Raúl A Suárez, Hao Wang, Ning Huang, Jonelle G Pallota, Tajana Douglas, Joonas Haapasalo, Ferechte Razavi, Evelina Silvestri, Olga Sirbu, Samantha Worme, Michelle M Kameda-Smith, Xiaochong Wu, Craig Daniels, Antony K MichaelRaj, Aparna Bhaduri, Daniel Schramek, Hiromichi Suzuki, Livia Garzia, Nabil Ahmed, Claudia L Kleinman, Lincoln D Stein, Peter Dirks, Christopher Dunham, Nada Jabado, Jeremy N Rich, Wei Li, Poul H Sorensen, Robert J Wechsler-Reya, William A Weiss, Kathleen J Millen, David W Ellison, Dimitar S Dimitrov, Michael D Taylor. Early rhombic lip Protogenin+ ve stem cells in a human-specific neurovascular niche initiate and maintain group 3 medulloblastoma *Cell*. 2024.08;
6. Knockdown of CDX2 Induces microRNA-221 Up-regulation in Human Colon Cancer Cells. *Anticancer Res*. 2024.08;
7. Inhibition of TOPORS ubiquitin ligase augments the efficacy of DNA hypomethylating agents through DNMT1 stabilization. *Nat Commun*. 2024.08;
8. Ieuchi, H., Matsuno, Y., Kusumoto-Matsuo, R., Ueno, T., Kojima, S., Ikegami, M., Kitada, R., Okuma, H., Kojima, Y., Yonemori, K., Yatabe, Y., Takamochi, K., Suzuki, K., Yoshioka, K., Mano, H., Kohsaka, S.. GLI1 confers resistance to PARP inhibitors by activating the DNA damage repair pathway. *Oncogene*. 2024.08; 43; 3037-3048
9. Iyoda S, Yoshida K, Shoji K, Ito N, Tanaka M, Nannya Y, Yamato G, Tsujimoto S, Shiba N, Hayashi Y, Shiozawa Y, Shiraishi Y, Chiba K, Okada A, Tanaka H, Miyano S, Koga Y, Goto H, Moritake H, Terui K, Ito E, Kiyokawa N, Tomizawa D, Taga T, Tawa A, Takita J, Nishikori M, Adachi S, Ogawa S, Matsuo H. KRAS G12 mutations as adverse prognostic factors in KMT2A-rearranged acute myeloid leukemia. *Leukemia*. 2024.07; 38(7); 1609-1612
10. Keiya Iijima, Hiroyuki Fujii, Fumio Suzuki, Kumiko Murayama, Yu-ichi Goto, Yuko Saito, Terunori Sano, Hiroyoshi Suzuki, Hajime Miyata, Yukio Kimura, Takuma Nakashima, Hiromichi Suzuki, Masaki Iwasaki, Noriko Sato. Genotype-relevant neuroimaging features in low-grade epilepsy-associated tumors *Frontiers in Neurology*. 2024.07;

11. Sato T, Yoshida K, Toki T, Kanezaki R, Terui K, Saiki R, Ojima M, Ochi Y, Mizuno S, Yoshihara M, Uechi T, Kenmochi N, Tanaka S, Matsubayashi J, Kisai K, Kudo K, Yuzawa K, Takahashi Y, Tanaka T, Yamamoto Y, Kobayashi A, Kamio T, Sasaki S, Shiraishi Y, Chiba K, Tanaka H, Muramatsu H, Hama A, Hasegawa D, Sato A, Koh K, Karakawa S, Kobayashi M, Hara J, Taneyama Y, Imai C, Hasegawa D, Fujita N, Yoshitomi M, Iwamoto S, Yamato G, Saida S, Kiyokawa N, Deguchi T, Ito M, Matsuo H, Adachi S, Hayashi Y, Taga T, Saito AM, Horibe K, Watanabe K, Tomizawa D, Miyano S, Takahashi S, Ogawa S, Ito E. Landscape of driver mutations and their clinical effects on Down syndrome-related myeloid neoplasms. *Blood*. 2024.06; 143(25); 2627-2643
12. Natsume M, Niwa M, Ichikawa S, Okamoto T, Tsutsui H, Usukura D, Murata T, Abe R, Shimonaka M, Nishida T, Shiina I & Obata Y. Brefeldin A and M-COPA block the export of RTKs from the endoplasmic reticulum via simultaneous inactivation of ARF1, ARF4, and ARF5 *J. Biol. Chem.*. 2024.06; 300(6); 107327
13. Ichiyo Shibahara, Takuma Nakashima, Mariko Toyoda, Madoka Inukai, Toshihide Matsumoto, Kazuko Fujitani, Yoko Tanihata, Takuichiro Hide, Nobuo Fuse, Hiromichi Suzuki, Toshihiro Kumabe. Evolving driver mutations in adult-onset SHH-medulloblastoma originated from radiological cerebellar abnormality *Journal of Neuropathology & Experimental Neurology*. 2024.05;
14. Kohsaka, S., Yagishita, S., Shirai, Y., Matsuno, Y., Ueno, T., Kojima, S., Ieuchi, H., Ikegami, M., Kitada, R., Yoshioka, K., Toshimitsu, K., Tabata, K., Yokoi, A., Doi, T., Yamamoto, N., Owa, T., Hamada, A., Mano, H.. An RBM39 inhibitor, E7820, induces synthetic lethality in cancer cells with homologous recombination repair deficiency *npj Precision Oncology*. 2024.05; 8; 117
15. Metabolic reprogramming regulated by TRAF6 contributes to the leukemia progression. *Leukemia*. 2024.04;
16. Makiko Yamada, Ross R Keller, Rodrigo Lopez Gutierrez, Daniel Cameron, Hiromichi Suzuki, Reeti Sanghrajka, Jake Vaynshteyn, Jeffrey Gerwin, Francesco Maura, William Hooper, Minita Shah, Nicolas Robine, Phillip Demarest, N Sumru Bayin, Luz Jubierre Zapater, Casie Reed, Steven Hébert, Ignas Masilionis, Ronan Chaligne, Nicholas D Socci, Michael D Taylor, Claudia L Kleinman, Alexandra L Joyner, G Praveen Raju, Alex Kentsis. Childhood cancer mutagenesis caused by transposase-derived PGBD5 *Science Advances*. 2024.03;
17. Manaka, Y., Kusumoto-Matsuo, R., Matsuno, Y., Asai, H., and Yoshioka, K.. Single Base Substitution Signatures 17a, 17b, and 40 Are Induced by γ -Ray Irradiation in Association with Increased ROS Levels. *Heliyon*. 2024.03; 9; e28044
18. Takuma Nakashima, Ryo Yamamoto, Makoto Ohno, Hirokazu Sugino, Masamichi Takahashi, Yusuke Funakoshi, Shohei Nambu, Atsuhito Uneda, Shunsuke Yanagisawa, Takeo Uzuka, Yoshiaki Arakawa, Ryosuke Hanaya, Joji Ishida, Koji Yoshimoto, Ryuta Saito, Yoshitaka Narita, Hiromichi Suzuki. Development of a rapid and comprehensive genomic profiling test supporting diagnosis and research for gliomas *Brain Tumor Pathology*. 2024.02;
19. Naoko Iida, Yukari Muranaka, Jun Won Park, Shigeki Sekine, Neal G. Copeland, Nancy A. Jenkins, Yuichi Shiraishi, Masanobu Oshima, Haruna Takeda. Sleeping Beauty transposon mutagenesis in mouse intestinal organoids identifies genes involved in tumor progression and metastasis *Cancer Gene Therapy* . 2024.01;
20. Noerenberg, D., Briest, F., Hennch, C., Yoshida, K., Hablesreiter, R., Takeuchi, Y., Ueno, H., Staiger, A. M., Ziepert, M., Asmar, F., Locher, B. N., Toth, E., Weber, T., Amini, R. M., Klapper, W., Bouzani, M., Poeschel, V., Rosenwald, A., Held, G., Campo, E., Ishaque, N., Stamatopoulos, K., Kanellis, G., Anagnostopoulos, I., Bullinger, L., Goldschmidt, N., Zinzani, P. L., Bodor, C., Rosenquist, R., Vassilakopoulos, T. P., Ott, G., Ogawa, S., Damm, F.. Genetic Characterization of Primary Mediastinal B-Cell Lymphoma: Pathogenesis and Patient Outcomes. *J Clin Oncol*. 2024; 42(4); 452-466
21. Aoki, T., Shiba, N., Tsujimoto, S., Yamato, G., Hara, Y., Kato, S., Yoshida, K., Ogawa, S., Hayashi, Y., Iwamoto, S., Taki, T., Shimada, A., Iijima-Yamashita, Y., Horibe, K., Tawa, A., Taga, T., Adachi, S., Tomizawa, D.. High IL2RA/CD25 expression is a prognostic stem cell biomarker for pediatric acute myeloid leukemia without a core-binding factor. *Pediatr Blood Cancer*. 2024; 71(2); e30803

Department of Cellular and Molecular Medicine

Associate Professor Junko Sasaki

(1) Outline

Phosphoinositides (PIPs) are the molecules that contain phosphatidylinositol, which has a glycerol backbone, two long-chain fatty acids, and an inositol head group. As a result of combinatorial phosphorylation of the hydroxyls of inositol ring, seven other PIPs classes can be generated. Each PIPs exhibits a unique stereochemistry and can bind to distinct cellular protein targets, thereby regulating a wide variety of cellular activities and responses. In terms of PIPs acyl chains, our knowledge about how much importance these hydrocarbon chains have is only limited, in contrast to the phosphorylation patterns. Our goal is to reveal the functions of each PIPs molecular species.

(2) Research

Recently, we revealed that the acyl profiles of phosphoinositides are altered in human prostate cancer tissues. Therefore we are currently studying the physiological and pathophysiological functions of each PIPs molecular species by three approaches.

1. Cellular analyses: We examine changes in PIPs molecular species regulating cellular responses, including cell migration, proliferation, and differentiation.
2. In vivo analyses: We examine changes in PIPs molecular species of diseased tissues from gene-targeted mice lacking PIPs metabolizing enzymes.
3. Molecular analyses: We find the binding proteins of each PIPs molecular species by developing new methods for studying lipid-protein interaction.

(3) Education

Topics of research for graduate student

1. Cancers and PIPs molecular species
2. Inflammations and PIPs molecular species
3. Disorders of sex development and PIPs molecular species

(4) Lectures & Courses

Each student has an independent research theme. Students are expected to have experimental science knowledge and skills.

The goal is to be able to plan, execute, and present original research in cooperation with other researchers.

(5) Publications

[Original Articles]

1. Oikawa, T; Hasegawa, J; Handa, H; Ohnishi, N; Onodera, Y; Hashimoto, A; Sasaki, J; Sasaki, T; Ueda, K; Sabe, H. p53 ensures the normal behavior and modification of G1/S-specific histone H3.1 in the nucleus LIFE SCIENCE ALLIANCE. 2024.09; 7(9);
2. Takafumi Kawai, Shin Morioka, Haruhiko Miyata, Rizki Tsari Andriani, Sharmin Akter, Gabriel Toma, Tatsuya Nakagawa, Yuki Oyama, Rie Iida-Norita, Junko Sasaki, Masahiko Watanabe, Kenji Sakimura, Masahito Ikawa, Takehiko Sasaki, Yasushi Okamura. The significance of electrical signals in maturing spermatozoa for phosphoinositide regulation through voltage-sensing phosphatase. Nat Commun. 2024.08; 15(1); 7289

[Conference Activities & Talks]

1. Junko Sasaki, Shogo Yanai, Shin Morioka, Hiroaki Kajiho, Takehiko Sasaki. DISORDERS OF SEX DEVELOPMENT (DSD) IN MICE LACKING PHOSPHOINOSITIDE-METABOLIZING PHOSPHATASES. FASEB and the Japanese Association for Protein Phosphatase Research 2024.12.10 Palm Springs, California
1. Shogo Yanai, Junko Sasaki, Hiroaki Kajiho, Takehiko Sasaki. Regulation of gonadal supporting cells by phosphoinositides and its effect on reproduction. The 47th Annual Meeting of the Molecular Biology Society of Japan 2024.11.27 Fukuoka
2. Shin Morioka, Toshiyoshi Yamamoto, Junko Sasaki, Takehiko Sasaki. The mass spectrometric method for quantitative analysis of PI5P. The 97th Annual Meeting of the Japanese Biochemical Society 2024.11.06 Yokohama
3. Miko Oikawa, Iku Tamura, Haruka Abeki, Shin Morioka, Toshiyoshi Yamamoto, Junko Sasaki, Takehiko Sasaki. Establishment of a glioblastoma cell line accumulating the rare phospholipid PI(5)P. The 97th Annual Meeting of the Japanese Biochemical Society 2024.11.06 Yokohama
4. Fusui Oka, Junya Hasegawa, Junko Sasaki, Hideo Shindou, Takehiko Sasaki. Identification of PI(4)P remodeling mechanisms. The 97th Annual meeting of the Japanese Biochemical Society 2024.11.06 Yokohama
5. Molecular mechanisms and physiological significance of oxidative stress-induced PI(3,4)P₂ production. The 97th Annual Meeting of the Japanese Biochemical Society 2024.11.06 Yokohama
6. Junko Sasaki, Shogo Yanai, Takehiko Sasaki. Pathophysiological functions of nuclear phospholipids. The 97th Annual Meeting of the Japanese Biochemical Society 2024.11.06 Yokohama

Department of Data Science Algorithm Design and Analysis

Professor BANNAI Hideo
Assistant Professor

DIPTARAMA HENDRIAN

(1) Outline

The department of Data Science Algorithm Design and Analysis studies algorithms, which are an essential component of data science, especially for handling large data sets. Our aim is to design algorithms and data structures that are both effective and efficient, in order to help manage and analyze various types of medical data.

(2) Research

We research is mainly on the following topics

1. Algorithms and data structures for pattern matching, pattern discovery
2. Algorithms and data structures for data compression and processing of compressed data
3. Combinatorics on words

(3) Publications

[Original Articles]

1. Aaron Hong, Marco Oliva, Dominik Köppl, Hideo Bannai, Christina Boucher, Travis Gagie. Pfp-fm: an accelerated FM-index Algorithms for Molecular Biology. 2024.12; 19(1); 15
2. Diptarama Hendrian, Takuya Takagi, Shunsuke Inenaga, Keisuke Goto, Mitsuru Funakoshi. Linear time online algorithms for constructing linear-size suffix trie Theoretical Computer Science. 2024.11; 1015; 114765:1-114765:20
3. Hideo Bannai, Mitsuru Funakoshi, Diptarama Hendrian, Myuji Matsuda, Simon Puglisi. Height-bounded Lempel-Ziv encodings Proc. European Symposium on Algorithms 2024 (ESA 2024) . 2024.09;
4. Rikuya Hamai, Kazushi Taketsugu, Yuto Nakashima, Shunsuke Inenaga, Hideo Bannai. On the Number of Non-equivalent Parameterized Squares in a String String Processing and Information Retrieval - 31st International Symposium (SPIRE 2024). 2024.09; 14899; 174-183
5. Golnaz Badkobeh, Hideo Bannai, Dominik Köppl. Bijective BWT Based Compression Schemes String Processing and Information Retrieval - 31st International Symposium (SPIRE 2024). 2024.09; 14899; 16-25
6. Davaajav Jargalsaikhan, Diptarama Hendrian, Yohei Ueki, Ryo Yoshinaka, Ayumi Shinohara. Serial and parallel algorithms for order-preserving pattern matching based on the duel-and-sweep paradigm Acta Informatica. 2024.08; 61; 415-444

7. Yuto Nakashima, Dominik Köppl, Mitsuru Funakoshi, Shunsuke Inenaga, Hideo Bannai. Edit and Alphabet-Ordering Sensitivity of Lex-Parse Proc. 49th International Symposium on Mathematical Foundations of Computer Science (MFCS 2024). 2024.08; 306; 75:1-75:15
8. Yuki Yonemoto, Yuto Nakashima, Shunsuke Inenaga, Hideo Bannai. Faster space-efficient STR-IC-LCS computation Theoretical Computer Science. 2024.07; 1003; 114607
9. Kento Iseri, Tomohiro I, Diptarama Hendrian, Dominik Köppl, Ryo Yoshinaka, Ayumi Shinohara. Breaking a Barrier in Constructing Compact Indexes for Parameterized Pattern Matching Proceedings of the 51st International Colloquium on Automata, Languages and Programming (ICALP 2024). 2024.07; 89:1-89:19
10. Hideo Bannai, Panagiotis Charalampopoulos, Jakub Radoszewski. Maintaining the Size of LZ77 on Semi-Dynamic Strings. Proc. 35th Annual Symposium on Combinatorial Pattern Matching (CPM 2024). 2024.06; 3-20
11. Diptarama Hendrian, Dominik Köppl, Ryo Yoshinaka, Ayumi Shinohara. Algorithms for Galois Words: Detection, Factorization, and Rotation Proceedings of the 35th Annual Symposium on Combinatorial Pattern Matching (CPM 2024). 2024.06; 18:1-18:16
12. Mitsuru Funakoshi, Takuya Mieno, Yuto Nakashima, Shunsuke Inenaga, Hideo Bannai, Masayuki Takeda. Computing Maximal Palindromes in Non-standard Matching Models Combinatorial Algorithms - 35th International Workshop (IWOCA 2024). 2024.06; 14764; 165-179
13. Akiyoshi Kawamoto, Tomohiro I, Dominik Koepl, Hideo Bannai. On the Hardness of Smallest RLSPs and Collage Systems 2024 Data Compression Conference (DCC 2024). 2024.03;
14. Yoshito Kawasaki, Diptarama Hendrian, Ryo Yoshinaka, Ayumi Shinohara. Query Learning of Minimal Deterministic Symbolic Finite Automata Separating Regular Languages Proceedings of the 49th International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM 2024). 2024.02; 340-354
15. Hideo Bannai, Juha Kärkkäinen, Dominik Köppl, Marcin Piatkowski. Constructing and indexing the bijective and extended Burrows-Wheeler transform INFORMATION AND COMPUTATION. 2024; 297; 105153

[Conference Activities & Talks]

1. Hideo Bannai, Mitsuru Funakoshi, Diptarama Hendrian, Myuji Matsuda, Simon J. Puglisi. Height-Bounded Lempel-Ziv Encodings. European Symposium on Algorithms (ESA) 2024 2024.09.03 Royal Holloway, University of London in Egham, United Kingdom

[Awards & Honors]

1. ESA 2024 best paper award (Track B), European Association for Theoretical Computer Science (EATCS), 2024.09

Homeostatic Medicine

Professor Fumiko Toyoshima
Associate Professor Yoshihiko Kobayashi
Assistant Professor Shinya Abe

(1) Outline

Our laboratory studies physiological organ remodelling through the life cycle. We analyse the mechanisms of tissue homeostasis at the single cell level and work on their application to regenerative medicine.

(2) Research

We analyse physiological organ remodelling that occurs during the life course, such as pregnancy and ageing. We are interested in how intercellular networks such as vascular/neural/immune/stromal/epithelial cells, in cooperation with mechanofields and humoral factors, orchestrate tissue remodelling to adapt to physiological changes in the body. We also aim to elucidate the coupled mechanism of maternal organ remodelling and fetal development, and to develop regenerative medicine technologies and therapies that exploit physiological organ remodelling mechanisms.

(3) Lectures & Courses

We train researchers who can independently conduct advanced basic medical research on biohomeostasis and regenerative medicine from the perspective of organ remodelling. Graduate students will receive direct supervision from supervisors, have regular meetings in the laboratory, and actively participate in and present their research at national and international conferences. Graduate students are given the opportunity to participate in collaborative research with researchers from other fields and companies, and are guided to become interdisciplinary researchers with broad perspectives.

(4) Publications

[Original Articles]

1. Akihiro Shimba, Shizue Tani-Ichi, Kyoko Masuda, Guangwei Cui, Satoru Munakata, Shinya Abe, Satsuki Kitano, Hitoshi Miyachi, Hiroshi Kawamoto, Koichi Ikuta. A Chimeric IL-7R α /IL-2R β Receptor Promotes the Differentiation of T Cell Progenitors into B Cells and Type 2 Innate Lymphoid Cells. *J Immunol.* 2024.10; 213(7); 952-964
2. Shizue Tani-Ichi, David Obwegs, Alice Yoshikawa, Hitomi Watanabe, Satsuki Kitano, Aki Ejima, Shinya Hatano, Hitoshi Miyachi, Guangwei Cui, Akihiro Shimba, Shinya Abe, Shohei Hori, Gen Kondoh, Sagar, Yasunobu Yoshikai, Koichi Ikuta. A RORE-dependent Intronic Enhancer in the IL-7 Receptor- α Locus Controls Glucose Metabolism via V γ 4+ γ δ T17 Cells. *J Immunol.* 2024.08; 213(3); 283-295
3. Riki Ishibashi, Ritsuko Maki, Fumiko Toyoshima. Gene targeting in adult organs using in vivo cleavable donor plasmids for CRISPR-Cas9 and CRISPR-Cas12a *Scientific Reports.* 2024.03; 14(1); 7615

1. Tighe RM, Birukova A, Malakhau Y, Kobayashi Y, Vose AT, Chandramohan V, Cyphert-Daly JM, Cumming RI, Kirshner HF, Tata PR, Ingram JL, Gunn MD, Que LG, Yu YA. Altered ontogeny and transcriptomic signatures of tissue-resident pulmonary interstitial macrophages ameliorate allergic airway hyperresponsiveness *Frontiers in Immunology*. 2024.06; 15: 1371764;

[Misc]

1. Koichi Ikuta, Takuma Asahi, Guangwei Cui, Shinya Abe, Daichi Takami. Control of the Development, Distribution, and Function of Innate-Like Lymphocytes and Innate Lymphoid Cells by the Tissue Microenvironment. *Adv Exp Med Biol*. 2024; 1444; 111-127
2. Guangwei Cui, Shinya Abe, Ryoma Kato, Koichi Ikuta. Insights into the heterogeneity of iNKT cells: tissue-resident and circulating subsets shaped by local microenvironmental cues. *Front Immunol*. 2024; 15; 1349184

[Conference Activities & Talks]

1. Fumiko Toyoshima. Maternal organ remodeling and fetal growth. 2024.07.19
2. Fumiko Toyoshima. Spatial transcriptomics and tissue stiffness during tissue remodeling. 2024.07.02
3. Maternal liver remodeling and fetal size scaling. 2024.03.23

Computational Drug Discovery and Design

Professor Ryuichiro Ishitani
Associate Professor Yoshitaka Moriwaki
Assistant Professor Naruki Yoshikawa
Part-time Lecturer Kentaro Rikimaru

(1) Outline

Our research activities are based on computational physical chemistry approaches such as molecular and atomic simulations and informatics approaches such as machine learning and structural informatics to understand biological phenomena. Our research activities are aimed at understanding biological phenomena based on information science approaches such as computational mechanics and structural informatics.

(2) Publications

[Original Articles]

1. Sergio Pablo-García, Ángel García, Gun Deniz Akkoc, Malcolm Sim, Yang Cao, Maxine Somers, Chance Hattrick, Naruki Yoshikawa, Dominik Dworschak, Han Hao, Alán Aspuru-Guzik. An affordable platform for automated synthesis and electrochemical characterization Device. 2024.10; 3(2); 100567
2. Kim, G; Lee, S; Karin, EL; Kim, H; Moriwaki, Y; Ovchinnikov, S; Steinegger, M; Mirdita, M. Easy and accurate protein structure prediction using ColabFold NATURE PROTOCOLS. 2024.10;
3. Ishitani, R; Takemoto, M; Tomii, K. Protein ligand binding site prediction using graph transformer neural network PLOS ONE. 2024.08; 19(8); e0308425
4. Rama El-khawaldeh, Abhijoy Mandal, Naruki Yoshikawa, Wenyu Zhang, Ryan Corkery, Paloma Prieto, Alán Aspuru-Guzik, Kourosh Darvish, Jason E. Hein. From eyes to cameras: Computer vision for high-throughput liquid-liquid separation Device. 2024.07; 2(7); 100404
5. Homma, M; Wakabayashi, T; Moriwaki, Y; Shiotani, N; Shigeta, T; Isobe, K; Okazawa, A; Ohta, D; Terada, T; Shimizu, K; Mizutani, M; Takikawa, H; Sugimoto, Y. Insights into stereoselective ring formation in canonical strigolactone: Identification of a dirigent domaincontaining enzyme catalyzing orobanchol synthesis PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA. 2024.06; 121(26); e2313683121
6. Martin Seifrid, Felix Strieth-Kalthoff, Mohammad Haddadnia, Tony C. Wu, Emre Alca, Leticia Bodo, Sebastian Arellano-Rubach, Naruki Yoshikawa, Marta Skreta, Rachel Keunen, Alán Aspuru-Guzik. Chempyd: an open-source python interface for Chemspeed robotic chemistry and materials platforms Digital Discovery. 2024.05; 3(7); 1319-1326
7. Fan Zhao, Yoshitaka Moriwaki, Tomohiro Noguchi, Kentaro Shimizu, Tomohisa Kuzuyama, Tohru Terada. QM/MM Study of the Catalytic Mechanism and Substrate Specificity of the Aromatic Substrate < i> C< /i> -Methyltransferase Fur6 Biochemistry. 2024.02; 63(6); 806-814

[Misc]

1. Gary Tom, Stefan P. Schmid, Sterling G. Baird, Yang Cao, Kourosh Darvish, Han Hao, Stanley Lo, Pablo-García S., Ella M. Rajaonson, Marta Skreta, Naruki Yoshikawa, Samantha Corapi, Gun Deniz Akkoc, Felix Strieth-Kalthoff, Martin Seifrid, Alán Aspuru-Guzik. Self-Driving Laboratories for Chemistry and Materials Science Chemical Reviews. 2024.08; 124(16); 9633-9732

[Conference Activities & Talks]

1. Naruki Yoshikawa. Lowering the Barriers to Laboratory Automation. Annual Meeting of MRS-J 2024.12.18 Yokohama, Kanagawa
2. Naruki Yoshikawa. Information Technology for Laboratory Automation. Interdisciplinary Quantum Roundtable 2024.12.05 Shinjuku-ku, Tokyo
3. Naruki Yoshikawa. Automation of chemistry experiments with general-purpose robot arms. Laboratory Automation Monthly Workshop 2024.05.25 Koto-ku, Tokyo
4. Naruki Yoshikawa. Automation of chemistry experiments with general-purpose robot arms. AI Robot-Driven Science Workshop 2024.02.14 Chuo-ku, Tokyo
1. New era of biology created by AlphaFold.. 2024.11.24

[Works]

1. CueMol: Molecular Visualization Framework, Software, 2000.01 - Now
2. localcolabfold, Software, GitHub, 2021.09 - Now

[Social Contribution]

1. This lab robot mixes chemicals, 2024.10.22

Department of Pathology and Anatomical Sciences

(Previous Department of Anatomy and Physiological Sciences)

Professor Osamu Hoshi

Assistant Professor Hitomi Fujishiro

Master's Programs Rin Nakao, Shine Shuku, Moeri Szuki

(Previous Department of Molecular Pathology)

Associate Professor

April 2024- Yurie Soejima

Junior Associate Professor(Career Track) -March 2024 Yurie Soejima

Assistant Professor

November 2024- Erina Iwabuchi

Master's Program Nozomi Takahashi, Miiko Nakahori, Fumina Fujii

Minano Kayamori, Sawa Nakai

(1) Outline

(Previous Department of Anatomy and Physiological Sciences)

Anatomy and physiology are the primary disciplines taught in the field of anatomy and physiological sciences. Anatomy explores the morphology and structure of the human body from the organ to cellular and molecular levels. It is the most fundamental area of medical science. Physiology investigates what kind of mechanism is needed for each structural component of the human body to function, and how such components are integrated into the whole human body. Anatomy and physiology function like two wheels of a cart for the scientific understanding of the human body. These two subjects lay down the foundation required to study advanced subjects. The teaching team is committed to providing students with education that helps them master the basics of the subjects and successfully transition to the clinic.

(Previous Department of Molecular Pathology)

Pathology is the basic science of medicine that involved both the basic and clinical stages to elucidate the essence of diseases.

Pathological techniques play a role in conducting higher quality diagnoses by various examinations and methods such as histology, cytology, immunohistochemistry, genetic analysis, and electron microscopy. We explore the essence of the diseases in both aspects of pathology and pathological techniques.

(2) Research

(Previous Department of Anatomy and Physiological Sciences)

Morphology and biological information analysis uses various microscopic techniques including electron microscopy for observing the microstructure of the living tissue, with the primary aim of gaining new scientific knowledge. Cutting-edge research has been conducted in this area, such as the development of new imaging technologies and applying atomic force microscopy to biomedicine.

(Previous Department of Molecular Pathology)

In our department, we research the following programs in order to investigate and elucidate the etiology and pathophysiology, and further to explore and develop the theoretics and methods of examination that can contribute to the diagnosis.

1. Molecular pathological study of cholangiocarcinoma and development of a novel therapy
2. Creation of digital content using cytological images, AI imaging diagnosis
3. Development of pathological diagnosis and pathological technology in developing countries
4. Visualization of the tumor microenvironment and factors associated with cancer progression in breast carcinoma

(3) Education

(Previous Department of Anatomy and Physiological Sciences)

Examination for Technology Stream: Human Anatomy Lecture, Human Anatomy Practicum, Physiology Lecture, Physiology Practicum, General Lecture, Graduate Research Project

Examination for Nursing Stream: Anatomy, Physiology

Examination for Science Stream: Morphology and Biological Information Analysis Special Lecture A, Morphology and Biological Information Analysis Experiment A, Morphology and Biological Information Analysis Special Lecture

(Previous Department of Molecular Pathology)

In the undergraduate course, students learn the etiology and pathophysiology of basic disease in Pathological Technology, lecture and practice (Medical Technology), and Pathology (Nursing science).

In graduate school, we provide education and conduct the research with the aim of exploring, developing, and systematizing the theoretics and methods of molecular pathological techniques with a higher level of pathological expertise and a broad international perspective.

(4) Lectures & Courses

(Previous Department of Anatomy and Physiological Sciences)

1) Undergraduate education

The teaching team provides students with education and research instructions that help them grow their interest to study and research in the field of medicine. The team simultaneously reviews feedback from students to improve the method of conducting lectures and practicums.

2) Graduate education

The students will be taught to formulate a hypothesis, conduct experiments to test it, discuss the results, and summarize them in a single paper.

(Previous Department of Molecular Pathology)

In order to cultivate medical professionals with interdisciplinary and international perspectives, precious humanity and high ethical values, the ability of self-problem raising and solution, life-long-thinking, the following education are providing.

1) Undergraduate education

- In the first grade of Medical Technology and Nursing science, students learn common changes in disease, the essence of pathogenesis, and their origins systematically in the general theory of Pathology/Pathological technology.
- In the second grade of Medical Technology, practical training of pathological examination is organized to contributes to the diagnosis of diseases and elucidation the pathogenesis, such as various special staining methods, immunohistochemistry, cytology, and frozen section, in addition to visual inspection of organs, basic preparation of specimens and observation.
- In the third grade of Medical Technology, pathological examination practice is carried out at the Department of Pathology in TMDU hospital as Clinical Practice.
- In the fourth grade of Medical Technology, we provide the education of the basics of research, such as how to proceed with the study and how to write the research paper as the Undergraduate Research.

2) Graduate education

- ・ In the Master' s Program, we discuss essentials of diseases, with the investigation and understanding the origin, pathophysiology, and pathological characteristics (macroscopical, histological, cytological and molecular pathological) of the disease. Furthermore, students learn the theory and method of pathological techniques (immunohistochemistry, gene analysis, image analysis, etc.), which useful for elucidation pathophysiology and diagnosis. In addition, students will acquire the skills of quality management and problem-solving in the laboratory. We participate in various research meetings and academic societies and learn about the current status and prospects of international and interdisciplinary research in the pathology/pathological techniques field. Through this course, students will complete their research as a Master' s thesis and acquire basic research ability.
- ・ In the Doctoral Program, we provide higher education, research instruction and medical English learning to acquire the independent research skills that internationally applicable.

(5) Clinical Services & Other Works

(Previous Department of Molecular Pathology)

In the Pathology department of the TMDU hospital, Soejima participates in the cytological diagnosis and supervises graduate students.

(6) Publications

[Original Articles]

1. Osamu Hoshi, Nobuyuki Takei. Ribosomal Protein Dynamics and Its Association with Actin Filaments and Local Translation in Axonal Growth Cones of Dorsal Root Ganglia Neurons. *Neurochem Res.* 2024.10; 49(10); 2774-2784
2. Erina Iwabuchi, Yasuhiro Miki, Junyao Xu, Ayako Kanai, Takanori Ishida, Hironobu Sasano, Takashi Suzuki. Zinc transporter ZnT5 is associated with epithelial mesenchymal transition via SMAD1 in breast cancer. *International journal of experimental pathology.* 2024.10; 105(5); 184-192
3. Nattamolphan Wittayavimol, Erina Iwabuchi, Prangwan Pateetin, Yasuhiro Miki, Yoshiaki Onodera, Hironobu Sasano, Viroj Boonyaratanakornkit. Progesterone receptor-Grb2 interaction is associated with better outcomes in breast cancer. *The Journal of steroid biochemistry and molecular biology.* 2024.03; 237; 106441
1. Yasuhiro Miki, Erina Iwabuchi, Chihiro Inoue, Yuto Yamazaki, Takashi Suzuki. Histopathological analysis potential for unveiling hormone signaling in endocrine-related tumors 2024.08; 4(1); e240033

[Conference Activities & Talks]

1. Hoshi O. The effect of chelating calcium ions on the structure of the chromosomes as observed by atomic force microscopy. *International Scanning Probe Microscopy Conference 2024* 2024.11.20 Sapporo, Japan
2. Miiko Nakahori, Soulideth Vilayvong, Thavisouk Hatthakone, Vimala Keobounpheng, Phetsamone Arounlangsy, Motoji Sawabe, Daisuke Komura, Shumpei Ishikawa, Yurie Soejima. Development of approaches that improves pathology laboratories in Laos. *The 70th Autumn Annual Meeting of the Japanese Society of Pathology* 2024.11.07 Tokyo
3. 岩渕英里奈, 三木康宏, 石井博子, 山崎あすみ, 石田孝宣, 鈴木貴. HER2 結合タンパクによる HER2 低発現乳癌の特徴の解明. 第 65 回日本組織細胞化学会総会・学術集会 2024.10.26
4. Yasuhiro Miki, Erina Iwabuchi, Hiroko Ishii, Kiyohsi Takagi, Muneaki Shimada, Kiyoshi Ito, Takashi Suzuki. Lipid metabolism in endometrial cancer: significance of carnitine palmitoyltransferase 2 in cancer malignant behavior. 第 83 回 日本癌学会学術総会 2024.09.21
5. Ryoki Nishiwaki, Yasuhiro Miki, Erina Iwabuchi, Asumi Yamazaki, Akiko Ebata, Takanori Ishida, Takashi Suzuki. Intratumoral cortisol and 11 β -hydroxysteroid dehydrogenase 1 expression in estrogen receptor-negative breast cancer. 第 83 回 日本癌学会学術総会 2024.09.19
6. Erina Iwabuchi, Yasuhiro Miki, Takanori Ishida, Takashi Suzuki. The clinicopathological significance of zinc transporters in breast cancer. 第 83 回 日本癌学会学術総会 2024.09.19

7. Yurie Soejima, Chiara Raggi, Mirella Pastore, Tiziano Lottini, Toshio Fukusato. Establishment and in vitro and in vivo examination of ITGB6 knockout cholangiocarcinoma cell lines. 第113回日本病理学会総会 2024.03.28 名古屋
8. Nozomi Takahashi, Yurie Soejima, Minano Kayamori, Toshio Fukusato.. Expression of PODXL2 in intrahepatic cholangiocarcinoma cell lines. The 113th Annual Meeting of the Japanese Society of Pathology 2024.03.28 名古屋
1. Yasuhiro Miki, Erina Iwabuchi, Chihiro Inoue, Yuto Yamazaki, Takashi Suzuki. Visualization of steroid hormones in breast cancer. The 99th Annual Meeting of the Japanese Society of Pathology Tohoku Niigata (JSP-TN) 2024.12.07
2. Yasuhiro Miki, Erina Iwabuchi, Asumi Yamazaki, Chihiro Inoue, Takashi Suzuki. Histocytochemistry in the diagnosis and treatment of breast cancer. The 65th Annual Meeting of the Japan Society Histochemistry and Cytochemistry 2024.10.27
3. Relationship between the concentration of steroid hormone in estrogen receptor (ER)-negative breast cancer tissues and cellular senescence. The 32nd Annual Meeting of the Japanese Breast Cancer Society 2024.07.12
4. Erina Iwabuchi, Yasuhiro Miki, Hiroko Ishii, Minoru Miyashita, Takanori Ishida, Takashi Suzuki. Significance of HER2-related factors in HER2-low breast cancer. The 32nd Annual Meeting of the Japanese Breast Cancer Society 2024.07.11

Hematology and Biophysical Systems Analysis

Professor ITO Minami
Associate Professor Miwako Nishio
Assistant Professor HONMA Satoru
Researcher YOSHIMORI Mayumi
Adjunct Lecturer Arai Ayako
Adjunct Lecturer SAEKI Kumiko
Adjunct Lecturer IMADOME Ken-ichi
Adjunct Lecturer NAKAYAMA Yoichi

(1) Outline

A) Biological measurements tell a lot about functions of the human bodies. Norbert Wiener, known as a founder of cybernetics, indicated that our body is a kind of control mechanism. Thus, our goal is to understand mechanisms underlying our complex biological systems and to control them for improving our life. Here, we have explored the visual information processing underlying contour integration and material perception, by combining behavioral studies indicating animals' percept, electrophysiological studies at the level of a single unit, and computational studies with mathematical models. On the other hand, we have developed a temperature control system in hypothermia based on a heat conduction model of the brain.

B) For undergraduate education, we are in charge of Clinical Laboratory Hematology, Hematology, Clinical Practice, Clinical clerkship (School of Medicine), Clinical Hematology (Track of Nursing Science). We provide lectures on hematopoiesis, mechanisms of coagulation and fibrinolysis, pathology and clinical features of main hematological disorders as well as fundamental laboratory practices.

For graduate education, we focus on clarifying molecular mechanisms of development of hematological disorders. We apply the results to develop new diagnostic procedures and treatment strategies. Our current research subject is EB virus-positive T- and NK-cell neoplasms.

(2) Research

A)1) Mathematical models for context dependent visual information processing, 2) Neural mechanisms underlying context dependent visual information processing

Our visual perception mechanism is well flexible to reveal stable recognition of the external information even under various environments. Furthermore, it realizes dynamics given by the surrounding situation, past experiences and learning processes. Our goal is to reveal the mechanism underlying such flexible visual information processing, by studying the process of integrating fragmentary information into the contour of objects or the process of material representation on an object surface, in middle stages of the cerebral visual cortex. Especially, by performing behavioral study with a method of psychophysics and electrophysiological recordings mainly from a single cell in an animal, we may reveal causal relationships between them. So far, we have trained three Japanese monkeys to conduct our material discrimination tasks. Five materials (metal, fabric, gel sheet, wood bark, fur) were used as reference stimuli, which represent categories of material discrimination. Then, the second task was introduced, combining haptic inspection of material cues and visual inspection of correct response levers. Finally, we investigated animals' categorization of 96 new material samples. These

results were compared with human subjects who conducted similar material discrimination tasks.

3) Developing methods to monitor vital information with the aid of mathematical models

Our goal is to develop new devices to control functions in living bodies, which can be introduced into medical treatment or rehabilitation. Toward this end, we are studying comprehensive methods to understand the interactions among multiple biological functions and the mathematical methods to express the non-linearity, individuality, temporal changes and their environmental conditions of biological phenomena, and an adaptive control system to overcome such complexity of human mechanisms. So, we have developed a brain temperature control system for the brain hypothermia. The heat conduction in the head tissue was reproduced using a physical model, and the validity of the temperature control system using different control methods was compared and verified by simulation. This year, we have introduced the predictive control methods using AI.

B) Our research goals:

1) Clarifying pathogenesis of hematopoietic malignancies and innovation of a new treatment strategies

2) Clarifying mechanisms of EB virus-positive T- and NK-cell neoplasms and developing new treatment strategies

3) Creating new methods for diagnosing hematopoietic tumors

4) Development of new treatment methods using regenerative medicine technology

5) Functional Analysis of human iPS cells derived Brown Adipocytes

We collaborate on several researches with doctors of Deps. Hematology, Pediatrics, Neurology, Molecular Virology, Center for Stem Cell and Regenerative Medicine, Ophthalmology, Dermatology, Department of Comprehensive Pathology, and Diagnostic Radiology on-campus in TMDU. We are also doing research with members of National Center for Child Health and Development, Osaka Women's and Children's Hospital. We collaborate with several companies as well.

(3) Education

A)

1) Undergraduate school: A face-to-face lectures and practices were carried out. Clinical Laboratory Management; students learn about the basic management methods in the medical laboratory sciences. Medical Measurement System and Information, (1) students learn the frequency-filters and amplification systems of electrical signals, in order to understand the principle of the physiological measurements and to conduct them safely. Medical Measurement, System and Information (2); students learn about basic concepts of (1) informatics, (2) computer and network, information security, and (3) the hospital information systems. In practice, students learn some of logical ways to build up some programming rules and programming tools to achieve some calculation programs in C language. Principles and Practice of Medical Information Processing (1)&(2); students learn statistical tests to compare data with a spreadsheet software, the evidence based medicine (EBM), database, experimental designs for biological experiments, the regression analysis and some recent topics covering the multivariate analysis and the Bayesian inference.

2) Graduate school: Students learn the way to collect necessary information and to solve their problems to advance their own research projects. Through intensive reading of original articles and text books in English, students learn basic ideas of the central nervous system, underlying mechanisms, and the way of logical thinking. Health care informatics; this is a joint course with Nursing Innovation Science Track. Invited lecturers give omnibus-style lectures on a wide range of topics, following group discussion. Biomedical Laboratory Sciences Seminar: 4 joint seminar with all members of the biomedical laboratory science track. In a part of special lectures, we discussed the system neuroscience, visual information processing in the brain, and relationships with the artificial intelligence.

B)

1) Undergraduate Education: We are in charge of Clinical Laboratory Hematology, Clinical Hematology, clinical clerkship (School of Medicine), Clinical Hematology (Track of Nursing Science). We provide lectures on hematopoiesis, hematological disorders, mechanism of coagulation and fibrinolysis, hematopoietic malignancies as well as fundamental laboratory practices. Students are also involved in Undergraduate Research, which objective is to learn basis of research including how to plan and carry out research activities, how to write theses, and how to give an academic presentation. They also experience as trainees for Clinical Practice for hematological examination in cooperation with Clinical Laboratory at Medical Hospital. These lectures and practices are conducted in collaboration with the members of Departments of Hematology.

2)Graduate Education: For graduate education, we focus on clarifying molecular mechanisms of development of hematological neoplasms. We apply the results to develop new diagnostic procedures and treatment strategies for these disorders. Our current research subject is EB virus-positive T- and NK-cell neoplasms. We instruct students to summarize what they investigated and complete English manuscripts for publication.

Detailed educational contents are shown below:

1. Investigating and understanding pathogenesis and pathology of hematopoietic disorders, especially neoplasms
2. Acquiring skills for cellular, molecular and genetic examination that play significant roles for diagnosing and clarifying cause and state of diseases. These molecular techniques are useful not only for clinical situation, but also for elucidating mechanisms of developing diseases
3. Acquiring current information for diagnosis and treatment of hematological diseases
4. Publishing papers on hematological laboratory testing and clinical hematology on main international academic journals and present them at international conferences

(4) Lectures & Courses

A)Rapid progress of the medical technology change the role of a medical technologist. Introduction of the systematic management system, IT technology, auto measurement devices, new measurement methods, new statistical analysis, demand diverse knowledge across a wide range of fields from medicine/life sciences to engineering.

- 1) Undergraduate school: Not only acquiring practical techniques necessary as a clinical laboratory technician, students learn the background, principle and mechanism of biological measurement. They also learn about the advantages and disadvantages of the current measurement technologies. Our purpose is to train new type laboratory technicians with a broad perspective suitable for the healthcare and medical field, a high degree of expertise and versatility, who can be a bridge between engineering and life sciences.
- 2) Graduate school: Our purpose is to train autonomous researchers with a broad perspective suitable for the life science and medical science who are capable of working in an international and interdisciplinary environment. Students learn the way of preparing, organizing and conducting research projects. We also encourage students to use English, which is necessary for activities in international community.

B)Cultivating interdisciplinary- and internationally-minded medical staffs with rich humanity, a strong sense of ethics, and ability to suggest and solve unmet medical issues.

(5) Clinical Services & Other Works

B)Research: Our research group is also a principal investigator of Japan Agency for Medical Research and Development (AMED) study group ‘the Investigator-initiated clinical research of a JAK1/2 inhibitor ruxolitinib for chronic active Epstein-Barr virus infection’ . We are supporting patients with chronic active Epstein-Barr virus infection (CAEBV) through CAEBV patient’ s association (SHAKE). <http://caebv.com/>

(6) Clinical Performances

B)We are the only group that specialize EBV-positive T- or NK-cell neoplasms especially chronic active EBV infection. We accept referral patients with CAEBV from all over Japan and abroad. We analyze the blood sample in CAEBV patients.

(7) Publications

[Original Articles]

1. Mizuno M, Kimbara S, Ichise H, Ishikawa N, Nishihara Y, Nishio M, Sekiya I.. Cleaning methods for biosafety cabinet to eliminate residual mycoplasmas, viruses, and endotoxins after changeover. *Regen Ther.* 2024.12; 3(28); 73-80
2. Mitsuru Mizuno, Kouichirou Yori, Toshikazu Takeuchi, Takaaki Yamamoto, Natsumi Ishikawa, Megumi Kobayashi, Miwako Nishio, Ichiro Sekiya. Evaluation of cleaning methods for change-over after the processing of cell products to avoid cross-contamination risk. *Regen Ther.* 2024.06; 26; 489-495
3. Miwako Nishio, Minoru Saito, Mayumi Yoshimori, Yuki Kumaki, Ayaka Ohashi, Eri Susaki, Ichiro Yonese, Megumi Sawada, Ayako Arai. Clinical significance of anti-Epstein-Barr virus antibodies in systemic chronic active Epstein-Barr virus disease. *Front Microbiol.* 2024.01; 14; 1320292

[Conference Activities & Talks]

1. M. NISHIO, M. YOSHIMORI, K. YOSHIOKA, Y. MAEKAWA, R. HARA, T. YOKOTA, R. NABESHIMA, A. ARAI. Functional Analysis of EBV-Derived MicroRNAs in Systemic Chronic Active EBV Disease Using Novel Antisense Oligonucleotides. *ASH Annual meeting* 2024.12.07
2. 吉森 真由美, 西尾 美和子, 吉岡 耕太郎, 前川 友璃, 原 倫太郎, 横田 隆徳, 鍋島 竜介, 新井 文子. EBV 由来マイクロ RNA を標的とした核酸医薬の EBV 関連 T/NK リンパ増殖性疾患に対する効果. *日本血液学会学術集会* 2024.10.12
3. 上村 悠, 西尾 美和子, 下牧 瑠那, 吉森 真由美, 大橋 彩香, 伏屋 愛加, 宮部 斉重, 新井 文子. 全身性慢性活動性 EB ウイルス病の診断と治療効果判定における CXCL10 の意義. *日本血液学会学術集会* 2024.10.12
4. 西尾 美和子, 緒方 勇亮, 吉森 真由美, 伏屋 愛加, 大橋 彩香, 須田 互, 新井 文子. 慢性活動性 EB ウイルス病 (sCAEBV) における腸内細菌叢のメタゲノム解析. *日本血液学会学術集会* 2024.10.12
5. 福田 笑夏, 吉森 真由美, 南川 愛莉, 水谷 咲, 新井 文子, 西尾 美和子. 慢性活動性 EB ウイルス病患者由来 iPS 細胞から分化誘導した単球の特性解析. *日本血液学会学術集会* 2024.10.12
6. Minami Ito, Hitomi Misawa, Moe Yoshida, Mizushima Noa. Long term stability and changes in material perception associating haptic and visual inspections in non-human primates.. 第 47 回日本神経科学大会、第 8 回アジアオセアニア神経科学連合コンgres 2024.07.24 福岡
7. Mayumi Yoshimori, Miwako Nishio, Kotaro Yoshioka, Yuri Maekawa, Rintaro Hara, Takanori Yokota, Ryusuke Nabeshima, Ayako Arai. The Efficacy of Oligonucleotide Therapeutics on EBV-positive T- or NK-cell Lymphoproliferative Diseases Targeting EBV derived microRNAs. *日本核酸医薬学会* 2024.07.17
8. Miwako Nishio, Airi Minamikawa, Mayumi Yoshimori, Emika Fukuda, Saki Mizutani, Ayaka Ohashi, Ayako Arai. Elucidating the Pathogenic Mechanisms of Angiopathy in Systemic Chronic Active Epstein-Barr Virus Disease through Induced Pluripotent Stem Cell-Derived Endothelial Cells. *The International Symposium on EBV & KSHV* 2024.07.01
9. Hroshi Yasui, Aika Fuseya, Miwako Nishio, Masahide Yamamoto, Yu Uemura, Keisuke Tanaka, Yoshihiro Umezawa, Kumi Oshima, Fumiaki Sano, Takehiko Mori, Masanao Sasaki, Akihiro Hirakawa, Ryuji Koike, Ken-ichi Imadome, Shoichi Ohga, Ayako Arai. Clinical Features and Prognostic Factors of Adult Systemic Chronic Active Epstein-Barr Virus Disease: A Retrospective Analysis using Japanese Registry Data. *The International Symposium on EBV & KSHV* 2024.07.01
10. Aika Fuseya, Miwako Nishio, Masahide Yamamoto, Yu Uemura, Keisuke Tanaka, Yoshihiro Umezawa, Kumi Oshima, Fumiaki Sano, Takehiko Mori, Masanao Sasaki, Akihiro Hirakawa, Ryuji Koike, Hiroshi Yasui, Ken-ichi Imadome, Shoichi Ohga, Ayako Arai. Clinical Features and Prognostic Factors of Adult Systemic Chronic Active Epstein-Barr Virus Disease: A Retrospective Analysis Using Japanese Registry Data. *The European Hematology Association* 2024.06.14
1. Satoru HONMA. Analysis of student behavior in relation to the mathematical components in medical engineering, Technical Meeting on Frontiers in Education. *Technical Meeting on Frontiers in Education* 2024.03.29

Clinical Information and Applied Sciences

Professor:	Yuki Sumi, MD, PHD.
Associate Professor:	Miho Akaza, MD, PHD.
Assistant Professor:	Tomoki Kawahara, MD, PHD.
Part-time:	Keiko Hara, MD, PHD, Sayaka Aritake, MT, PHD, Mina Ako, MT, PHD, Osamu Takahashi, MT, PHD, Yoko Soroida, MT, PHD, Jyunji Endo, MD, PHD, Yuri Ichikawa, MT, PHD, Yoshiaki Adachi, PHD, Yuko Kato, MT, PHD, Hiramitsu Shiro, MD, PHD.
Doctoral:	Terutaka Sonohara.
Master's:	Yukina Higasiguchi, Yusuke Komabashiri, Sakura Shimooki, Risa Okada, Kouki Kawamura, Hiyori Tarui.
Students:	Natsumi Iso, Chihiro Kami, Hana Sasaki, Asuka Suzuki, Rena Nakagome, Chiharu Hakkaku, Aoki Riina, Takano Hinako, Takemura Azuki, Baba Riona, Miller Lion Robert, Mori Arisa.

(1) Outline

We research and educate the physiological function testing which measure and analyze the workings of the living body as an integrated system from the molecular and cellular level to the organ level, clinical medicine, and public health as a human population.

The official name is "Department of Clinical information Applied Sciences, Division of Biomedical Sciences and engineering, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo". Previously, research and education on respiratory, cardiovascular, and nerves were conducted by the name of "Biofunctional Informatics, Tokyo Medical and Dental University". At the time of reorganization of Tokyo Medical and Dental University in 2018, cardiovascular division separated, and we moved from "Graduate School of Health Care Sciences" to "Graduate School of Medical and Dental Sciences" and were renamed to "Respiratory and Nervous System Science". In 2023 there was an organizational reform in the track of Medical Technology, and we took charge of the field of public health. We were renamed to the "Department of Clinical information Applied Sciences". In October 2024, Tokyo Medical and Dental University and Tokyo Institute of Technology merged to form Institute of Science Tokyo.

(2) Research

Each research is conducted independently, and each staff is the principal investigator. We have expanded on its original specialized fields of respiratory medicine, neurology, and pediatrics. In the respiratory field, Sumi is researching the clinical significance of new pulmonary function tests, the mechanism and endotype classification of bronchial asthma, gene therapy for lung diseases, image diagnosis using AI, and clinical diagnosis using AI. Akaza is conducting electroencephalogram (EEG) research and epilepsy research in the central nervous system, and developing new peripheral nerve activity measuring methods in the peripheral nerve. Kawahara conducts researches in the field of public health.

(3) Education

In education, we provide education in general clinical medicine and acquire theory and skills through lectures and practical training in physiological function tests (lung function, EEG, peripheral nerve tests, various sonography, etc.). Undergraduate and graduate research educations are conducted in each specialized field. Sumi also teaches medical students.

1) Undergraduate student education

In the 1st year, a lectures was given on Advanced Laboratory Sciences. Second-year students have the fundamentals of clinical medicine are taught in the Clinical Medicine 1 lecture. In the second semester of the second year and the first semester of the third year, lectures and practical training in Clinical Physiological Laboratory Science 1 cover the basics of clinical physiological testing, including electroencephalography, pulmonary function tests, electrocardiography, and ultrasonic examination, as well as the theory and practice of basic clinical skills such as collecting specimens and intravenous catheterization, which are newly required of medical technologists in task shifts. In the second semester of the second year, students learn more advanced physiological function tests such as neurological examination, respiratory examination, cardiovascular system tests, various ultrasonography, image analysis, thermography, balance function tests, and fundus examination, as well as clinical examination techniques such as vital signs, and emergency care. In the second half of the third and fourth years, students conduct their graduation research. In the second half of the fourth year, students undergo on-site training. During the on-site training, they learn practical pulmonary function tests including arterial blood gas analysis interpretation, electroencephalography, and evoked potential testing.

Sumi also provides medical education to medical students and residents. He teaches MIC (Medical Introductory Course) lecture to first-year medical students, respiratory physiology to second-year students, chest imaging to third-year students, bronchial anatomy for chest X-ray diagnosis to fourth-year students, and CC (Clinical Clerkship) including lecture to small group medical fifth-year students about abnormal findings of respiratory disease. Evening Seminar lectures are given to 6th year students and residents. Furthermore, he participates in AI education for all students. In the "AI Strategy 2019," the Ministry of Education, Culture, Sports, Science and Technology (MEXT) set the target year of 2025 as 1) all university students, regardless of their background, should acquire elementary level competency and 2) university students should acquire advanced competency in their own specialized fields. The Tokyo Medical and Dental university aimed to develop a model curriculum and teaching tools for mathematics, Data Science, and Artificial Intelligence (AI) education to all medical and dental schools in Japan. In the Tokyo Medical and Dental university, we have newly established "Introduction to AI and Big Data with Medicine" starting in FY2021 as a university-wide common course. From FY2023 "Applied AI and Big Data with Medicine" was prepared for all medical and dental students as the required courses. In addition, "AI Practical Exercise" was offered as an elective course.

2) Graduate education

In the Master's course, we are in charge of "Medical Technology II", "Basic Human Pathology for Graduate Students", "Seminar of Clinical information Applied Sciences", "Practice of Clinical information Applied Sciences", "Clinical information Applied Sciences Analysis Research for Thesis", "Seminar of Respiratory and Nervous System Science Analysis", "Practice of Respiratory and Nervous System Science", and "Respiratory and Nervous System Science Analysis Research for Thesis". The purpose of "Medical Technology II" is to deepen the understanding of clinical tests currently being conducted in the medical field and to develop the ability to consider future research issues. "Basic Human Pathology for Graduate Students" is the course to study diseases for university graduates who did not specialize in medicine. In each lecture of "Clinical information Applied Sciences" and "Respiratory and Nervous Systems Science", we educate new knowledge and techniques, clarify areas that have already been elucidated and areas that do not, and acquire scientific research attitudes to clarify areas that are still unknown.

In the Doctoral course, we are in charge of "Clinical Reasoning", "Clinical information Applied Sciences", and "Clinical information Applied Sciences Lab". In the "Clinical Reasoning", we aim to cultivate the clinical laboratory technologists who can understand pathological conditions from examination data. In the "Clinical information Applied Sciences", we aim to teach the theory and techniques to research. In particular, students learn the cutting edge medical knowledge in the research area, the methodology to analyze.

(4) Lectures & Courses

What is important in education is to motivate students to learn. Especially in the lower grades of undergraduate studies, many students do not understand how basic learning is useful, and are not motivated to learn, despite its importance. For this reason, we are trying to increase the amount of practical training and early exposure so that students can understand how it is needed in clinical settings. They are thirsty for learning and aim for education like water seeping into dry sand.

In particular, as the physiological function testing is a clinical front line that is conducted in direct contact with patients, we educate from the standpoint of clinical medicine. The goal is that students learn theories and techniques of clinical physiological examinations in nerves, respiration, cardiovascular, digestive organs, and diagnostic imaging, and be able to apply them to researches. Physiological function testing involves not only device operation, safety measures, recording of biological phenomena, data organization / analysis techniques and knowledge, but also testing directly in contact with humans. Therefore, medical knowledge about diseases, medical ethics and communication skills are also required. It is also important to cultivate the ability to quickly recognize and take appropriate measures for test results that require emergency treatment for patient. In addition to these, we are also educating students on how to respond to sudden changes in patients during testing.

(5) Clinical Services & Other Works

Dr. Sumi is a Respiratory specialist and Respiratory instructor, and Allergy specialist certified by the academic society. He treats patients at respiratory medicine department in the hospital. He also takes care of the study groups of doctors and takes part in as discussant. He gave lecture at Evening seminar for medical interns, at CC (Clinical Clerkship) in respiratory medicine for undergraduate 5th grade medical students, at PCC (Preparation for Clinical Clerkship) in respiratory internal medicine for 4th year undergraduate medical students, at Respiratory Internal medicine for 3rd year undergraduate medical students, at Respiratory physiology for 2nd year undergraduate medical students, and at MIC (Medical Introductory Course) for 1st year undergraduate medical students.

The neurologist, Dr. Akaza, is familiar with peripheral neuropathy in addition to neurological diseases in general, and plays a central role in performing peripheral nerve tests and evaluating results in medical hospitals.

Dr. Kawahara is conducting various surveys to collect public health research data.

Dr. Hara is the psychiatrist, Mental health designated physician, specialist / instructor of the Japan Epilepsy Society, certified by the Japanese Society of Clinical Neurophysiology (EEG), and Delegate of the Japanese Society of Clinical Neurophysiology, Councilor of the Japan Pharmaco-EEG Society, Board secretary of the Japan Epilepsy Society. She examines many patients with epilepsy in the outpatient department including second opinions. In cooperation with the Department of Neurosurgery, she attends weekly EEG conferences, monthly EEG and epilepsy lectures.

(6) Clinical Performances

Dr. Sumi is a specialist in general internal medicine from the Japanese Society of Internal Medicine, an advisor and specialist in respiratory medicine from the Japanese Society of Respiratory Medicine, and a specialist in allergy from the Japanese Society of Allergy.

Dr. Akaza is a specialist in peripheral nerve function testing and performs most tests for neurological patients. She is conducting clinical research on peripheral neuropathy in diabetic patients.

Dr. Hara treats many patients with epilepsy including second opinions. She specializes in the treatment of pregnant women with epilepsy. In cooperation with obstetrics and gynecology doctors, patients with epilepsy are referred to her consultant before pregnancy since 2013.

(7) Publications

[Original Articles]

1. Tomoki Kawahara, Satomi Kato Doi, Aya Isumi, Yusuke Matsuyama, Yukako Tani, Takeo Fujiwara. Impact of COVID-19 pandemic on children overweight in Japan in 2020. *Pediatr Obes.* 2024.08; 19(8); e13128
2. Kawahara T, Isumi A, Ochi M, Doi SK, Surkan PJ, Fujiwara T*. Association between maternal dissatisfaction with oneself at birth and shaking and smothering toward the offspring up to 18 months old. *Child Abuse Negl.* 2024.07; 153; 106816
3. Tani Y, Kawahara T, Sugihara G, Machida M, Amagasa S, Murayama H, Inoue S, Fujiwara T, Shobugawa Y. Childhood Book Availability Helps to Preserve Cognitive Function in Older Adults With Low Education: Results From the NEIGE Study. *The journals of gerontology. Series B, Psychological sciences and social sciences.* 2024.06; 79(6);
4. Kawahara T, Sumi Y. GPT-4/4V's performance on the Japanese National Medical Licensing Examination. *Medical teacher.* 2024.03; 47(3); 450-457
5. Goto Y, Nagamine Y, Hanafusa M, Kawahara T, Nawa N, Tateishi U, Ueki Y, Miyamae S, Wakabayashi K, Nosaka N, Miyazaki Y, Tohda S, Fujiwara T. Association of excess visceral fat and severe illness in hospitalized COVID-19 patients in Japan: a retrospective cohort study. *International journal of obesity (2005).* 2024.01; 48(5); 674-682
6. Okubo Luna, Takeda Naoya, Suzuki Yoshihiro, Nakashima Kuniya, Asano Motoyo, Koike Fumika, Ide Akane, Sumi Yuki. The characteristic serum cytokine profiles in asthma exacerbation. *Journal of Medical and Dental Sciences.* 2024; 71; 27-35
7. Tomari Kouki, Taketomi Hirohisa, Magota Miyuki, Kawahara Tomoki, Shimabukuro Wataru, Nakanishi Koichi. Features of pediatric idiopathic nephrotic syndrome in the Sakishima Islands, Japan: An epidemiological study(タイトル和訳中) *琉球医学会誌.* 2024; 43(1-4); 11-17

[Conference Activities & Talks]

1. Evaluation of motor unit electrical current activity using magnetic field measurement. 第52回日本臨床神経生理学会学術大会 2024.10.24
1. Yukina Higashiguchi. AI Answer Ability in Various Medical National Qualification Examinations. The 56th Annual Meeting of the Japan Society for Medical Education 2024.08.09 Teikyo University Itabashi Campus
2. Maina Oshige, Yuki Sumi. Website construction to predict final outcomes of COVID-19 patients using deep learning. The 6th Annual Meeting of the Japanese Association for Medical Artificial Intelligence 2024.05.15 Okaya Nagoya Hall

Department of Clinical and Diagnostic Laboratory Science

Professor

Sei Kakinuma, M.D., Ph.D.

Associate Professor

Yu Matsuzawa, M.D., Ph.D.

Assistant Professor

Junji Yamaguchi, M.D., Ph.D.

Graduate Students, Doctoral Program.

Jun Tsuchiya, M.D., Taro Shimizu, M.D., Keiya Watakabe, M.D.,

Tomohiro Mochida, M.D., Kento Inada, M.D.

(in collaboration with Department of Gastroenterology and Hepatology, Medical and Dental Science Track)

Graduate Students, Master Program.

Rion Kamimae (~2024/03), Shusuke Sanada, Kyoko Chino,

Minori Kurata (2024/04~), Ayaka Suga (2024/04~), Kaho Yamada (2024/04~) .

Undergraduate Students.

4th grade, Moeka Ikoma, Kanau Oshima, Ryutaro Kobayashi, Nanako Seki, Miku Takizawa, Moe Toshioka.

3rd grade, Akari Kotaki, Ryuto Teraoka, Riko Nakajima, Fuka Hagimori, Marika Yoshida, Nichika Yoshimura

(1) Outline

Approximately 40,000 people die from chronic liver diseases, including liver cancer, each year in Japan. Liver transplantation remains the only effective treatment for patients with end-stage liver diseases. However, due to a severe shortage of donors for allogeneic liver transplantation, alternative therapies are needed.

Preventing hepatocarcinogenesis and hepatic fibrosis is also crucial for patients with chronic liver disease, and developing effective treatments for progressive liver diseases is essential. Additionally, more than 40,000 people die from biliary and pancreatic cancer each year in Japan. Detecting these diseases at early stages and establishing standard therapeutic strategies for them remains challenging. Addressing these issues, along with those of chronic liver diseases, is urgently needed.

We believe that an essential role of the departments in the Graduate School in the Division of Biomedical Laboratory Sciences at Science Tokyo is to provide a foundation for innovative medical examinations and to establish next-generation treatments. To achieve our mission, both basic research guided by clinical concepts and the development of novel laboratory and diagnostic strategies based on basic research are required.

Our department was founded in 2020 during the COVID-19 pandemic, adhering to these principles. Our research projects focus on hepatobiliary diseases (Dr. Kakinuma), intestinal diseases (Dr. Matsuzawa), and cardiovascular diseases (Dr. Yamaguchi). The goal of our education is to develop students into well-rounded scientists and leading experts in the fields of pathophysiology and medical technology for these diseases.

(2) Research

Our research principle is to conduct studies inspired by various clinical problems and to develop innovative diagnostic and therapeutic procedures.

Prof. Kakinuma focuses on basic studies of novel disease models using human iPS cells to elucidate pathophysiology of hepatobiliary diseases. We also analyze cell-to-cell interactions that regulate the development and progression of hepatobiliary diseases. Additionally, we focus on other projects described below and promote them using molecular and cellular biological approaches. We collaborate with many departments in Science Tokyo, and several departments in other universities in Japan.

Dr. Matsuzawa aims to elucidate the pathophysiology of inflammatory bowel diseases, including Crohn's disease, by focusing on the molecular pathogenesis of Crohn's disease-related genes and other factors, and to develop therapeutic target molecules. Dr. Matsuzawa investigates the molecular mechanisms regulating intestinal immunity and cell death of intestinal cells through the interaction between immune cells and epithelial cells, using molecular and cell biological approaches, partly supported by the AMED-PRIME project.

Dr. Yamaguchi collaborates with the Department of Cardiovascular Medicine and conducts research in basic and clinical cardiology. We are currently developing novel absorbable biomaterials for ischemic diseases and studying the role of extracellular vesicles in myocardial remodeling. We also research low- and non-invasive health monitoring devices, including the screening of sleep apnea syndrome (SAS) with an infrared camera and the detection of early-stage heart failure and arrhythmia using a single-lead electrocardiogram. Our cardiovascular research spans broad perspectives, aiming for clinical application in the future.

Research Projects:

1. Development of novel disease models using human iPS cells to elucidate pathophysiology.
2. Analysis of cell-to-cell interactions regulating the development and progression of hepatobiliary, intestinal, and cardiovascular diseases.
3. Development of hepatobiliary and intestinal disease models using organoid culture systems.
4. Investigation of molecular mechanisms regulating the homeostasis of stem/progenitor cells in gastrointestinal, hepatobiliary, and pancreatic tissues.
5. Research on molecular mechanisms regulating liver regeneration and hepatic fibrosis.
6. Study of molecular pathogenesis in inflammatory bowel disease, focusing on Paneth cells.
7. Analysis of molecular mechanisms regulating cell death in gastrointestinal cells.
8. Examination of cell communication and signaling in the process of myocardial remodeling.
9. Development of novel treatments for cardiac and limb ischemia using biocompatible and bioabsorbable materials.
10. Development of low- and non-invasive health monitoring devices.

(3) Education

Undergraduate Students:

We teach courses in Clinical and Physiological Laboratory, Clinical Pathophysiology, and Medical Genetics/Human Genome Science for undergraduate medical technologist students at the School of Medicine, Science Tokyo. We also provide instruction on basic techniques and scientific thinking necessary for advancing scientific research among undergraduate students at Science Tokyo.

Graduate Students:

Our educational goal is to develop students into well-rounded scientists and leading experts in hepato-biliary or cardiac diseases and medical technology.

The primary goal of our graduate education is to train highly educated and experienced clinical and technological scientists in the fields of hepato-biliary, intestinal, and cardiovascular diseases. We aim to produce clinical and technological scientists who think from a broad perspective and to nurture the next generation of scientific leaders.

(4) Lectures & Courses**Undergraduate Students:**

- # Clinical and Physiological Laboratory Science
- # Clinical Medicine
- # Advanced physiological function
- # Analysis of Electrocardiogram
- # Medical Genetics and Human Genome Science

Graduate Students:

- # Clinical and Diagnostic Laboratory Science

Our lectures and courses are conducted in collaboration with the Department of Respiratory and Nervous System Science for undergraduate courses, and with the Department of Gastroenterology and Hepatology and the Department of Cardiovascular Medicine for graduate courses. We also provide education to residents and medical technologists at Science Tokyo Hospital.

- #1. Students should master the strategy of research for molecular and cellular biology to reveal the pathophysiology of Hepato-Biliary, Intestinal, and Cardiovascular diseases.
- #2. Students should master the theory and techniques about physiological laboratory and diagnostic imaging in the field of Hepato-Biliary, Intestinal, and Cardiovascular diseases.
- #3. Students should learn about the research strategy to develop a novel diagnostic and therapeutic strategies.

(5) Clinical Services & Other Works**Prof. Kakinuma:**

We pursue the development of highly advanced technologies, including novel procedures, for the sophisticated diagnosis and treatment of liver, biliary duct, and pancreatic diseases. We also conduct numerous multicenter clinical studies in collaboration with the Department of Gastroenterology and Hepatology at Science Tokyo Hospital. We participate in five research projects for the treatment and eradication of hepatitis virus, funded by the Japan Agency for Medical Research and Development (AMED). We have published numerous studies in peer-reviewed international journals and presented our recent work at various international and domestic conferences.

For the treatment of patients with liver, biliary duct, and pancreatic diseases at Science Tokyo Hospital, we contribute to the management of activities and academic meetings held by the American Association for the Study of Liver Disease, the Japanese Society of Gastroenterology (Councilor), the Japanese Society of Hepatology (Councilor), and the Japanese Society for the Research of Hepatic Cells.

Dr. Matsuzawa:

Dr. Matsuzawa contributes to academic meetings held by the Japanese Society of Immunology and the Japanese Society of Clinical Immunology, and assists in the management of these scientific meetings and journals.

Dr. Yamaguchi:

Dr. Yamaguchi contributes to academic meetings held by the American Heart Association and the Japanese Circulation Society, and assists in the management of these scientific meetings and journals.

(6) Clinical Performances**Prof. Kakinuma:**

For the treatment of patients with liver, biliary duct, and pancreatic diseases at the Medical Hospital of TMDU, we collaborate with the Department of Gastroenterology and Hepatology at TMDU. We have established an outpatient section specialized in chronic hepatitis, cirrhosis, and hepatocellular carcinoma (HCC). We are conducting several multicenter studies on hepatitis and liver cancer, including one named the “Ochyanomizu Liver Conference.” More than 2,000 patients with viral hepatitis have been enrolled in these studies, which have clarified the clinical factors that accurately predict therapeutic prognosis and the risk of developing HCC.

We are developing screening programs for the early detection of HCC in patients with chronic hepatitis after virus eradication, utilizing non-invasive elastography, novel serum biomarkers, and dynamic contrast-enhanced ultrasonography.

Dr. Yamaguchi:

Dr. Yamaguchi studies low- and non-invasive health monitoring devices, including the screening of sleep apnea syndrome (SAS) with an infrared camera and the detection of early-stage heart failure and arrhythmia using a single-lead electrocardiogram.

(7) Publications

[Original Articles]

1. Miyako Murakawa, Mina Nakagawa, Hisaaki Nishimura, Shun Kaneko, Masato Miyoshi, Fukiko Kawai-Kitahata, Sayuri Nitta, Jun Tsuchiya, Taro Shimizu, Keiya Watakabe, Tomohiro Mochida, Kento Inada, Yasuhiro Iizuka, Hideki Sakai, Yuki Sakurai, Ayako Sato, Seishin Azuma, Takahiro Kawamura, Chiaki Maeyashiki, Masayuki Kurosaki, Fumihiko Kusano, Hideki Watanabe, Hitoshi Kurata, Yuko Karakama, Takeo Fujiwara, Yuki Nagata, Toshihiro Tanaka, Sei Kakinuma, Ryuichi Okamoto, Yasuhiro Asahina. High serum gamma-glutamyltransferase level after hepatitis C virus elimination is a risk factor for the development of hepatocellular carcinoma. *Hepatol Res.* 2024.12; 54(12); 1128-1138
2. Yamaguchi J, Takigawa M, Goya M, Iwakawa H, Kawamura I, Negishi M, Yamamoto T, Ikenouchi T, Goto K, Shigeta T, Nishimura T, Takamiya T, Tao S, Suzuki S, Iwanaga T, Miyazaki S, Sasano T. Feasibility and safety assessment of RF double applications in very high power and short duration ablation. *Heart rhythm.* 2024.10;
3. Watakabe K, Miyoshi M, Kakinuma S, Sato A, Tsuchiya J, Shimizu T, Mochida T, Inada K, Kaneko S, Kawai-Kitahata F, Murakawa M, Nitta S, Nakagawa M, Oshima S, Watanabe M, Ma A, Asahina Y, Okamoto R. A20 in hepatic stellate cells suppresses chronic hepatitis by inhibiting DCLK1-JNK pathway-dependent chemokines. *FASEB journal : official publication of the Federation of American Societies for Experimental Biology.* 2024.07; 38(13); e23757
4. Shun Kaneko, Yasuhiro Asahina, Miyako Murakawa, Shunsuke Ueyama, Chiaki Maeyashiki, Hideki Watanabe, Akiko Kusano-Kitazume, Ayako Sato, Kozue Uchidate, Takehito Asakawa, Sho Watanabe, Yasuhiro Iizuka, Isamu Shibata, Shinya Oooka, Yuko Karakama, Takashi Fujii, Taro Watabe, Keiichi Akahoshi, Minoru Tanabe, Kento Inada, Tomohiro Mochida, Keiya Watakabe, Taro Shimizu, Jun Tsuchiya, Masato Miyoshi, Fukiko Kitahata-Kawai, Sayuri Nitta, Mina Nakagawa, Sei Kakinuma, Ryuichi Okamoto, . Prognostic significance of C-reactive protein in unresectable hepatocellular carcinoma treated with atezolizumab and bevacizumab. *Hepatol Res.* 2024.06; 54(6); 562-574
5. Takigawa M, Yamaguchi J, Goya M, Iwakawa H, Yamamoto T, Amemiya M, Ikenouchi T, Negishi M, Kawamura I, Goto K, Shigeta T, Nishimura T, Takamiya T, Tao S, Ohuchi K, Suzuki S, Miyazaki S, Sasano T. An optimized approach for increasing lesion size in temperature-controlled setting using a catheter with a surface thermocouple and efficient irrigation. *Journal of arrhythmia.* 2024.06; 40(3); 536-551
6. Takamiya T, Takigawa M, Noda M, Yamamoto T, Martin C, Shigeta T, Ikenouchi T, Yamaguchi J, Amemiya M, Negishi M, Goto K, Nishimura T, Tao S, Miyazaki S, Goya M, Sasano T. Distribution of peak frequency and omnipolar voltage in electrograms across the atrial body and thoracic veins in a normal heart. *Journal of interventional cardiac electrophysiology : an international journal of arrhythmias and pacing.* 2024.06;
7. Yamaguchi J, Takigawa M, Goya M, Martin CA, Negishi M, Yamamoto T, Ikenouchi T, Goto K, Shigeta T, Kawamura I, Nishimura T, Takamiya T, Tao S, Miyazaki S, Sasano T. Impact of contact force on the lesion characteristics of very high-power short-duration ablation using a QDOT-MICRO catheter. *Journal of arrhythmia.* 2024.04; 40(2); 247-255
8. Kaneko S, Asahina Y, Murakawa M, Azuma S, Inada K, Mochida T, Watakabe K, Shimizu T, Tsuchiya J, Miyoshi M, Kawai-Kitahata F, Nitta S, Takahashi M, Fujioka T, Kishino M, Anzai T, Kakinuma S, Nakagawa M, Okamoto R. Analysis of prognosis and background liver disease in non-advanced hepatocellular carcinoma in two decades. *PLoS ONE.* 2024.03; 19(3); e0297882

9. Yamamoto T, Takigawa M, Shigeta T, Martin CA, Yamaguchi J, Amemiya M, Ikenouchi T, Negishi M, Kawamura I, Goto K, Nishimura T, Takamiya T, Tao S, Miyazaki S, Goya M, Sasano T. Effect of reference electrode on intracardiac electrograms: Close indifferent electrode vs Wilson central terminal. *Heart rhythm*. 2024.03;

[Conference Activities & Talks]

1. Nobusawa, T, Kaneko, S, Murakawa, M, Inada, K, Mochida, T, Watakabe, K, Shimizu, T, Tsuchiya, J, Miyoshi, M, Kawai-Kitahata, F, Nitta, S, Kimura, K, Kishino, M, Tateishi, U, Nakagawa, M, Kakinuma, S, Okamoto, R, Asahina, Y. Proton density fat fraction stratifies prognosis in liver disease with advanced fibrosis. AASLD The Liver Meeting 2024 2024.11.16 San Diego, USA
2. Tsuchiya, J, Miyoshi, M, Kakinuma, S, Shimizu, T, Watakabe, K, Mochida, T, Inada, K, Kaneko, S, Kawai-Kitahata, F, Nitta, S, Murakawa, M, Nakagawa, M, Asahina, Y, Okamoto, R. Mechanism of hepatocarcinogenesis due to hepatitis B virus genome integration into host KMT2B locus. AASLD The Liver Meeting 2024 2024.11.16 San Diego, USA
3. Kaneko, S, Asahina, Y, Murakawa, M, Ueyama, S, Watanabe, H, Maeyashiki, C, Kitazume, A, Sato, A, Watabe, T, Uchidate, K, Akahoshi, K, Nobusawa, T, Inada, K, Mochida, T, Watakabe, K, Shimizu, T, Tsuchiya, J, Miyoshi, M, Kawai-Kitahata, F, Nitta, S, Nakagawa, M, Kakinuma, S, Okamoto, R. The albumin-bilirubin score as an indicator of effective immunotherapy in elderly patients with unresectable hepatocellular carcinoma. AASLD The Liver Meeting 2024 2024.11.16 San Diego, USA
4. Keiya Watakabe, Masato Miyoshi, Sei Kakinuma, Ayako Sato, Kento Inada, Tomohiro Mochida, Taro Shimizu, Jun Tsuchiya, Tsubasa Nobusawa, Shun Kaneko, Fukiko Kawai-Kitahata, Miyako Murakawa, Mina Nakagawa, Yasuhiro Asahina, Ryuichi Okamoto. TNFAIP3 mediates JNK-dependent chemokine expression in hepatic stellate cells. AASLD The Liver Meeting 2024 2024.11.16 San Diego, USA
5. Mina Nakagawa, Miyako Murakawa, Masato Miyoshi, Shun Kaneko, Tsuchiya Jun, Taro Shimizu, Keiya Watakabe, Sei Kakinuma, Ryuichi Okamoto and Yasuhiro Asahina. High GGT levels is a risk factor for HCC development having potential to reflect mitochondrial dysfunction after HCV eradication. AASLD2024 2024.11.15
6. Shun Kaneko, Miyako Murakawa, Masato Miyoshi, Fukiko Kawai-Kitahata, Sayuri Nitta, Mina Nakagawa, Sei Kakinuma, Ryuichi Okamoto, Yasuhiro Asahina. Efficacy and Safety of Immunotherapy for Real-World Elderly Patients with Unresectable Hepatocellular Carcinoma in Japan. Asian Pacific Association for the Study of Liver Oncology 2024 2024.09.24 Chiba, JAPAN
7. Mina Nakagawa, Miyako Murakawa, Masato Miyoshi, Shun Kaneko, Fukiko Kawai-Kitahata, Sayuri Nitta, Sei Kakinuma, Ryuichi Okamoto and Yasuhiro Asahina. Association of metabolic abnormalities with HCC development and survival in CHC patients after SVR. The 33rd Annual Meeting of the Asian Pacific Association for the Study of the Liver 2024.03.28 Kyoto, JAPAN
8. Masateru Takigawa, Junji Yamaguchi, Hidehiro Iwakawa, Tasuku Yamamoto, Iwanari Kawamura, Takashi Ikenouchi, Miho Negishi, Kentaro Goto, Takuro Nishimura, Tomomasa Takamiya, Susumu Tao, Shinsuke Miyazaki, Tetsuo Sasano. How to Enlarge Lesion Size in Temperature Control Mode Using an Irrigation Catheter with a Flexible-tip of Laser-cut Kerfs. The 88th Annual Scientific Meeting of the Japanese Circulation Society (JCS2023) 2024.03.10
9. Junji Yamaguchi, Masateru Takigawa, Tasuku Yamamoto, Takashi Ikenouchi, Kentaro Goto, Takatoshi Shigeta, Takuro Nishimura, Susumu Tao, Shinsuke Miyazaki, Masahiko Goya, and Tetsuo Sasano. In vivo Lesion Characteristics of Single vs. Double Radiofrequency Applications of Very High-power and Short-duration Ablation. The 88th Annual Scientific Meeting of the Japanese Circulation Society (JCS2023) 2024.03.09
10. Masateru Takigawa, Tasuku Yamamoto, Junji Yamaguchi, Takashi Ikenouchi, Iwanari Kawamura, Miho Negishi, Kentaro Goto, Takuro Nishimura, Tomomasa Takamiya, Susumu Tao, Shinsuke Miyazaki, Tetsuo Sasano. Optimizing Pulmonary Vein Isolation with vHPSD-Ablation. The 88th Annual Scientific Meeting of the Japanese Circulation Society (JCS2023) 2024.03.09
11. Yu Matsuzawa, Ken Cadwell. Examining the mechanism by which γ δ T cells secrete API5. The 52nd Annual Meeting of the Japanese Society for Immunology 2024.01.18 Makuhari, Japan

Department of Clinical Bioanalysis and Molecular Biology

Professor:

- 2024.1-12 : Ryunosuke Ohkawa

Associate Professor:

- 2024.1-12: Nobuharu Suzuki

Assistant Professor:

- 2024.1-12 : Akira Yoshimoto

Contract Lecturer

- 2024.1-12 : Takahiro Kameda
- 2024.1-12 : Yuna Horiuchi
- 2024.1-12 : Susana DE VEGA
- 2024.1-12 : Shunsuke Yaguchi
- 2024.1-12 : Chikako Hayashi

Graduate Students:

(Doctoral Students)

- 2024.1-3 : Rina Kawaguchi
- 2024.4-12 : Rina Kawaguchi, Sun Chengman, Tsunehiro Miyakoshi

(Master Students)

- 2024.1-3 : Mei Ogino, Wakana Okabayashi, Riho Shimizu, Sun Chengman, Motoki Nakamura, Yuna Hakii, Tsunehiro Miyakoshi, Hinako Saito, Mizuki Fukuhara, Yuwa Someya, Taichi Hashimoto, Reina Ohno, Binri Sasaki, Mio Fujisato
- 2024.4-12 : Wakana Okabayashi, Yuwa Someya, Taichi Hashimoto, Reina Ohno, Binri Sasaki, Mio Fujisato, Hanae Akiyama, Nao Igarashi, Kotoko Matayoshi, Hitomi Misawa, Nanako Yamada

(Doctoral Students)

Adult Graduate Students:

- 2024.1-3 : Azusa Yamazaki, Masamichi Mikame, Takuya Shimura
- 2024.4-12 : Azusa Yamazaki, Takuya Shimura

Under Graduate Students:

(Senior)

- 2024.1-3 : Hanae Akiyama, Nao Igarashi, Mizuki Tanaka, Kotoko Matayoshi, Chisato Banno, Nanako Yamada
- 2024.4-12: Haruka Akagi, Saki Izumi, Misaki Tanaka, Yurina Togashi, Tomoka Aoki, Kanoko Mitsunari

(Junior)

- 2024.1-3 : Haruka Akagi, Saki Izumi, Misaki Tanaka, Yurina Togashi, Tomoka Aoki, Kanoko Mitsunari
- 2024.11-12 : Komomo Sugiura, Fumika Nakaya, Saki Hikota, Chisaki Akutsu, Sakurako Abe, Mikari Kodama

(1) Outline

Ohkawa Group : Prof. Ohkawa, Assistant Prof. Yoshimoto (from 1st,May), 10 graduate students, and 6 undergraduate students had been conducting research activities in Ohkawa's group. The central mission is to educate and research through "Clinical Chemistry" in Clinical Laboratory Science. Our topic is "Development of a new biomarker to predict a risk for cardiovascular disease". To achieve our goal, skill and ability to create new reliable method are required. Development of students who can give back to a society through active outreach like publishing a paper and presenting at a congress is most important. We also aim to develop a Biomedical Laboratory Scientist who not only plays a pivotal role in medical front but also be active in education or research institutes. For that reason, creation of a laboratory where students can throw themselves into their research with enjoyment is essential.

Suzuki Group: In Suzuki's group, Assoc. Prof. Suzuki, 7 graduate students, and 7 undergraduate students were the members and performed various activities in research and education. Regarding our research, our main goal was the elucidation of the molecular mechanism of myelination in the central nervous system. In 2024 particularly, we proceeded 3 main projects, "Elucidation of the molecular mechanism of myelination in the central nervous system", "Development of new animal models of neurological and mental disorders using genetically engineered mice", and "Application of extracellular matrix molecules for the creation of novel cell culture substrates and biomaterials". We got a research grant from AMED regarding the projects. In terms of education, we taught graduate and undergraduate students at many lectures and laboratory classes of basic and advanced biochemistry/molecular biology. In addition, Suzuki worked as a member of various committees and contributed to their activities.

(2) Research

Ohkawa Group: Our primary research focuses on lipoproteins, their major components (cholesterol and triglycerides), constituent and functional proteins (various apolipoproteins), and their metabolites, degradation products, and metabolic enzymes. Through detailed studies of these elements, our main research objective is to develop biomarkers useful for the early detection of atherosclerotic diseases. Specifically, we are developing specific biomarkers for coronary artery disease, focusing on the anti-atherosclerotic functions of high-density lipoprotein (HDL), such as reverse cholesterol transport, antioxidant ability, and anti-inflammatory effects. We also analyze how HDL diversifies through interactions with other lipoproteins and cells, and how this diversification relates to the aforementioned properties and functions. Additionally, we are investigating the mechanisms of lipid metabolism involving interactions between HDL and very low-density lipoprotein (VLDL), as well as red blood cells. In the current year (2024), we focused on elucidating the modification mechanisms of paraoxonase 1, an HDL-related enzyme, developing quantitative methods for apolipoprotein transfer between HDL and VLDL, and red blood cell cholesterol, and improving our "novel cholesterol efflux assay" (Japanese Patent Application No. 2021-94456, filed June 4, 2021; PCT application designated country transition: domestic, Japanese Patent Application No. 2023-525852; US, 18/566,478; Europe, EP22816097.4; China, 2022800401211), which is currently pending patent, for social implementation. We presented these research findings at numerous domestic and international conferences, and our students received awards five times at domestic conferences and once at an international conference. Furthermore, Ohkawa gave eight lectures at domestic and international conferences, primarily on the research results of HDL, and Assistant Professor Yoshimoto also gave one lecture at a luncheon seminar.

Research Focus

- Development of a new biomarker to estimate residual risk for cardiovascular disease
- Mechanism of HDL diversification and its effect on the character and function
- Molecular mechanism of red blood cell-related lipids metabolism

Suzuki Group: In the central nervous system, myelin is formed by oligodendrocytes and is essential for the rapid propagation of neuronal signal. Therefore, defects in the functions of myelin cause neurological disorders, such as multiple sclerosis and leukodystrophy. In addition, it has been recently revealed that the myelin functions are critically associated with mental disorders and dementia. Thus, the study regarding myelin functions will give new insights in brain science and better understanding of the mechanisms and new strategies of the treatments for the diseases. In our group, we investigate its cellular and molecular mechanisms using the mutant mouse line that develops hypomyelination in the central nervous system and try to expand our research to application studies. In 2024, we demonstrated the molecular mechanism of axon maintenance

after the inhibition of myelination in teneurin-4 deficient mice and reported that at The Japanese Society for Neurochemistry (JSN), The Molecular Biology Society of Japan (MBSJ), The Japanese Society for myelin study, and American Society for Cell Biology (ASCB). Further, we focused on the mutations in the teneurin-4 gene and examined the effect on the cell adhesion activity. We also created and prepared 5 different lines of genetically engineered mice to develop new models of related diseases. In addition, we proceeded to elucidate the molecular mechanisms of functions of extracellular matrix proteins, fibulin-7 and laminins. We got research grants regarding these projects: Japan Agency for Medical Research (AMED) (2024-2026: Molecular Biological Study of the Myelin Function in the Gender Difference of Dementia and Depression) and Japan Society for the Promotion of Science (JSPS). Grants-in-Aid for Scientific Research – KAKENHI –: Scientific Research (C) (2024-2026: Development of the mouse model of axonal diameter-dependent demyelination by oligodendrocyte subpopulation and elucidation of its mechanism)

Research Focus

- Elucidation of the molecular mechanism of myelination in the central nervous system
- Development of new animal models of neurological and mental disorders using genetically engineered mice
- Application of extracellular matrix molecules for the creation of novel cell culture substrates and biomaterials

(3) Lectures & Courses

Undergraduate education:

(Ohkawa) Main topic is Analytical Laboratory Chemistry which includes Urinalysis & Body Fluid Tests and Clinical Chemistry. In addition, Professor Ukihide Tateishi from General Isotope Research Division helps to educate radioisotope. We aim to educate student to become a leader of biomedical laboratory scientist in hospital or company. Our final goal is that student develop their creativities to think, solve a problem and improve by themselves.

(Suzuki) For the undergraduate education, Suzuki was a responsible organizer for “Biochemistry” and “Biochemistry, Lecture” for the students of the nursing course and medical technology course, and “Biochemistry, Laboratory” for the students of the medical technology course. Through these lectures, we educated the students to let them understand fundamental mechanism of the biological phenomena at the molecular levels. In addition, we taught how to make hypotheses, expertized techniques of gene engineering and primary cultures from experimental animals, scientific analyses of the results, and scientific discussions via our research activities of the molecular biology of the central nervous system myelination.

Graduate education:

(Ohkawa) Analytical skill is essential for research. There is no research achievement without analytical skill. Our first purpose is to understand an importance of reliable analytical skill and obtain the skill. Next, by using these skills, we aim to find new biomarker and develop a novel assay for the biomarker. Though these research process, students can obtain the analytical skill and cultivate capacity as researcher to make a research plan and choose the optimal way to proceed by themselves. Moreover, students can develop their outreach skill through presenting their research achievements at a congress and publishing their papers.

(Suzuki) During the last century, molecular biology has been markedly developed and has contributed to the elucidation of numerous biological phenomena and to clinical applications. The progress has not been stopped and various novel phenomena have been demonstrated. We tried to catch them up and acquire them and to educate students to become leaders for the life scientists at the next generation. Through our research activity of molecular biology of myelination in the central nervous system, we taught how to make hypotheses, expertized experiments of gene recombination techniques, genetically engineered animals, and primary cultures from the animals, and scientific analyses and discussions via our research activities of the molecular biology of the central nervous system myelination. In our laboratory, we taught students from fundamental to advanced parts of our research field at lectures, journal clubs, and discussions to let them understand the history and our position in the current research field. Moreover, we made efforts for students to have high motivation with their research and study and to enjoy new findings.

(4) Publications

[Original Articles]

1. Takuya Shimura, Hideaki Isago, Yoshifumi Morita, Ryunosuke Ohkawa, Naoyuki Yoshikawa, Yoshikazu Ono, Makoto Kurano. Modulating lysophospholipids with Paraoxonase-1: Exploring its impact on inflammatory responses and immune reactions. *Biochem Biophys Res Commun.* 2024.12; 746; 151234
2. Akiko Futatsugi, Minoru Tozuka, Yuna Horiuchi, Ryunosuke Ohkawa, Tomoki Kosho. High-density lipoprotein functionality in cholesterol efflux in early childhood is related to the content ratio of triglyceride to cholesterol. *Sci Rep.* 2024.10; 14(1); 23323

[Misc]

1. Binri Sasaki, Reina Ono, Momona Yamada, Nanako Yamada, Nobuharu Suzuki. The regulatory mechanism of oligodendrocyte development and differentiation by extracellular matrix molecules *Journal of Japanese Biochemical Society.* 2024.04; 96(2); 296-300

[Conference Activities & Talks]

1. Nobuharu Suzuki, Hinako Saito, Riko Takahashi, Nanako Yamada, Mio Fujisato, Kanoko Mitsunari, Binri Sasaki, Yukina Hosoda, Chikako Hayashi, Toru Doi, Mikael Simons, and Ryunosuke Ohkawa. The maintenance of small diameter axons after dysmyelination in teneurin-4 deficient mice. . CELL BIO24 (An ASCB/EMBO Meeting) 2024.12.15 San Diego, CA, US.
2. Binri Sasaki, Chikako Hayashi, Nanako Yamada, Nobuharu Suzuki. The regulation of actin-cytoskeletal organization by teneurin-4 is important for CNS myelination by oligodendrocytes. CELL BIO24 (An ASCB/EMBO Meeting) 2024.12.15 San Diego, CA, US.
3. Nanako Yamada, Momona Yamada, Reina Ono, Binri Sasaki, Nobuharu Suzuki. The induction of apoptosis in oligodendrocyte lineage cells by extracellular Chromogranin B. CELL BIO24 (An ASCB/EMBO Meeting) 2024.12.15 San Diego, CA, US.
4. Ohkawa R. Tips for identifying and managing abnormal reaction curves. 17th Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB) Congress 2024.11.03 Sydney
5. Akiyama H., Miyakoshi T., Kawaguchi R., Kameda T., Yoshimoto A., Ohkawa R. Effect of Cholesterol Loading on the Assay for ABCA1-mediated Cholesterol Efflux Capacity using THP-1 cells and BODIPY-cholesterol. 17th Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB) Congress 2024.11.01 Sydney
6. Yamazaki A., Yoshimoto A., Ichimura N., Tohda S., Ohkawa R. Validation and Application of Direct Measurement Method for Erythrocytes Cholesterol Content. 17th Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB) Congress 2024.11.01 Sydney
7. Someya Y., Shibuya M., Sun C., Yamazaki A., Miyakoshi T., Kawaguchi R., Yoshimoto A., Ohkawa R.. Establishment of a method for measuring apolipoproteins transfer rates between high-density lipoprotein and very lowdensity lipoprotein by ELISA. 17th Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB) Congress 2024.11.01 Sydney
8. Ohkawa R.. How Should We Evaluate High-Density Lipoprotein?. International Medini Healthcare Conference 2024 In conjunction with MIMLS 33rd National Scientific Conference 2024.09.24 Johor Bahru
9. Ohkawa R. High-density lipoprotein - small particles with a big impact -. The 46th Annual Conference of The Association of Medical Technologists of Thailand (ACMTT) 2024.06.13 Bangkok
10. Miyakoshi T., Akiyama H, Horiuchi Y., Araki M., Yonetsu T., Yoshimoto A., Tozuka M., Sasano T., Ohkawa R. Comparison of clinical usefulness of CEC assays by immobilized liposome-bound magnetic beads method and conventional cell-dependent assay targeting at coronary artery plaque size. European Atherosclerosis Society (EAS) 92nd Congress 2024.05.27 Lyon
11. Kawaguchi R., Yoshimoto A., Kameda T., Ohkawa R. Serum Analysis, not Isolated HDL Analysis, Reveals a New Effect of Homocysteine Modification on HDL Paraoxonase 1 Activities and Distribution. European Atherosclerosis Society (EAS) 92nd Congress 2024.05.27 Lyon

12. Yamazaki A., Yokoyama S., Okazaki M., Ai M., Miyake S., Takahashi J., Kameda T., Ichimura N., Tohda S., Ohkawa R. Influence of lipoprotein(a) on the accuracy of LDL-cholesterol measurement. European Atherosclerosis Society 92nd Congress 2024.05.27 Lyon
1. Yoshimoto Akira. Research started by an awareness during a routine test -Drugs interfering with urinary creatinine measurement. The 64th Annual Meeting of the Japanese Society of Clinical Chemistry 2024.08.31 1-20 Miyamirai, Utsunomiya-shi, Tochigi-ken, Japan
2. Yuji Kurihara, Yuki Kawaguchi, Junpei Matsubayashi, Yuki Ohta, Nana Kawasaki, Nobuharu Suzuki, Yuki Fujita, Kohtaro Takei. LOTUS, a neural circuit formation factor, promotes neurite outgrowth through its binding to a cell adhesion molecule Teneurin-4. 2024.07.24
3. Nobuharu Suzuki, Hinako Saito, Riko Takahashi, and Mio Fujisato. Elucidation of the mechanism of unmyelinated axon survival due to the inhibition of myelination. The 8th Annual Meeting of the Japan Myelin Society 2024.02.10

[Social Contribution]

1. Nobuharu Suzuki, Frontiers in Cell and Developmental Biology:Topic Editor, 2021.09.01 - Now
2. Nobuharu Suzuki, Cells:Topical Advisory Panel, 2021.09.01 - Now
3. Ryunosuke Ohkawa,Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB),Communication and Publication Committee member, 2023.02.10 - Now
4. Nobuharu Suzuki, Frontiers in Cell and Developmental Biology:Review Editor, 2023.09.01 - Now
5. Nobuharu Suzuki, Neurology International:Editorial Board, 2023.09.01 - Now

Department of Molecular Microbiology and Immunology

Professor: Ryoichi Saito

Associate Professor: Yukie Tanaka

Assistant Professor: Yusuke Ota

Graduate Student (doctor's course):

Frederick Ofosu Appiah, Mika Nagata, Shu Hagiwara,
Runa Furuya, Ivy Amanor,

Nozomi Uchida, Taira Kawamura, Yuki Nakano

Graduate Student (master's course):

Tomoko Oshiro, Ayaha Suzuki, Nanako Minami,

Ai Akasaka, Chen Fei, Ishizaki Runa, Ishiwatari Saori

(1) Outline

Our department is engaged in both lecture and practical course for medical microbiology and immunology. These include education on prevention, diagnosis and treatment of infectious diseases for both undergraduate and graduate students. Regarding our research, we are interested in investigating molecular mechanisms of antibiotic resistance and virulence gene regulation in bacteria.

In the immunology section, students learn basic immunology to understand various aspects of immune response in the human body, and through this, acquire the ability to properly perform tests related to immune diseases, including infectious diseases, and to accurately evaluate the results. Regarding our research, we are interested in immune mechanisms in hematopoietic stem cell transplantation and the development of immunotherapy for refractory viral infections.

(2) Research

Research Interests involved in Molecular Microbiology:

1. Evolution and diversity of multidrug-resistant bacteria
2. Regulation system of virulence in pathogenic bacteria
3. Environmental microbiome dynamics and interactions for AMR transmission
4. Development of molecular biological and bacteriological methods for rapid identification and typing of pathogenic bacteria

Research Interests involved in immunology:

1. Multi-virus-specific T-cell therapy for patients with opportunistic infections after transplantation.
2. Analysis of HTLV-1-specific cytotoxic stem-cell memory like T-cells.
3. Research on the mechanism of hematopoietic stem cell mobilization using CXCR4 antagonists
4. Development of novel therapies for hematopoietic tumors.

(3) Education

Our course provides the conceptual basis for understanding pathogenic microorganisms including host response in infectious diseases, antimicrobial resistance, and epidemiologic surveillance. It also provides opportunities for undergraduate and graduate students to gain basic techniques, such as identification of microorganisms,

antimicrobial susceptibility testing, and immunological testing which are performed in the clinical laboratory at medical facilities.

(4) Publications

[Original Articles]

1. Inoue K, Tomomasa D, Nakagama Y, Takeuchi H, Tanaka Y, Tanimoto K, Kamiya T, Isoda T, Takagi M, Tanaka K, Yoshifuji K, Miwa Y, Ohnishi H, Okada S, Mori T, Yasuda S, Kido Y, Morio T, Kanegane H. Real-world experience of tixagevimab/cilgavimab prophylaxis in Japanese patients with immunodeficiency. *Journal of infection and chemotherapy : official journal of the Japan Society of Chemotherapy*. 2024.12; 31(2); 102577
2. Morimoto S, Tanaka Y, Nakata J, Fujiki F, Hasegawa K, Nakajima H, Nishida S, Tsuboi A, Hosen N, Kagawa N, Maruno M, Myoui A, Enomoto T, Izumoto S, Sekimoto M, Hashimoto N, Yoshimine T, Kumanogoh A, Oji Y, Oka Y, Sugiyama H. Spontaneous high clonal expansion of Wilms' tumor gene 1-specific cytotoxic T-lymphocytes in patients with Wilms' tumor gene 1-expressing solid tumor. *Cancer immunology, immunotherapy : CII*. 2024.11; 74(1); 15
3. Yusuke Ota, Fei Chen, Isaac Prah, Samiratu Mahazu, Kimiyo Watanabe, Teruaki Kinoshita, Yoshiaki Gu, Yoko Nukui, Ryoichi Saito. Metatranscriptomic Analysis Reveals Actively Expressed Antimicrobial-Resistant Genes and Their Hosts in Hospital Wastewater. *Antibiotics (Basel)*. 2024.11; 13(12); 1122
4. Ota Y., Chen F., Prah I., Mahazu S., Watanabe K., Kinoshita T., Gu Y., Nukui Y., Saito R.. Metatranscriptomic Analysis Reveals Actively Expressed Antimicrobial-Resistant Genes and Their Hosts in Hospital Wastewater *Antibiotics*. 2024.11; 13(12); 1122
5. Osaka Hilary, Tagashira Yasuaki, Takeuchi Hiroaki, Tanaka Yukie, Tanimoto Kousuke, Gu Yoshiaki. Nosocomial Outbreak of SARS-CoV-2 in a Hospital Ward during the Omicron Variant-Dominant Wave with a Review of the Relevant Literature(タイトル和訳中) *Japanese Journal of Infectious Diseases*. 2024.09; 77(5); 253-259
6. Yoshiaki Iwashita, Shizue Takeuchi, Yoshiro Hadano, Taira Kawamura, Yuichiro Tanaka, Rie Sato, Nobuhiro Kodani, Noriaki Yamada, Ryoichi Saito. A case of community-acquired *Clostridioides difficile* infection causing intussusception, severe pneumonia, and severe hypokalemia. *BMC Infect Dis*. 2024.07; 24(1); 744
7. Kayo Yamada, Alafate Ayibieke, Akari Ikeda, Kageto Yamada, Shinji Ogihara, Shuji Tohda, Ryoichi Saito. Molecular characterization of *Staphylococcus epidermidis* bloodstream isolates from two hospitals in Tokyo. *Laboratory Medicine International*. 2024.06; 3(2); 33-41
8. Osaka H, Tagashira Y, Takeuchi H, Tanaka Y, Tanimoto K, Gu Y. Nosocomial outbreak of SARS-CoV-2 in a hospital ward during the Omicron variant-dominant wave with a review of the relevant literature. *Japanese journal of infectious diseases*. 2024.05; 77(5); 253-259
9. Ota Y, Yasunaga K, Mahazu S, Prah I, Nagai S, Hayashi T, Suzuki M, Yoshida M, Hoshino Y, Akeda Y, Suzuki T, Gu Y, Saito R. Comparative evaluation of analytical pipelines for illumina short- and nanopore long-read 16S rRNA gene amplicon sequencing with mock microbial communities. *Journal of microbiological methods*. 2024.04; 221; 106929
10. Mahazu S, Prah I, Ota Y, Hayashi T, Suzuki M, Yoshida M, Hoshino Y, Akeda Y, Suzuki T, Ishino T, Ablordey AS, Saito R. Colistin Resistance Mediated by Mcr-3-Related Phosphoethanolamine Transferase Genes in *Aeromonas* Species Isolated from Aquatic Environments in Avaga and Pakro Communities in the Eastern Region of Ghana. *Infection and drug resistance*. 2024; 17; 3011-3023

[Misc]

1. Yusuke Kanno, Shuzo Masui, Yusuke Ota, Ryoichi Saito, Takasi Nisisako. Electrochemical sensing strategies for on-site testing of pathogenic nucleic acids. *Electrochemical Science Advance*. 2024.04; 1-10
2. Yusuke Kanno, Shuzo Masui, Yusuke Ota, Ryoichi Saito, Takasi Nisisako. Electrochemical sensing strategies for on-site testing of pathogenic nucleic acids *Electrochemical Science Advances*. 2024.04; 1-10

[Conference Activities & Talks]

1. Ayaha Suzuki, Isaac Prah, Yusuke Ota, Samiratu Mahazu, Mitsunori Yoshida, Masato Suzuki, Yoshihiko Hoshino, Toshihiko Suzuki, Anthony Ablordy, Ryoichi Saito. Phenotypic and genotypic characterization of carbapenemase producers from hospital sewage in Ghana. The International Union of Microbiological Societies 2024 2024.10.25 Florence, Italy
2. Yusuke Ota, Fei Chen, Isaac Prah, Samiratu Mahazu, Kimiyo Watanabe, Tomoko Oda, Teruaki Kinoshita, Yoshiaki Gu, Yoko Nukui, Ryoichi Saito. Integrated metagenomic and metatranscriptomic analysis reveals actively expressed antimicrobial-resistant genes and their hosts in hospital wastewater. The International Union of Microbiological Societies 2024 2024.10.25 Florence, Italy
3. Yusuke Ota, Fei Chen, Isaac Prah, Samiratu Mahazu, Kimiyo Watanabe, Tomoko Oda, Teruaki Kinoshita, Yoshiaki Gu, Yoko Nukui, Ryoichi Saito. Integrated metagenomic and metatranscriptomic analysis reveals actively expressed antimicrobial-resistant genes and their hosts in hospital wastewater. IUMS 2024 2024.10
4. Ayaha Suzuki, Issac Prah, Yusuke Ota, Samiratu Mahazu, Mitsunori Yoshida², Masato Suzuki, Yoshihiko Hoshino, Toshihiko Suzuki, Anthony Ablordy, Ryoichi Saito. Phenotypic and genotypic characterization of carbapenemase producers from hospital sewage in Ghana. IUMS2024 2024.10
5. Tomoko Oshiro, Yusuke Ota, Hideki Takahashi, Ryoichi Saito. Functional characterization of polyphosphates in *Neisseria meningitidis*. The Asian Society for Clinical Pathology and Laboratory Medicine 2024 2024.09.27 Seoul, Korea
6. Nanako Minami, Yusuke Ota, Hideki Takahashi, Ryoichi Saito. Genetic characteristics evolving ciprofloxacin resistance in *Neisseria meningitidis*. The Asian Society for Clinical Pathology and Laboratory Medicine 2024 2024.09.27 Seoul, Korea
7. Frederick Ofosu Appiah, Samiratu Mahazu, Isaac Prah, Yusuke Ota, Yohei Nishikawa, Mitsunori Yoshida, Masato Suzuki, Yoshihiko Hoshino, Toshihiko Suzuki, Tomoko Ishino, Anthony Ablordy, Ryoichi Saito. Emergence of meropenem-resistant blaPOM-1 producing *Pseudomonas otitidis* isolated from a river water in Ghana. The Asian Society for Clinical Pathology and Laboratory Medicine 2024 2024.09.27 Seoul, Korea
8. Nanako Minami, Yusuke Ota, Hideyuki Takahashi, Ryoichi Saito. Genetic characteristics evolving ciprofloxacin resistance in *Neisseria meningitidis*. ASCPaLM 2024 2024.09
9. Tomoko Oshiro, Yusuke Ota, Hideki Takahashi, Ryoichi Saito. Functional characterization of polyphosphates in *Neisseria meningitidis*. ASCPaLM 2024 2024.09
10. Frederick Ofosu Appiah, Samiratu Mahazu, Isaac Prah, Yusuke Ota, Yohei Nishikawa, Mitsunori Yoshida, Masato Suzuki, Yoshihiko Hoshino, Toshihiko Suzuki, Tomoko Ishino, Anthony Ablordy, Ryoichi Saito. Emergence Of meropenem-resistant blaPOM-1 producing *Pseudomonas otitidis* isolated from a river water in Ghana. ASCPaLM2024 2024.09
11. Yamazaki R, Tanaka Y, Igarashi Y, Fujimaru R, Kato J, Hayashi F, Tanosaki R. Possibility of the Sysmex XN series hematopoietic progenitor cells (HPC) as a substitute for CD34-positive cell counts in allogeneic peripheral blood stem cell harvest from G-CSF mobilized donor.. 38th International Congress of the International Society for Blood Transfusion 2024.06.23 Barcelona
12. Y Nukui, C Yamamoto, K Furukawa, T Inaba, R Saito, Y Ota, K Aoki, Y Ishii, R Koike. Molecular Epidemiological Analysis of Multidrug-Resistant *Achromobacter xylosoxidans* that Caused an Outbreak in Japan. AMS Microbe 2024 2024.06.13 Atlanta, GA

[Awards & Honors]

1. Taira Kawamura, The Best Biomedical Research Award (Master's Program), Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, 2024.03
2. Ogata Tomio Award, College of Laboratory Medicine of Japan, 2024.11

Department of Lifetime Oral Health Care Sciences

【Professor】 Takeuchi Yasuo
【Junior Associate Professor】 Komatsu Keiji (Dec -)
【Specially Appointed Assistant Professor】 Tooi Masayuki
【Clinical Fellow】 Niimi Hiromi
【Adjunct Lecturer】 Kondo Keiko

(1) Outline

Lifetime Oral Health Care Sciences focuses on supporting lifelong oral health through prevention, early detection, and treatment, aiming to improve quality of life (QOL) and extend healthy life expectancy. The oral cavity not only plays a crucial role in essential functions like eating and speaking but is also closely linked to systemic health, including diabetes and cardiovascular diseases. As a result, oral health management is essential not only for preventing oral diseases but also for maintaining overall health.

Maintaining oral health requires balance among various factors, especially within the oral microbiome. Disruption of this balance—dysbiosis—can lead to oral infections like periodontitis, dental caries, and peri-implant diseases, and may also contribute to systemic diseases. Preventing and managing dysbiosis is therefore critical for both oral and overall health.

Our department focuses on controlling dysbiosis and developing strategies to maintain a healthy microbiome. We also research treatments for age- and disease-related declines in oral function. Through these efforts, we aim to equip dental professionals, including dentists and dental hygienists, with evidence-based knowledge and practical skills to deliver optimal, personalized care for every patient.

(2) Research

1. Microbial Analysis in Periodontitis and Peri-implantitis

We study the molecular mechanisms through which dysbiosis in the oral microbiome contributes to the onset and progression of periodontitis and peri-implant diseases.

2. Application of LED Light Therapy to Periodontal Treatment

We are developing non-invasive treatments using the biological effects of LED light to selectively suppress periodontal inflammation. We also evaluate how light influences cellular repair and inflammatory responses to establish effective clinical treatments.

3. Lifestyle and Its Impact on Oral and Systemic Health

We investigate how daily habits and physical activity affect the oral microbiome and the risk of systemic diseases, aiming to develop strategies for health promotion.

4. Development of New Debridement Techniques for Peri-implant Diseases

To improve treatment outcomes, we are developing innovative debridement techniques that enhance bacterial removal while minimizing damage to surrounding tissues.

5. Surface Modification Technologies to Prevent Peri-implant Diseases

We optimize implant surface properties to prevent bacterial adhesion and promote host cell function, contributing to the development of next-generation implants.

(3) Education

Scientific evidence increasingly links oral diseases, especially periodontitis, to systemic conditions such as diabetes and cardiovascular diseases. Dental professionals must have the skills to prevent and detect these diseases early to contribute to lifelong health and extended healthy life expectancy. Our education focuses on providing advanced knowledge and technical skills in oral disease prevention. We also foster oral health counseling and health promotion abilities, training professionals who actively contribute to community health. Courses:

Introduction to Medicine, AI, and Big Data / Physical Well-being / Infection Prevention / Dental Caries and Periodontal Disease / Basic and Applied Oral Disease Prevention / Interprofessional Collaboration / Advanced Dental Medicine / Practical Training in Oral Disease Prevention / Clinical Practicum for Dental Hygienists / Graduation Research / Special Topics in Periodontology / Oral Health Seminar / Oral Health and Welfare Studies / Advanced Topics in Lifetime Oral Health Care / Seminar in Lifetime Oral Health Care Sciences

(4) Lectures & Courses

1. Undergraduate Education

We aim to train dental professionals who can support lifelong oral health, improve quality of life, and extend healthy life expectancy. We also foster practical skills for addressing community health issues through collaboration with other professions, alongside nurturing ethical awareness and broad perspectives for linking oral and systemic health.

2. Graduate Education

Through advanced research, we train researchers who generate new knowledge and contribute to evidence-based dental care. Graduate students participate in projects on periodontitis, peri-implant diseases, and dysbiosis-related systemic impacts, acquiring research skills and foundations as independent researchers. We also promote international exchange and conference presentations to foster globally-minded researchers who contribute locally.

(5) Clinical Services & Other Works

Our clinical division offers comprehensive care, including disease prevention, periodontal treatment, post-treatment maintenance, and Perioperative Oral Management to prevent complications and support oral function during the surgical period. Dentists and dental hygienists collaborate to support lifelong oral and systemic health, providing personalized care tailored to each patient's living environment, physical condition, and oral status.

(6) Clinical Performances

We specialize in the prevention and management of periodontal diseases and perioperative oral function maintenance, emphasizing comprehensive oral health management through both preventive and therapeutic care.

(7) Publications

[Original Articles]

1. G Tanabe, T Hasunuma, Y Takeuchi, H Churei, K Hayashi, K Togawa, N Moriya, T Ueno. Assessment of Exercise-Induced Dehydration Status Based on Oral Mucosal Moisture in a Field Survey Dentistry Journal. 2024.12; 13(1); 5
2. S.Shimizu, K.Hayashi, Y.Takeuchi, G.Tanabe, H.Churei, H.Kobayashi, T.Ueno, K.Fueki. Effect of Porphyromonas gingivalis Infection on Healing of Skeletal Muscle Injury: An In Vivo Study Dentistry Journal. 2024.10; 12(11); 346

3. Nagai T, Shiba T, Komatsu K, Watanabe T, Nemoto T, Maekawa S, Kobayashi R, Matsumura S, Ohsugi Y, Katagiri S, Takeuchi Y, Iwata T. Optimal 16S rRNA gene amplicon sequencing analysis for oral microbiota to avoid the potential bias introduced by trimming length, primer, and database Microbiology Spectrum. 2024.10; 12(12); e0351223
4. Okano T, Ashida H, Komatsu N, Tsukasaki M, Iida T, Iwasawa M, Takahashi Y, Takeuchi Y, Iwata T, Sasai M, Yamamoto M, Takayanagi H, Suzuki T. Caspase-11 mediated inflammasome activation in macrophages by systemic infection of *A. actinomycetemcomitans* exacerbates arthritis. International journal of oral science. 2024.08; 16(1); 54
5. Matsuura T, Komatsu K, Suzumura T, Stavrou S, Juanatas ML, Park W, Ogawa T. Enhanced functionality and migration of human gingival fibroblasts on vacuum ultraviolet light-treated titanium: An implication for mitigating cellular stress to improve peri-implant cellular reaction. Journal of Prosthodontic Research. 2024.08;
6. Chao D, Komatsu K, Matsuura T, Cheng J, Stavrou S, Jayanetti J, Chang T, Ogawa T. Human gingival fibroblast growth and function in response to laser-induced meso- and microscale hybrid topography on dental implant healing abutments. The International Journal of Oral & Maxillofacial Implants. 2024.08; 39(4); 603-614
7. Watanabe K, Maruyama Y, Mikami R, Komatsu K, Kikuchi K, Hotta K, Yoshikawa T, Ogasawara K, Hattori A, Arakawa S. Highly purified hypochlorous acid water facilitates glucose metabolism and memory formation in type 2 diabetic mice associated with altered-gut microbiota. Scientific reports. 2024.07; 14(1); 16107
8. Keiji Komatsu, Denny Chao, Takanori Matsuura, Daisuke Kido, Takahiro Ogawa. Advancing osseointegration research: A dynamic three-dimensional (3D) in vitro culture model for dental implants Journal of Dental Sciences. 2024.07;
9. Komatsu K, Matsuura T, Ogawa T. Achieving complete human gingival fibroblast collagen coverage on implant abutments through vacuum ultraviolet (VUV) photofunctionalization The International Journal of Oral & Maxillofacial Implants. 2024.04; 0(0); 1-32
10. Nagai T, Shiba T, Komatsu K, Matsumura S, Koyanagi T, Nemoto T, Kobayashi R, Takeuchi Y, Iwata T. Characterizing Bacterial Communities among Healthy, Peri-implant Mucositis, and Peri-implantitis Statuses by 16S rRNA gene amplicon sequencing 口腔病学会雑誌. 2024.03; 91(1); 8-18
11. Yokose M, Komatsu K, Shiba T, Tanaka D, Takeuchi Y, Ikeda Y. Gnetin-C, a Resveratrol Dimer, Inhibits the Growth and Virulence of Porphyromonas gingivalis 口腔病学会雑誌. 2024.03; 91(1); 47-65

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1. Keiji Komatsu, Takanori Matsuura, James Cheng, Daisuke Kido, Wonhee Park, Takahiro Ogawa. Nanofeatured surfaces in dental implants: contemporary insights and impending challenges International Journal of Implant Dentistry . 2024.07; 10(10);
2. Matsuura T, Komatsu K, Cheng J, Park G, Ogawa T. Beyond microroughness: novel approaches to navigate osteoblast activity on implant surfaces. International Journal of Implant Dentistry. 2024.07; 10(1); 35
3. Park G, Matsuura T, Komatsu K, Ogawa T. Optimizing implant osseointegration, soft tissue responses, and bacterial inhibition: A comprehensive narrative review on the multifaceted approach of the UV photofunctionalization of titanium. Journal of Prosthodontic Research. 2024.06;
4. Shiba T, Komatsu K, Takeuchi Y, Koyanagi T, Taniguchi Y, Takagi T, Maekawa S, Nagai T, Kobayashi R, Matsumura S, Katagiri S, Izumi Y, Aoki A, Iwata T. Novel flowchart guiding the non-surgical and surgical management of peri-implant complications: a narrative review Bioengineering. 2024.01; 11(2); 118
1. Takeuchi Y. Oral environment and systemic diseases: The effects of exercise on oral and systemic health Inflammation and immunity. 2024.12; 33(1); 3-7
2. Takeuchi Y, Shiba T. Analysis of microbiome associated with periodontitis and peri-implantitis 2024.12; 49(4); 26-29

[Conference Activities & Talks]

1. Takada K, Shiba T, Nagai T, Kobayashi R, Matsumura S, Komatsu K, Katagiri S, Iwata T. Exploring the Relationship between Oral Bacteria and Infective Endocarditis through Next-Generation Sequencing. 口腔病学会 2024.12.06
2. Keita Toyoshima, Peiya Lin, Yujin Ohsugi, Hiromi Niimi, Sayaka Katagiri, Takanori Iwata, Akira Aoki. Effects of Er:YAG laser irradiation on cell proliferation and gene expression in osteocyte-like cells. The 18th Congress of World Federation for Laser Dentistry 2024.11.12 The Rebouças Convention Center
3. Kobayashi R, Shiba T, Nagai T, Komatsu K, Matsumura S, Nemoto T, Takada K, Takeuchi Y, Iwata T. Shifting the Microbiome Following Non-Surgical Treatment for Each Periodontal Status. The 110th Annual Meeting of the American Academy of Periodontology 2024.11.06
4. Nagai T, Shiba T, Komatsu K, Matsumura S, Koyanagi T, Nemoto T, Kobayashi R, Takeuchi Y, Iwata T. Characterizing Bacterial Communities among Healthy, Peri-implant Mucositis, and Peri-implantitis Statuses by 16S rRNA gene amplicon sequencing.. American Academy of Periodontology, 110th ANNUAL MEETING 2024.10.31
1. Kovayashi Ryota, Satake Kazuhisa, Nagai Takahiko, Matsumura Shunsuke, Takada Koki, Takeuchi Yasuo, Shiba Takahiko, Iwata Takanori. Comparison of the bacterial communities in supra- and subgingival calculus using 16S rRNA gene amplicon sequencing analysis. The 161st Meeting of the Japanese Society of Conservative Dentistry 2024.11.21 Himeji
2. Toyoshima K, Ohsugi Y, Lin P, Komatsu K, Shiba T, Takeuchi Y, Shimohira T, Tsuchiya Y, Katagiri S, Iwata T, Aoki A. Effects of blue LED irradiation on oral microbiome of ligature-induced periodontitis in mice. The 36th Annual meeting of Japanese Society for Laser Dentistry 2024.10.19 Aichi Gakuin University
3. Takeuchi Y. Lifelong oral health support. Regular meeting of the Stomatological Society, Japan 2024.06.17

[Awards & Honors]

1. UCLA Science Day Poster Presentation First Place Award, UCLA School of Dentistry, 2024.06

Department of Oral Care for Systemic Health Support

Professor Yuji Kabasawa
Lecturer Kanade Ito
Assistant Professor Liao Shin-Ru
Graduate Students (Doctoral) Misaki Suzaka, Yuko Hirota, Kyoko Kajitani
Graduate Students (Master's) HSIEH HSIN YU

(1) Outline

1) Education

We will teach the knowledge and skills necessary for oral health activities through the subjects we are in charge of, clinical practice and research results. We will educate students about oral medicine, i.e. perioperative oral function management, the relationship between the oral cavity and the whole body, such as periodontal disease and diabetes. We will also teach students about health assessment in the stomatological field, and through practical training in vital sign measurement, which is one of the indicators of general health assessment, and emergency life-saving activities, we will have students acquire basic knowledge and skills. We also provide education on the relationship between oral health and social disparities.

In addition, we provide lectures on the pathology, pathophysiology, diagnosis and treatment of oral and maxillofacial diseases, and teach the necessary knowledge for oral health education and the prevention of oral diseases in people with underlying medical conditions.

(2) Research

Research to support the maintenance and promotion of health through oral health. In particular, research on perioperative oral function management, research on oral care for people with underlying diseases, research on the relationship between oral health and social disparities, and international comparative research on dental hygienist student education, etc., to contribute to the health and happiness of people.

(3) Clinical

In order to maintain and improve general health through oral health, we provide dental prevention and oral health education to patients at the Oral Health Center in collaboration with the outpatient departments of the dental hospital. We mainly provide oral health management for inpatients at medical departments, and we also work with nurses, nutritionists, pharmacists and other professionals to provide oral health management tailored to the patient's condition as part of a team of healthcare professionals.

(2) Research

(1) Research on perioperative oral health management

We are conducting clinical research on the significance of oral function management in perioperative management.

In particular, we are researching oral function management and rehabilitation after oral surgery and oral cancer surgery.

(2) Development of new oral cleaning, stomatitis prevention, and treatment methods

We are conducting research on oral health and social environmental factors according to life stage.

(4) International comparative research on the cognitive flexibility of dental hygiene students

By investigating and comparing the cognitive flexibility and psychological wellbeing of dental hygiene students in Asia and Europe/America, we aim to clarify methods for cultivating the cognitive flexibility of students in dental hygiene education.

(3) Education

Subjects in charge of: Anatomy and function of the human body, Anatomy and function of the teeth and mouth, Anatomy and function of the head and neck, Morphology of the teeth, Bioethics, Pathogenic microorganisms and biological defense, Interprofessional education, Clinical practice, Oral surgery and dental anesthesia, Oral medicine, Dental radiology, Oral health and international cooperation, Clinical medicine, Graduation research, Health and medical services, Dentistry for the disabled, Pediatric dentistry, Orthodontics, Applied clinical oral health, Biomaterials Science, Basic and Applied Studies in Oral Disease Prevention, Clinical Oral Health and Hygiene Practice, Dental Practice Assistance Theory, Oral Health and Hygiene Internship, etc.

(4) Lectures & Courses

The aim is to train people who can contribute to oral and general health. We train dental hygienists who can contribute to people's health and welfare based on knowledge and skills necessary for oral health activities, with an understanding of oral medicine and social environmental factors that affect health.

(5) Clinical Services & Other Works

In order to maintain and improve general health through oral health, the Oral Health Center provides dental prevention and oral health education to patients in collaboration with the outpatient departments of the dental hospital. In addition to providing oral management for inpatients in medical departments, we also provide perioperative management in collaboration with nurses and other professionals.

Kabasawa is also involved in the diagnosis, treatment and oral health guidance of patients with various oral diseases at the oral surgery and maxillofacial surgery outpatient clinics.

(6) Clinical Performances

Based on knowledge of oral medicine, they provide perioperative oral function management with a high level of expertise.

(7) Publications

[Original Articles]

1. Liao SR, Seki N, Foxton R, Sireerat K, Akiyama M, Kanamori Y, Moross J, Shinada K, Chen S, Morio I. An investigation into the cognitive flexibility of undergraduate dental hygiene students at two dental schools in Asia *Journal of Dental Sciences*. 2024.10; 19(4); 2196-2202
2. Kanako Noritake, Jun Tsuruta, Koji Mizutani, Keiko Kondo, Hitomi Suzuki, Naoko Adachi, Naoko Seki, Ridan Cao, Risako Mikami, Sayaka Katagiri, Yuji Kabasawa, Hiroshi Nitta. Educational effects of dental hygiene student intervention in dental student clinical practicum *Journal of Dental Sciences*. 2024.10;
3. Mikami R, Saito T, Mizuno R, Kabasawa Y, Matsuo K. Gingival Necrosis Associated with Septic Shock of Unknown Origin in Patient with Systemic Lupus Erythematosus: A Case Report. *The Bulletin of Tokyo Dental College*. 2024.12; 65(4); 83-90
4. Yuko Hirota, Naoko Adachi, Kanade Ito, Kayoko Shinada, Yuji Kabasawa. Relationship between oral health literacy and changes in self-assessment of oral health during COVID-19 *Journal of Dental Sciences*. 2024.05;
5. Cheng BH, Ho PS, Hsu CC, Chen FL, Chen MA, Kabasawa Y, Huang HL. Effectiveness of the lay health advisor program on oral function and quality of life in aboriginal older adults: A randomized controlled trial. *Journal of oral rehabilitation*. 2024.01; 51(5); 840-850

[Conference Activities & Talks]

1. 樺沢勇司、伊藤 奏、沖 拓弥. 歯科医院の内外部空間に対する視線行動パターンの検討. 第 89 回 口腔病学会学術大会 2024.12.07 東京
2. 樺沢勇司, 伊藤奏, Shin-Ru LIAO. ゼラチンシートの口腔ケア用品への応用. 第 89 回 口腔病学会学術大会 2024.12.07
3. Yumeno Kato, Kanade Ito, Shin-Ru Liao, Haruna Ozawa, Yuji Kabasawa. Factors associated with interprofessional competencies of dental hygienists : a multicenter cross-sectional study. International Symposium on Dental Hygiene 2024 2024.07.11 Seoul
4. Kabasawa Yuji, Miyamoto Koki, Liao Shin-Ru, Ito Kanade. Application of Gelatin Sheets to Oral Care Products. 第 4 回国際口腔ケア学会学術大会 2024.04.28 東京
1. Kanako Noritake, Jun Tsuruta, Koji Mizutani, Keiko Kondo, Hitomi Suzuki, Naoko Adachi, Naoko Seki, Risako Mikami, Yuji Kabasawa, Arata Ebihara, Masayuki Hideshima, Hiroshi Nitta. Overview and Effectiveness of Interprofessional Education in clinical practicum at TMDU School of Dentistry. The 56th Annual Meeting of the Japan Society for Medical Education 2024.08.09 Tokyo

Department of Preventive Oral Health Care Sciences

Professor Shiho Kino
Assistance Professor Naoko Adachi
Graduate student Yuho Kobayashi
Graduate student Yuki Sawada
Technical assistant Mai Ikegawa
Technical assistant Yuko Inoue
Technical assistant Megumi Tsukamoto

(1) Outline

The Department conducts research and education on the causes and prevention of important oral diseases in order to maintain and promote health.

In particular, the Department conducts epidemiological research on oral disease prevention and oral health promotion by applying social epidemiology and public health. In addition, the department provides education to enable students to acquire the attitudes, knowledge, and skills necessary to practice oral health instruction, health education, and professional oral health care.

(2) Research

1. Epidemiological research on oral disease prevention and oral health promotion
2. Research on health inequalities and social determinants of health
3. Research on oral health and health care systems
4. Research on dental hygiene education

(3) Lectures & Courses

In order to maintain and improve health and to prevent important oral diseases, we provide education that teaches specialized knowledge about the causes and prevention of oral diseases and preventive treatment techniques, and cultivates the ability to provide oral health instruction and health education.

In particular, we focus on fostering independence and pioneering ability, strengthening the field of data science, enhancing critical thinking, fostering internationalism, and developing research and leadership skills, and cultivate human resources who can contribute widely to society and play a leadership role with their specialized knowledge and skills.

(4) Publications

[Original Articles]

1. Kanako Noritake, Jun Tsuruta, Koji Mizutani, Keiko Kondo, Hitomi Suzuki, Naoko Adachi, Naoko Seki, Ridan Cao, Risako Mikami, Sayaka Katagiri, Yuji Kabasawa, Hiroshi Nitta. Educational effects of dental hygiene student intervention in dental student clinical practicum Journal of Dental Sciences. 2024.10;

2. Sayo Masuko, Yusuke Matsuyama, Shiho Kino, Katsunori Kondo, Jun Aida. Changes in leisure activity, all-cause mortality, and functional disability in older Japanese adults: The JAGES cohort study. *Journal of the American Geriatrics Society*. 2024.11;
3. Naoko Adachi, Kumiko Sugimoto, Hitomi Suzuki, Kayoko Shinada. Influence of oral health status on absenteeism and presenteeism as indices of work productivity loss *Journal of Dental Sciences*. 2024.09; in press;
4. Naoko Adachi, Kumiko Sugimoto, Kayoko Shinada. Association between tooth loss and adherence to oral maintenance in a dental clinic: A retrospective study more than 20 years. *International Journal of Dental Hygiene*. 2024.08; 22(3); 596-603
5. Ishimaru, M; Zaito, T; Kino, S; Inoue, Y; Taira, K; Takahashi, H; Tamiya, N. Recent dental visits and family caregiving among individuals with dental symptoms: A nationwide cross-sectional study in Japan *COMMUNITY DENTISTRY AND ORAL EPIDEMIOLOGY*. 2024.08; 52(4); 406-412
6. Keiko Ueno, Daisuke Nishioka, Junko Saito, Shiho Kino, Naoki Kondo. Understanding the daily life needs of older public assistance recipient subgroups in Japan: A qualitative study *Global Health & Medicine*. 2024.08; 6(4); 259-263
7. Shiho Kino, Yudai Tamada, Kenji Takeuchi, Atsushi Nakagomi, Koichiro Shiba, Taro Kusama, Takafumi Yamamoto, Jun Aida. Exploring the relationship between oral health and multiple health conditions: An outcome-wide approach *Journal of Prosthodontic Research*. 2024.07; 68(3); 415-424
8. Yuko Hirota, Naoko Adachi, Kanade Ito, Kayoko Shinada, Yuji Kabasawa. Relationship between oral health literacy and changes in self-assessment of oral health during COVID-19 *Journal of Dental Sciences*. 2024.05; in press;
9. Shiho Kino, Keiko Ueno, Daisuke Nishioka, Naoki Kondo, Jun Aida. Prevalence of dental visits in older Japanese adults receiving public assistance. *Community Dent Oral Epidemiol*. 2024.02; 52(1); 68-75
10. Keiko Ueno, Chie Teramoto, Daisuke Nishioka, Shiho Kino, Hiroyuki Sawatari, Kazuaki Tanabe. Factors associated with prolonged on-scene time in ambulance transportation among patients with minor diseases or injuries in Japan: a population-based observational study. *BMC emergency medicine*. 2024.01; 24(1); 10

[Conference Activities & Talks]

1. Naoko Adachi, Hitomi Suzuki, Masayo Sunaga, Atsuhiko Kinoshita, Kumiko Sugimoto, Naomi Yoshida, Kayoko Shinada. Effectiveness of a Simulation Program Using Humanoid Patient Robot in Dental Hygiene Clinical Training. *International Symposium on Dental Hygiene 2024* 2024.07.11 Seoul, Korea
2. Yuki Sawada, Danielle Rulli, Kayoko Shinada, Naoko Adachi. Differences in Resilience and Stress between American and Japanese Dental Hygiene Students. *International Symposium on Dental Hygiene 2024* 2024.07.12 Seoul, Korea
1. A trial of medical interviewing skills testing for dental hygiene students using a simulator. 2024.09.06
2. Kanako Noritake, Jun Tsuruta, Koji Mizutani, Keiko Kondo, Hitomi Suzuki, Naoko Adachi, Naoko Seki, Risako Mikami, Yuji Kabasawa, Arata Ebihara, Masayuki Hideshima, Hiroshi Nitta. Overview and Effectiveness of Interprofessional Education in clinical practicum at TMDU School of Dentistry. *The 56th Annual Meeting of the Japan Society for Medical Education* 2024.08.09 Tokyo

Oral Health Sciences for Community Welfare

Professor Koichiro MATSUO
Senior Assistant Professor Rena HIDAKA
Graduate Student Misaki TANAKA
Amika SUGITA

(1) Outline

The Vision of department of Oral Health Sciences for Community Welfare is:

To establish the basis of human resource development where dental professionals can manage the needs of older adults who have various characteristics.

We engage in the activities with the Mission below:

To conduct practice, research and education to nurture human resources who act vigorously as oral health professional, working together with the other health professionals in acute care to community welfare

Please contact us if you are interested in the graduate school or collaborative research (matsuo.ohcw at tmd.ac.jp)

(2) Research

1. Invention of oral frail preventive program for community dwelling older adults
2. Invention of monitoring system for eating behavior in dependent older adults
3. Innovative food technology systems for independent senior living
4. Establishment of oral management system during stroke recovery
5. Invention of peri-operative oral management system for cancer patients
6. Multidisciplinary Oral management system

(3) Education

Under-graduate course

Gerodontology/Welfare for older adults/Nursing-care for older adults/Prosthodontics/Home visiting dentistry/Community dental care/ Social work

Post-graduate course

Welfare and Oral Health Care for older adults

(4) Lectures & Courses

The education policy of our department is:

To educate dental professionals who will acquire the competency below:

Knowledge, skill and experience to work in medical and health care fields

Communication skill to educate the other health professionals

Activities with self-intent

Interest in international academic activities with positive research mind

(5) Clinical Services & Other Works

Japanese Society of Gerodontology: Specialist, Instructor, Executive Board Member (International Affair)

Japanese Association of Dentistry and Oral Health: Specialist, Instructor, Board Member (International Affair)

Japanese Society of Dysphagia Rehabilitation

Japanese Society for Clinical Nutrition and Metabolism

Asian Association of Dentistry and Oral Health: Board member

International Association of Dentistry and Oral Health: Councilor, International Advisory Committee

(6) Publications

[Original Articles]

1. Hidaka R, Matsuo K, Tanaka M, Srinivasan M, Kanazawa M. Differences in oral hypofunction prevalence and category measures across age groups and sex in Japan: a pilot study. BMC oral health. 2024.12; 24(1); 1483
2. Mikami Risako, Saito Tetsuya, Mizuno Ruriko, Kabasawa Yuji, Matsuo Koichiro. Gingival Necrosis Associated with Septic Shock of Unknown Origin in Patient with Systemic Lupus Erythematosus: A Case Report(タイトル和訳中) The Bulletin of Tokyo Dental College. 2024.11; 65(4); 83-90
3. Tomohisa Ohno, Izumi Terada, Akiko Nomoto, Ichiro Fujishima, Yasuyuki Iwasa, Yoshiko Umeda, Daisuke Kanamori, Masako Kishima, Hideo Sakaguchi, Koichiro Matsuo, Yasutomo Motohashi, Kenichiro Ozaki, Shunsuke Minakuchi. Impact of Hospital Dentistry on Patients' Food Intake Status in Convalescent Rehabilitation Ward. J Oral Rehabil. 2024.11; 51(11); 2467-2474
4. Yu Sekimoto, Koichiro Matsuo, Ayu Sakai, Seiko Shibata, Shunsuke Minakuchi. Improvement of oral function and its impact on oral food intake in subacute stroke patients: A prospective study with dental intervention. J Oral Rehabil. 2024.08; 51(8); 1365-1372
5. Ayu Sakai, Koichiro Matsuo, Yu Sekimoto, Rena Hidaka, Akihiro Yoshihara. Changes in oral health status with dental intervention during the acute to subacute stages of stroke. Gerodontology. 2024.06; 41(2); 276-282
6. Takashi Sakurai, Taiki Sugimoto, Hiroyasu Akatsu, Takehiko Doi, Yoshinori Fujiwara, Akihiro Hirakawa, Fumie Kinoshita, Masafumi Kuzuya, Sangyoon Lee, Nanae Matsumoto, Koichiro Matsuo, Makoto Michikawa, Akinori Nakamura, Susumu Ogawa, Rei Otsuka, Kenji Sato, Hiroyuki Shimada, Hiroko Suzuki, Hiroyuki Suzuki, Hajime Takechi, Shinya Takeda, Kazuaki Uchida, Hiroyuki Umegaki, Satomu Wakayama, Hidenori Arai, . Japan-Multimodal Intervention Trial for the Prevention of Dementia: A randomized controlled trial. Alzheimers Dement. 2024.06; 20(6); 3918-3930
7. Suzuki H, Furuya J, Nakagawa K, Hidaka R, Yoshimi K, Shimizu Y, Saito K, Hatanaka Y, Mukai T, Itsui Y, Tohara H, Minakuchi S. Impact of oral health management by nurses and dental professionals on oral health status in inpatients eligible for the Nutrition Support Team: A longitudinal study J Oral Rehabil. 2024.02;
1. Matsuo Koichiro. What is a VF test? What should I be careful of? A guide to feeding therapy for children and adults with developmental disorders. 2024.04; 51-53

[Books etc]

1. Nart J, Vilarrasa J, Tapia B, Barallat L, Paniagua B, Valles C, Matsuo K. A Multidisciplinary Approach to Managing Swallowing Dysfunction in Older People. Elsevier, 2024.03 (ISBN : 978-0323916868)

[Misc]

1. Matsuo Koichiro. Oral function and oral hygiene Special issue: Journal of clinical rehabilitation. 2024.06; 33(7); 610-617

[Conference Activities & Talks]

1. Hitomi Sato, Koichiro Matsuo, Saki Miyajima, Ruriko Mizuno, Moeko Ishii, Hitomi Suzuki, Rena Hidaka, Yuji Kabasawa. Improvement of oral function and oral intake status by intensive oral rehabilitation after oral cancer surgery: A case report . iADH 2024.09.27 Seoul
2. Rena Hidaka, Koichiro Matsuo, Yasuyuki Iwasa, Tomohisa Ohno, Daisuke Kanamori, Masako Kishima, Satoshi Teranaka, Junichi Furuya. Effects of dental intervention on oral food intake in subacute stroke patients: a multi-institutional prospective observational study . iADH 2024.09.27 Seoul
3. Amika Sugita, Koichiro Matsuo, Rena Hidaka, Johanna Anderson, Mats Stading, Kenji Suzuki. Sound based analysis of Test of Masticating and Swallowing Solids (TOMASS) using a portable neck-worn swallowing sounds monitoring device. iADH 2024.09.27
4. Koichiro MATSUO. Multidisciplinary approach to oral health care and dysphagia management. iADH 2024.09.27 Seoul
5. Saki Miyajima, Koichiro Matsuo, Hitomi Sato, Ruriko Mizuno, Moeko Ishii, Hitomi Suzuki, Rena Hidaka, Yuji Kabasawa. Oral health challenges in patients with depression, cognitive impairment, and suspected parkinsonism: a case report . iADH 2024.09.27 Seoul
6. R Hidaka, K Matsuo, Y Iwasa, T Ohno, D Kanamori, M Kishima, S Teranaka, J Furuya.. Effects of dental intervention on oral food intake in subacute stroke patients: a multi-institutional prospective observational study .. iADH2024 2024.09.27 Seoul
7. A Sugita, K Matsuo, R Hidaka, J Anderson, M Stading, K Suzuki.. Sound based analysis of Test of Masticating and Swallowing Solids (TOMASS) using a portable neck-worn swallowing sounds monitoring device.. iADH2024 2024.09.27 Seoul
8. S Miyajima, K Matsuo, H Sato, R Mizuno, M Ishii, H Suzuki, R Hidaka, Y Kabasawa. . Oral health challenges in patients with depression, cognitive impairment, and suspected parkinsonism: a case report . . iADH2024 2024.09.27 Seoul
9. H Sato, K Matsuo, S Miyajima, R Mizuno, M Ishii, H Suzuki, R Hidaka, Y Kabasawa. . Improvement of oral function and oral intake status by intensive oral rehabilitation after oral cancer surgery: A case report . iADH2024 2024.09.27 Seoul
10. Koichiro Matsuo, Rena Hidaka, Misaki Tanaka, Murali Srinivasan, Manabu Kanazawa. Age-related differences in oral function and association with physical function: Normative assessment implications. 34th Annual Congress of the European College of Gerodontology 2024.06.07 Belgrade, Serbia
11. Koichiro Matsuo, Rena Hidaka, Misaki Tanaka, Murali Srinivasan, Manabu Kanazawa. Age-related differences in oral function and association with physical function: Normative assessment implications. ECG 2024.06.06 Beograd
12. K Matsuo, R Hidaka, M Tanaka, M Srinivasan, M Kanazawa.. Age-related differences in oral function and association with physical function: Normative assessment implications. . 34th Annual Congress of the European College of Gerodontology 2024.06.06 Beograd
13. Koichiro MATSUO. Effects of Comprehensive oral frailty prevention program on physical and oral frailty – CAMCAM Lunch Program - . ISTCD 2024.05.05 Tainan
14. Koichiro MATSUO. Oral frailty and general health. KAGD 2024.04.07 Seoul
15. Misaki Tanaka, Koichiro Matsuo, Yu Sekimoto, Ayu Sakai, Tomoka Maruyama, Rena Hidaka. Perioperative Changes in Oral Function and Oral Food Intake Status in Patients Undergoing Gastric or Esophageal Cancer Surgery. The 102th General Session& Exhibition of the IADR 2024.03.16 new orleans
16. Misaki Tanaka, Koichiro Matsuo, Yu Sekimoto, Ayu Sakai, Tomoka Maruyama, Rena Hidaka. Perioperative Changes in Oral Function and Oral Food Intake Status in Patients Undergoing Gastric or Esophageal Cancer Surgery . IADR 2024.03.16 New Orleans

17. Koichiro Matsuo, Rena Hidaka, Misaki Tanaka, Murali Srinivasan, Manabu Kanazawa. Age-related differences in oral function and association with physical function: Normative assessment implications. IADR 2024.03.16 New Orleans
18. Yu Sekimoto, Koichiro Matsuo, Ayu Sakai. Association between recovery of oral function and improvement of oral food intake status in subacute stroke patients admitted to a convalescent rehabilitation unit . IADR 2024.03.16 New Orleans
19. K Matsuo, R Hidaka, M Tanaka, M Srinivasan, M Kanazawa.. Age-related differences in oral function and association with physical function: Normative assessment implications.. 2024 IADR/AADOCR/CADR General Session & Exhibition 2024.03.16 New Orleans
20. M Tanaka, K Matsuo, Y Sekimoto, A Sakai, T Maruyama, R Hidaka.. Perioperative Changes in Oral Function and Oral Food Intake Status in Patients Undergoing Gastric or Esophageal Cancer Surgery .. 2024 IADR/AADOCR/CADR General Session & Exhibition 2024.03.16

[Awards & Honors]

1. Healthy Longevity Global Challenge Catalyst Award, National Medical Academy , 2024.10

Oral Health Care Education

Professor Naomi Yoshida
Assistant Professor Hitomi Suzuki
Graduate Students Itsuki Takazawa
Yuka Sato
Keian Tokumaru
Kisaki Fujimoto

(1) Outline

Health education is a systematic process that provides people with the necessary knowledge, skills, and attitudes to take charge of their own health and the health of those around them, enabling them to lead healthy lives. This field encompasses research, education, and field activities that take place in various settings such as homes, communities, schools, workplaces, and hospitals. It focuses on a range of topics, including the relationship between dental and oral health and lifestyle habits. Additionally, we are working on developing effective educational methods in the field of dental hygiene.

(2) Research

- 1) Research on oral health behavior
- 2) Research on oral health management
- 3) Research on interprofessional education and work
- 4) Research and development of education methods in dental hygienists education

(3) Education

Oral health care education is special field of study which deals with establishment of theoretic and skill for health promotion to contribute to the development of the health. Educational objects of Oral health care education in the graduate course is to foster human resources who will be able to implement health promotion program in collaboration with other career or residents in many fields.

(4) Lectures & Courses

The program aims to promote people's health by providing education that cultivates practical skills in health education. It teaches theories and techniques for comprehensively understanding the state of oral health, creating a healthy environment, and maintaining and promoting mental and physical health. The objective of the program is to develop the attitude, knowledge, and skills needed to work with people and to build trusting relationships with patients, residents, and others by improving communication skills.

In the graduate school, students conduct research on health education and develop the ability to promote people's health by developing practices based on scientific evidence.

Some of the subjects that the program covers include General Dental Hygiene, Oral Health and Profession, Oral Disease Prevention, Clinical Experience, Fundamentals of Health Education, Planning and Practice of Health Education, Clinical Experience Practicum, Fundamentals of Dental Hygiene Process, Specialized Exercise of Dental Hygiene Process, Introduction to Team Medicine, Fundamentals of Team Medicine, Practice of Team Medicine, Oral Function Management Practicum, Dental Hygiene Practicum, Clinical Dental Hygiene Practicum, Clinical and Clinical Applied Practice in Dental Hygiene, Graduation Research, Oral Health Externship, Health Behavioral Sciences, Dental Health Research, Foundations of Consultation Assistance and the Professions, Clinical Oral Health Applications, Mixed Seminar in Dentistry, and Oral Health and Welfare Studies.

(5) Clinical Services & Other Works

In order to prevent any complications that may arise after a surgery that requires general anesthesia, we take measures to maintain and improve oral hygiene before the surgery. We also check for any oral problems that may occur after the surgery. In addition to this, we work proactively to detect and intervene in any oral problems that may arise due to systemic medical treatment, before and early in the treatment period. During hospitalization, if any oral problems arise or if eating functions deteriorate, we will respond promptly as needed. We will collaborate with various departments and nursing staff across the hospital to promote oral care, leveraging the unique features of Tokyo Medical and Dental University Hospital.

(6) Clinical Performances

Dental hygienists play a vital role in helping patients maintain their oral and overall health throughout their lifetime.

Department of Digital Dentistry

Professor: KANAZAWA Manabu (-Apr)
Professor: TAKAICHI Atsushi (Nov-)
Associate Professor: IWAKI Maiko
Assistant Professor: TSUCHIDA Yumi
RPD: HADA Tamaki (-Nov)

Graduate Students (Master):
PIAO Yuanhua
LI Haoyu

Graduate Students (PhD):
WANG Jingrong

(1) Outline

Department of Digital Dentistry is responsible for digital dentistry research, clinical practice, and teaching. " Digital dentistry" is an interdisciplinary field consisting of dentistry and engineering. This department provides a smooth connection between clinical dentistry and digital devices (hardware and software) in the field of engineering, and educates and trains individuals in research, clinical practice, and education.

(2) Research

1. Development and Evaluation of Prosthetic Device Fabrication Methods Using CAD/CAM Technology
2. Development of Medical Device Programs
3. Development of Clinical and Educational Evaluation Systems Using Deep Learning
4. Prosthetic Clinical Research

(3) Education

****Department of Oral Health Science, Major in Oral Health Engineering****

Courses Taught:*

1st Year:*

- Applied Media Informatics
- Pediatric Dental Engineering
- Pediatric Dental Engineering Practicum

2nd Year:*

- Complete Denture Engineering
- Complete Denture Engineering Practicum
- Dental Morphology Practicum
- Basics of Digital Dentistry

3rd Year:*

- Geriatric Dental Engineering
- Process Device Engineering
- CAD/CAM System Engineering Practicum
- Partial Denture Engineering Practicum II

4th Year:*

- CAD/CAM System Engineering Seminar
- Basic Integrated Practicum
- Advanced Integrated Practicum
- Image Analysis
- Graduation Research II
- Graduation Research III
- Oral Health Engineering Corporate Internship

Graduate Education:*

- Supervised research and taught the course "Advanced Oral Health Engineering" in the Master's program.
- Supervised research and taught the course "Advanced Topics in Oral Health Engineering" in the Doctoral program.

(4) Lectures & Courses

1. Acquisition of Digital Technology and Exceptional Skills
2. Fostering Social Contribution and International Perspective
3. Enhancing Leadership and Communication Skills

We will strengthen education in dental treatment utilizing the latest digital technology, enabling students to acquire cutting-edge skills. At the same time, we will enhance the curriculum to deepen the specialized knowledge and skills of dental technicians, fostering professionals with exceptional expertise. Additionally, by providing practical training and introducing the latest technologies, we will create an environment where students can acquire outstanding skills. Furthermore, we will encourage social contribution activities from both local and global perspectives, nurturing dental technicians with a strong sense of ethics and responsibility. Through overseas training and international exchange programs, we will broaden students' international perspectives, cultivating individuals who can thrive in the global dental field. By implementing educational programs that draw out individual talents and enhance leadership and communication skills, we aim to develop leaders who will drive the dental industry forward.

(5) Clinical Services & Other Works

Dental treatment at the Advanced Dental Treatment Center and the Department of Prosthodontics

(6) Clinical Performances

At the Advanced Dental Treatment Center and the Department of Prosthodontics, we are responsible for all aspects of prosthodontic dental treatment.

By utilizing digital technology in prosthodontic dental treatment, we achieve the following:

1. High-precision diagnosis and treatment planning
2. Efficient treatment processes
3. Reduced patient burden

(7) Publications**[Original Articles]**

1. Keyu Qi, Tamaki Hada, Xiangyu Ren, Maiko Iwaki, Shunsuke Minakuchi, Manabu Kanazawa. Effects of different 3Y-TZP nanoparticle concentrations on reinforcing mechanical properties of 3D-printed resin using stereolithography technology. *Journal of Prosthodontics*. 2024.11;
2. Maiko Iwaki, Yo Akiyama, Keyu Qi, Namano Sahaprom, Keisuke Kohri, Mitsuki Masumoto, Shogo Shibata, Nagame Mizokoshi, Mai Shirai, Hidemasa Shinpo, Chikahiro Ohkubo, Shin-Ichi Usugi, Manabu Kanazawa. Oral health-related quality of life and patient satisfaction using three-dimensional printed dentures: A crossover randomized controlled trial. *J Dent*. 2024.09; 150; 105338
3. Anna Miyayasu, Maiko Iwaki, Kouichi Enomoto, Manabu Kanazawa. Digital workflow for fabricating an implant-supported overdenture with the custom disk method *The Journal of Prosthetic Dentistry*. 2024.09;
4. Khin Pyae Sone, Hidekazu Takahashi, Maiko Iwaki, Sahaprom Namano, Yuriko Komagamine, Shunsuke Minakuchi, Manabu Kanazawa. Effect of build orientation on the wear resistance and hardness of denture teeth fabricated using digital light processing: An in vitro study. *J Prosthodont Res*. 2024.08;
5. Takaichi A, Kajima Y, Htat HL, Wakabayashi N. Influences of Different Selective Laser Melting Machines on the Microstructures and Mechanical Properties of Co-Cr-Mo Alloys. *Applied Sciences*. 2024.07; 14(15); 6576
6. Ushijima K, Hiraishi N, Ikeda M, Tsuji Y, Tsuchida Y, Shimada, Y. Effect of water glass treatment for zirconia and silane coupling on bond strength of resin cement. *Clin Oral Investig*. 2024.05; 28(6); 305
7. Htat Hein Linn, Takaichi Atsushi, Kajima Yuka, Kittikundecha Nuttaphon, Kamijo Shingo, Hanawa Takao, Wakabayashi Noriyuki. Influence of stress-relieving heat treatments on the efficacy of Co-Cr-Mo-W alloy copings fabricated using selective laser melting *Journal of Prosthodontic Research*. 2024.04; 68(2); 310-318
8. Meiko Oki, Mirai Nakayama, Yumi Tsuchida, Shingo Kamijo, Kazuhiro Aoki. Objective evaluation of tooth carving using homologous models *Journal of Dental Education*. 2024.03; 88(3); 314-321
9. Li CY, Wada T, Tsuchida Y, Hayashi K, Tanabe G, Ueno T, Churei H. Optimizing additively manufactured mouthguards: An evaluation of multi-layer materials for improved shock absorption and durability compared to conventionally fabricated samples. *Int J Bioprint*. 2024.03; 10(3); 379-393
10. Iwaki M, Kanazawa M, Soeda Y, Hada T, Komagamine Y, Minakuchi S. Effect of digital complete dentures manufactured using the custom disk method on masticatory function *Heliyon*. 2024.01; 10(1); 1-11
11. Namano S, Kanazawa M, Katheng A, Trang BNH, Hada T, Komagamine Y, Iwaki M, Minakuchi S. . Effect of support structures on the trueness and precision of 3D printing dentures: An in vitro study. *J Prosthodont Res*. 2024.01; 68; 114-121

[Misc]

1. Takaichi A, Kajima Y, Jialin D, Wakabayashi N. Metal Additive Manufacturing Technology for Digital Dentistry. *Health Care Curr Rev*. 2024.07; 12(3); 1000407
1. Atsushi Takaichi, Yuka Kajima. Characteristics of surface morphologies of metal additive manufacturing and their effects on adhesion 2024.05; 43(2); 83-86

[Conference Activities & Talks]

1. Dong J, Takaichi A, Kajima Y, Kamijo S, Wakabayash N. The effects of heat treatments on the metal-ceramic bond strength and residual stress of Co-Cr alloy manufactured by selective laser melting under thermal cycling. 11th World Congress on Materials Science and Engineering 2024.12.16 Osaka
2. Jingrong Wang, Anna Miyayasu, Maiko Iwaki, Roubing Ha, Manabu Kanazawa. Accuracy of 3D-printed castable resin patterns for removable partial denture frameworks using the vacuum-sealed method and heat-treatment. 第 89 回 口腔病学会学術大会 2024.12.07

3. Mariko Mukai, Maiko Iwaki, Tamaki Hada, Chun Wei Chang, Masahiro Shimogishi, Eriko Marukawa, Yudai Asai, Masaomi Kanauchi, Yasuo Morinaga, Ayaka Kohama, Yuriko Komagamine, Manabu Kanazawa. Development of database for dental implant surgery using MR devices.. IADR Japanese Division 72nd Annual Meeting 2024.11.15 Kagoshima
 4. Uchida Y, Takaichi A, Kajima Y, Wakabayashi N. Digitalization of removable partial dentures -Consideration of bonding method between metal framework and denture base. The 4th International Symposium on Design & Engineering by Joint Inverse Innovation for Materials Architecture(DEJI2MA-4) 2024.10.03 Tokyo
 5. Nguyen Thi Khanh An, Tamaki Hada, Maiko Iwaki, Shunsuke Minakuchi, Manabu Kanazawa. Effect of different surface treatments on the bond strength between light-cure hard chairside relining material and CAD/CAM milled denture base material. The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.07 Chiba
 6. Ren Xiangyu, Tamaki Hada, Keyu Qi, Maiko Iwaki, Motohiro Uo, Shunsuke Minakuchi, Manabu Kanazawa . Enhancing mechanical properties of photopolymer denture base resins by the incorporation of cellulose nanofibers (CNF). The 14th Biennial Congress of the Asian Academy of Prosthodontics (AAP) 2024.07.06 Chiba
 7. Jingrong Wang, Anna Miyayasu, Maiko Iwaki, Roubing Ha, Manabu Kanazawa. Accuracy of 3D-printed castable resin patterns for removable partial denture frameworks using the vacuum-sealed method. Pacific Coast Society for Prosthodontics 2024.06.21
 8. Yuanhua Piao, Maiko Iwaki, Hanano Nagura, Yo Akiyama, Manabu Kanazawa. Verification of denture scan trueness using intraoral scanners. TMDU GRADUATE PROGRAM RETRET. 2024.06.07 Tokyo
 9. Anna Miyayasu, Manabu Kanazawa, Maiko Iwaki, Chang Chun Wei, Daisuke Sato, Yuriko Komagamine, Yuriko Kusumoto, Yuka Abe, Kazuyoshi Baba, Shunsuke Minakuchi. A prospective study of implant-assisted removable partial dentures with short implants and magnetic attachments: 3-year results of implant survival rate, implant stability, and patient' s satisfaction. ITI Would symposium 2024 2024.05 Singapore
 10. Qu Wenrui, Takaichi Atsushi, Kajima Yuka, Kamijo Shingo, Wakabayashi Noriyuki. Trueness and adaptation of maxillary complete denture frameworks fabricated with contactless support by selective laser melting. 国際・産学連携インヴァースイノベーション 材料創出 (DEJI2MA) プロジェクト 公開討論会 2024.03.09 名古屋
 11. Qi K, Hada T, Ren X, Iwaki M, Minakuchi S, Kanazawa M. Evaluation of mechanical properties and degree of conversion modified 3Y-TZP nanoparticles reinforced stereolithography resin by using different post-polymerization conditions. The 8th Biennial Joint Congress of JPS-CPS-KAP 2024.03.05 China
 12. Yuanhua Piao, Yuriko Komagamine, Shanglin Wu, Mirai Nakayama, Koji Mizutani, Maiko Iwaki, Shunsuke Minakuchi, Manabu Kanazawa . A case report of mastication training using chewing gum for oral hypofunction. 8th Biennial Joint Congress of CPS-JPS-KAP. 2024.03.04 Guangzhou, China
 13. Haoyu Li, Tamaki Hada, Anna Miyayasu, Yo Akiyama, Maiko Iwaki , Manabu Kanazawa. Evaluating the efficacy of flowable composite resin for the custom disk method. 8th Biennial Joint Congress of CPS-JPS-KAP 2024.03.04 Guangzhou, China
 14. Chun Wei Chang, Manabu Kanazawa, Maiko Iwaki, Daisuke Sato, Anna Miyayasu, Yuriko Komagamine, Yuriko Kusumoto, Yuka Abe, Kazuyoshi Baba, Shunsuke Minakuchi. Patient-reported outcomes of implant-assisted removable partial denture with magnetic attachments: A 3-year progress report. The 23rd International Conference on Magnetic Applications in Dentistry General Information 2024.02.26 Japan
1. C. Chang, M. Iwaki, D. Sato, A. Miyayasu, Y. Komagamine, Y. Kusumoto, Y. Abe, K. Baba, M. Kanazawa. Masticatory function of Implant-Assisted Removable Partial Denture with Magnetic Attachments : A 4-Year Progress Report.. The 34th Annual Congress of The Japanese Society of Magnetic Application in Dentistry 2024.11.09 Chiba, Japan
 2. Atsushi Takaichi. Future of Dentures: Clinical Applications of Digital Technology. Study Group on Additive Manufacturing 2024.11.13 Tottori

3. Yuji Uchida, Atsushi Takaichi, Yuka Kajima, Hidekazu Takahashi, Manabu Kanazawa, Noriyuki Wakabayashi. Digitalization of removable partial dentures -Consideration of bonding method between metal framework and denture base. The 133rd Annual Meeting of the Japan Prosthodontic Society 2024.07.06 Chiba
4. Hiroshi CHUREI, Chenyuan, Takahiro Wada, Yumi Tsuchida, Kairi Hayashi, Gen Tanabe, Toshiaki Ueno. Study to optimize the shock absorption and durability of additive manufacturing 3D mouthguards.. The 133rd Annual Meeting of the Japan Prosthodontic Society 2024.07.01
5. Kobayashi Y, Takaichi A, Kajima Y, Wakabayashi N. The effect of the modified island scanning strategies on the fit accuracy of fixed dental prosthesis prepared by selective laser melting . The 82nd General Session of the Japanese Society for Dental Materials and Devices 2024.04.21 Kagoshima
6. Koabyashi Y, Kajima Y, Takaichi A, Wakabayashi N. Impact of modified island scan strategy on the fitness of bridge produced by powder bed fusion. Design & Engineering by Joint Inverse Innovation for Materials Architecture Public Discussion Meeting 2024.03.09 Nagoya
7. Takaichi A. Innovative processing methods when manufacturing dental prosthetic devices using metal additive manufacturing. 2024.02.03 Tokyo

Department of Oral Biomedical Engineering

(1) Outline

Oral Health Information Technology educates deepen understanding of the production of the dental prosthesis using the latest computer science and cultivate basics power to new technology development. This course cultivates the ability to offer high quality medical technology taking advantage of expertise or knowledge. And the purpose of this section is to educate professional dental technologists who has ability to apply newly developed materials and technologies and who is able to contribute in not only clinical situation but also research institution or educational organization at international levels. Presently, the latest technologies such as dental implant and dental CAD/CAM etc. became popular by the development of materials and the progress in technologies among dental treatment. Therefore, it is necessary to understand and lean knowledge about newly developed materials and technologies for properly control the dental laboratory works. Furthermore, It is necessary that the communication skill for report information about the materials and technologies to dentists and dental hygienists. Based on these evidences, it is an education in which specialists are raised to not be bound by classification as technologist and have ambition.

(2) Research

- 1) Advanced technology which utilized a CAD/CAM system.
- 2) Education of dental technician which utilized computer simulation training.
- 3) Relation of "medical care to support life" and the dental technician.
- 4) Evaluation of newly developed materials.

(3) Education

Introduction of Oral Health Engineering, Introduction of Clinical Dental Technology, Teeth Morphological Curving, Advanced Teeth Morphological Curving, Conservative Dentistry, Science of Occlusion, Advanced Science of Occlusion, Communication Theory, Health Promotion, Basic Fixed Prosthodontics, Advanced Fixed Prosthodontics, Complete Denture Prosthodontics, Removable Partial Prosthodontics, Globalization for Oral Health Engineering, Gerodontology, Laws for Dental Technologists, CAD/CAM System Technology, CAD/CAM System Technology Practice, Special Lectures for Advanced Technology, Management and Regulation for Dental Technologists, Oral Appliances, Aesthetic Dentistry Practice, Orthodontic Dentistry, Comprehensive Oral Rehabilitation Engineering Practice, Graduation Research

(4) Publications

[Original Articles]

1. Takashi Hatayama, Tomoko Tabata, Kota Kibe, Masaomi Ikeda, Yasunori Sumi, Yasushi Shimada . Bonding Performance of a New Resin Core System with a Low-Polymerization-Shrinkage Monomer to Root Canal Dentin Polymers. 2024.11; 16(23);
2. Takaaki Sato, Keiichi Hosaka, Junji Tagami, Hirofumi Tashiro, Hitoshi Miki, Kazunori Otani, Miho Nishimura, Masahiro Takahashi, Yasushi Shimada, Masaomi Ikeda. Clinical evaluation of direct composite

versus zirconia resin-bonded fixed dental prostheses for a single missing anterior tooth: A short-term multicenter retrospective study. *Journal of Dentistry*. 2024.10; 151; 105401

3. Lee SY, Shimada Y, Sadr A, Tabata T, Sato T, Byun JE, Han SH. Degree of conversion and interfacial adaptation of touch-cure resin cement polymerized by self-curing or dual-curing with reduced light. *Clinical oral investigations*. 2024.08; 28(8); 463
4. Chen X, Inoue G, Fan L, Sekizawa O, Nitta K, Ikeda M, Shimada Y. Enhancement of mineral density and mechanical properties in root caries treated with silver diammine fluoride and glass ionomer cement, with emphasis on silver ion distribution. *Journal of dentistry*. 2024.05; 146; 105041
5. Ishihara H, Yonekura K, Ikeda M, Inoue G, Nakajima M, Shimada Y, Hosaka K. Comparative bonding performance of coronal dentin disks and CAD/CAM resin composite disks for biological restoration: The impact of resin-coating technique. *Dental materials journal*. 2024.03; 43(2); 303-311
6. Yang Y, Inoue G, Hosaka K, Tichy A, Ikeda M, Tagami J, Shimada Y. The Effect of a Deproteinizing Pretreatment on the Bonding Performance and Acid Resistance of a Two-step Self-etch Adhesive on Eroded Dentin. *Operative dentistry*. 2024.01; 49(1); 65-75

[Conference Activities & Talks]

1. Yoshiko Sasaki, Tomoko Komagata, Masaomi Ikeda, Kanae Tanaka, Yumiko Ogawa, Shigeru Miyamae, Yoko Hamadate, Yoko Imazu, Yutaka Ueki. Survey on CBRNE Disaster Casualty Acceptance Readiness and Staff Education Needs at Regional Medical Care Support Hospitals. The 8th International Conference of World Society of Disaster Nursing (WSDN) 2024.11.30 Kobe
2. Siqi Zeng, Rena Takahashi, Masaomi Ikeda, Yasushi Shimada. The influence of zirconia thickness on bonding performance of dual-cured and light-cured resin cements. The 160th Meeting of the Japanese Society of Conservative Dentistry 2024.05.17 Miyagi, Japan
3. 曾 宸, 田端 倫子, 高橋 礼奈, 品川 淳一, 池田 正臣, 高野 隼輔, 角 保徳, 田上 順次, 島田 康史. CAD/CAM 冠の非侵襲的辺縁適合性評価. 特定非営利活動法人日本歯科保存学会学術大会プログラムおよび講演抄録集 2024.05.16 宮城県仙台市
4. Hirotoishi Iwabuchi, Go Inoue, Masaomi Ikeda, Yasushi Shimada. Acid resistance and bond strength of calcium-containing adhesive on enamel. 2024 IADR/AADOCR/CADR General Session & Exhibition 2024.03.16 Ernest N. Morial Convention Center, New Orleans, Louisiana, USA
5. Xu K, Inokoshi M, Yoshihara K, Kakehata M, Yashiro H, Takahashi R, Yamamoto M, Ikeda M, Minakuchi S. Bonding efficacy to femtosecond laser irradiated highly translucent zirconia ceramic. 102nd General Session & Exhibition of the IADR 2024.03.16 New Orleans
6. A. Khaled, T. Sato, T. Tabata, M. Zhao, K. Kibe, T. Hatayama, M. Ikeda, Y. Shimada. Comparing gap detection using OCT and leakage test. 102nd General Session & Exhibition of the IADR, NEW ORLEANS, LA, USA 2024.03.13
1. Go Inoue, Lin Fan, Masaomi Ikeda, Yasushi Shimada. Adhesive evaluation of a new self-adhesive resin composite, SA-100R, on uncut enamel. 2024.11.22
2. Shunsuke TAKANO, Rena TAKAHASHI, Tomoko TABATA, Chen ZENG, Masaomi IKEDA, Yasushi SHIMADA. Bonding performance of resin cements with universal adhesives. The 160th Meeting of the Japanese Society of Conservative Dentistry 2024.05.17 Miyai, Japan

Department of Liver Disease Control

Professor : Yasuhiro ASAHINA

Graduate Student

(collaboration with Department of Gastroenterology and Hepatology in TMDU)

Jun TUCHIYA, Taro SHIMIZU, Keiya WATAKABE, Tomohiro MOCHIDA, Kento INADA

(1) Outline

Patients died of chronic liver diseases, including liver cancer, are about 40,000 persons per a year in Japan. Liver transplantation remains the only effective treatment available to patients with end-stage liver diseases. Because of a serious shortage of donors for allogeneic liver transplantation, an alternative therapy is needed. Prevention of hepatocarcinogenesis and hepatic fibrosis is also necessary for patients with chronic hepatitis, and the development of effective treatment for progressive liver diseases has been quite essential. We believe that the central role of clinical departments in the graduate school of TMDU is to establish basis for the innovative medical treatment in the next generation. To achieve our mission, both basic research lead by clinical concepts and development of novel therapeutics established upon basic research are required.

Our section is a donation-funded department collaborating with the Department of Gastroenterology and Hepatology in TMDU. Most of basic research projects, education for students, and clinical contributions including multicenter studies are collaboration with the Department of Gastroenterology and Hepatology in TMDU. The goal of our education is to promote students to become a well-developed hepatologist, and also a leading expert in the field of Hepatology and Gastroenterology.

(2) Research

Our principle is to achieve a research evoked from various clinical problems, and also directed to launch innovative therapeutic procedures to the daily clinical practice.

We focus on the basic studies of molecular mechanism regulating development, pathophysiology, progression, and therapeutic resistance of hepatocellular carcinoma (HCC). We also focus on the development of novel disease models using human induced pluripotent stem cells, the research for molecular mechanisms regulating liver tissue regeneration and hepatic fibrogenesis, the study for molecular mechanisms regulating differentiation of hepatic stem/progenitor cells, analysis of mechanisms regulating escape of hepatitis viruses from innate immune systems in host cells, and factors for therapeutic resistance against antiviral agents.

Research projects

- Research for mechanism regulating development, pathophysiology, progression, and therapeutic resistance of HCC, based on molecular biology and genome informatics
- Development of novel disease models using human induced pluripotent stem cells to elucidate the pathophysiology of liver diseases
- Research for molecular mechanisms regulating liver tissue regeneration and hepatic fibrogenesis
- Research for molecular mechanisms regulating differentiation of hepatic stem/progenitor cells
- Analyses of molecular mechanisms regulating escape of hepatitis viruses from innate immune systems in host cells, and clinical factors for therapeutic resistance against antiviral agents.

(3) Education

Primary goal for education in our section is to train highly educated and experienced clinician-researchers in the field of hepatology. Our goal for education of graduate students is to produce clinical researchers thinking from a wide perspective and to bring up leaders of the next generation in hepatology.

(4) Lectures & Courses

Our lectures and courses are collaboration with the Department of Gastroenterology and Hepatology in School of Medicine, TMDU. We also educate clinical residents in Medical Hospital of TMDU and graduate students of the Department of Gastroenterology and Hepatology, in TMDU in collaboration with such department.

(5) Clinical Services & Other Works

For the treatment of patients with diseases of liver, biliary duct, and pancreas in Medical Hospital of TMDU, we collaborate with the Department of Gastroenterology and Hepatology in TMDU. In the clinical section, we pursue development and application of highly advanced technologies, including novel procedures, for sophisticated diagnosis and treatment of diseases of liver, biliary duct, and pancreas. We also operate a lot of multicenter study collaborating with the Department of Gastroenterology and Hepatology in TMDU. We participate in 8 research projects for treatment and eradication of hepatitis virus funded by Japan Agency for Medical Research and Development (AMED). From April 2019, our clinical research program, “Development of innovative disease models using hepatic organoids derived from human induced pluripotent stem cells and construction of new treatments to suppress carcinogenesis in liver” , was started as Programs for Basic and Clinical Research on Hepatitis in Division of infectious disease research, AMED. This program is primarily operated by our department in cooperation with several departments in TMDU and other institute. We are trying to develop novel therapeutic strategies to treat progressive liver diseases. We published a lot of studies in peer-reviewed international journals and presented the recent works in a lot of international and domestic conferences as described below.

(6) Clinical Performances

For the treatment of patients with diseases of liver, biliary duct, and pancreas in Medical Hospital of TMDU, we collaborate with the Department of Gastroenterology and Hepatology in TMDU. We have recently established the outpatient department specialized for chronic hepatitis, cirrhosis, and HCC. We have operated a lot of multicenter study about efficacy of treatment against viral hepatitis, named as “Ochyanomizu Liver Conference”. More than 2000 patients with viral hepatitis were enrolled in such studies. We have clarified the clinical factors predicting accurately the therapeutic prognosis and risk for development of HCC. We are developing the screening programs for the early detection of HCC in patients with chronic hepatitis after eradication of viruses utilizing non-invasive elastography, novel serum markers, and dynamic contrast-enhanced ultrasonography. For the treatment of HCC, three-dimensional location and structure of tumors and vessels are evaluated by multilateral approaches using dynamic contrast-enhanced ultrasonography, Gd-EOB-DTPA enhanced MRI, and real-time virtual ultrasonography (RVS). We have reported the utility and safety of such therapeutic approaches. We are providing patients the appropriate therapeutic option based on collective multimodal therapeutic strategy in collaboration with departments of surgery and radiology.

(7) Publications

[Original Articles]

1. Miyako Murakawa, Mina Nakagawa, Hisaaki Nishimura, Shun Kaneko, Masato Miyoshi, Fukiko Kawai-Kitahata, Sayuri Nitta, Jun Tsuchiya, Taro Shimizu, Keiya Watakabe, Tomohiro Mochida, Kento Inada, Yasuhiro Iizuka, Hideki Sakai, Yuki Sakurai, Ayako Sato, Seishin Azuma, Takahiro Kawamura, Chiaki Maeyashiki, Masayuki Kurosaki, Fumihiko Kusano, Hideki Watanabe, Hitoshi Kurata, Yuko

- Karakama, Takeo Fujiwara, Yuki Nagata, Toshihiro Tanaka, Sei Kakinuma, Ryuichi Okamoto, Yasuhiro Asahina. High serum gamma-glutamyltransferase level after hepatitis C virus elimination is a risk factor for the development of hepatocellular carcinoma. *Hepatol Res.* 2024.12; 54(12); 1128-1138
2. Yotaro Motomura, Kota Yoshifuji, Keisuke Tanaka, Chizuko Sakashita, Yoshihiro Umezawa, Toshikage Nagao, Sayuri Nitta, Yasuhiro Asahina, Takehiko Mori, Masahide Yamamoto. Hepatitis C virus-related hepatitis flare after immunochemotherapy in a patient with follicular lymphoma. *J Clin Exp Hematop.* 2024.12; 64(4); 313-317
 3. Yuki Tahata, Hayato Hikita, Satoshi Mochida, Nobuyuki Enomoto, Norifumi Kawada, Akio Ido, Daiki Miki, Masayuki Kurosaki, Hitoshi Yoshiji, Ryotaro Sakamori, Hidekatsu Kuroda, Hiroshi Yatsuhashi, Taro Yamashita, Yoichi Hiasa, Naoya Kato, Hisamitsu Miyaaki, Yoshiyuki Ueno, Yoshito Itoh, Kentaro Matsuura, Taro Takami, Yasuhiro Asahina, Goki Suda, Norio Akuta, Ryosuke Tateishi, Yasunari Nakamoto, Eiji Kakazu, Shuji Terai, Masahito Shimizu, Masanori Miyazaki, Yasutoshi Nozaki, Satoshi Sobue, Hiroki Yano, Tomokatsu Miyaki, Akihiro Moriuchi, Takeshi Hori, Kumiko Shirai, Kazuhiro Murai, Yoshinobu Saito, Takahiro Kodama, Tomohide Tatsumi, Tomomi Yamada, Tetsuo Takehara. Factors involved in gastroesophageal varix-related events in patients with hepatitis C virus-related compensated and decompensated cirrhosis after direct-acting antiviral therapy. *Hepatol Res.* 2024.10; Online ahead of print;
 4. Haruki Uojima, Kazumi Yamasaki, Masaya Sugiyama, Masayoshi Kage, Norihiro Ishii, Ken Shirabe, Hisashi Hidaka, Chika Kusano, Miyako Murakawa, Yasuhiro Asahina, Takashi Nishimura, Hiroko Iijima, Kazumasa Sakamoto, Kiyoaki Ito, Keisuke Amano, Takumi Kawaguchi, Nobuharu Tamaki, Masayuki Kurosaki, Takanori Suzuki, Kentaro Matsuura, Akinobu Taketomi, Satoru Joshita, Takeji Umemura, Sohji Nishina, Keisuke Hino, Hidenori Toyoda, Hiroshi Yatsuhashi, Masashi Mizokami. Quantitative measurements of M2BPGi depend on liver fibrosis and inflammation. *J Gastroenterol.* 2024.07; 59(7); 598-608
 5. Watakabe K, Miyoshi M, Kakinuma S, Sato A, Tsuchiya J, Shimizu T, Mochida T, Inada K, Kaneko S, Kawai-Kitahata F, Murakawa M, Nitta S, Nakagawa M, Oshima S, Watanabe M, Ma A, Asahina Y, Okamoto R. A20 in hepatic stellate cells suppresses chronic hepatitis by inhibiting DCLK1-JNK pathway-dependent chemokines. *FASEB journal : official publication of the Federation of American Societies for Experimental Biology.* 2024.07; 38(13); e23757
 6. Shun Kaneko, Yasuhiro Asahina, Miyako Murakawa, Shunsuke Ueyama, Chiaki Maeyashiki, Hideki Watanabe, Akiko Kusano-Kitazume, Ayako Sato, Kozue Uchidate, Takehito Asakawa, Sho Watanabe, Yasuhiro Iizuka, Isamu Shibata, Shinya Ooka, Yuko Karakama, Takashi Fujii, Taro Watabe, Keiichi Akahoshi, Minoru Tanabe, Kento Inada, Tomohiro Mochida, Keiya Watakabe, Taro Shimizu, Jun Tsuchiya, Masato Miyoshi, Fukiko Kitahata-Kawai, Sayuri Nitta, Mina Nakagawa, Sei Kakinuma, Ryuichi Okamoto, . Prognostic significance of C-reactive protein in unresectable hepatocellular carcinoma treated with atezolizumab and bevacizumab. *Hepatol Res.* 2024.06; 54(6); 562-574
 7. Tatsuya Suzuki, Yuka Hayakawa, Shun Kaneko, Kento Takenaka, Keiya Watakabe, Yuko Kinowaki, Akira Takemoto, Kazuo Ohtsuka, Yasuhiro Asahina, Ryuichi Okamoto. Granulomatous hepatitis with Crohn's disease: a case report. *Clin J Gastroenterol.* 2024.06; 17(3); 551-556
 8. Keito Suzuki, Yutaka Yasui, Kaoru Tsuchiya, Hiroaki Matsumoto, Yudai Yamazaki, Naoki Uchihara, Yuki Tanaka, Haruka Miyamoto, Michiko Yamada-Shimizu, Taisei Keitoku, Risa Okada, Mayu Higuchi, Kenta Takaura, Shohei Tanaka, Chiaki Maeyashiki, Nobuharu Tamaki, Hiroyuki Nakanishi, Yuka Takahashi, Yasuhiro Asahina, Ryuichi Okamoto, Masayuki Kurosaki, Namiki Izumi. Impact of immune-related adverse events in patients with hepatocellular carcinoma treated with atezolizumab plus bevacizumab. *J Gastroenterol Hepatol.* 2024.06; 39(6); 1183-1189
 9. Shun Kaneko, Yasuhiro Asahina, Miyako Murakawa, Seishin Azuma, Kento Inada, Tomohiro Mochida, Keiya Watakabe, Taro Shimizu, Jun Tsuchiya, Masato Miyoshi, Fukiko Kawai-Kitahata, Sayuri Nitta, Marie Takahashi, Tomoyuki Fujioka, Mitsuhiro Kishino, Tatsuhiko Anzai, Sei Kakinuma, Mina Nakagawa, Ryuichi Okamoto. Analysis of prognosis and background liver disease in non-advanced hepatocellular carcinoma in two decades. *PLoS One.* 2024; 19(3); e0297882

[Conference Activities & Talks]

1. Mina Nakagawa, Miyako Murakawa, Masato Miyoshi, Shun Kaneko, Tsuchiya Jun, Taro Shimizu, Keiya Watakabe, Sei Kakinuma, Ryuichi Okamoto and Yasuhiro Asahina. High GGT levels is a risk factor for HCC development having potential to reflect mitochondrial dysfunction after HCV eradication. AASLD2024 2024.11.15
2. Mina Nakagawa, Miyako Murakawa, Yasuhiro Asahina. Risk factors for HCC and prognosis after SVR to construct an effective post-treatment surveillance system. JDDW2024 2024.11.01
3. Mina Nakagawa, Miyako Murakawa, Masato Miyoshi, Shun Kaneko, Fukiko Kawai-Kitahata, Sayuri Nitta, Sei Kakinuma, Ryuichi Okamoto and Yasuhiro Asahina. SVR 後の肝臓、生存とメタボ因子に関する解析. APASL 2024 Kyoto 2024.03.28

Department of Advanced Therapeutics for GI Diseases

Associate Professor : Takashi NAGAISHI

(1) Outline

The goal of our department is to develop novel therapeutic strategies for inflammatory bowel diseases (IBD) in humans. With multiple layers of support of corporations who wish to contribute to our mission, we have been focusing on IBD research from the clinical and basic science perspectives, providing an exceptional education program for graduate students at TMDU.

(2) Research

Our research activities focus on the key areas listed below. We have a particular emphasis on translational (bench to clinic) research on IBD.

- Research on the intestinal epithelium to develop regenerative medicine approaches for IBD
- The study of mucosal immunology to develop novel approaches for the diagnosis and treatment of IBD

(3) Education

We share our expertise and teaching program in graduate course education with the Department of Gastroenterology and Hepatology at TMDU. We are also involved in many programs designed for undergraduates.

(4) Lectures & Courses

Our goal is to create future leaders who are able to reach the highest level of quality in IBD research through the training of fellows and graduate/undergraduate students.

(5) Clinical Services & Other Works

We focus on developing highly advanced technologies, including novel procedures, for diagnosis and treatment of IBD in collaboration with the Department of Gastroenterology and Hepatology at TMDU. In addition, we have been playing a major role in nation-wide survey and multi-center studies on IBD, which is funded by the Japanese Ministry of Health, Labor and Welfare.

(6) Clinical Performances

- Development of new treatment protocol for IBD patients with stem cell therapy or immunomodulators.
- Development of minimally-invasive diagnostic modalities for inflammatory bowel diseases (i.e. MRE).
- Diagnosis and treatment of small intestinal lesions of inflammatory bowel diseases by double-balloon enteroscopy.

(7) Publications

[Original Articles]

1. Yuki Yonemoto, Yasuhiro Nemoto, Ryo Morikawa, Nana Shibayama, Shigeru Oshima, Takashi Nagaishi, Tomohiro Mizutani, Go Ito, Satoru Fujii, Ryuichi Okamoto. T cell subsets were increased in the small intestinal intraepithelial lymphocytes of aged mice. *Front Immunol.* 2024.01; 15; 1340048

[Conference Activities & Talks]

1. Yuki Yonemoto, Yasuhiro Nemoto, Ryuichi Okamoto. Single cell analysis revealed that two distinct, unique CD4+ T cell subsets were increased in the small intestinal intraepithelial lymphocytes of aged mice. JDDW2024 2024.10.31 Kobe_Japan
2. Inoue T, Fushimi M, Yamada D, Watabe T, Watanabe M, Okamoto R, Nagaishi T. Downregulated apelin expression in T cells in the setting of chronic colitis. ECCO 2024.02.23 Stockholmsmässan.Stockholm
3. Inoue T, Fushimi M, Tsugawa N, Yamada D, Watabe T, Watanabe M, Okamoto R, Adachi T, Blumberg RS, Nagaishi T. B cell receptor signaling-mediated activation in lymphoid tissues is regulated by the long isoform of CEACAM1. The 52nd Annual Meeting of the Japanese Society for Immunology 2024.01.19 Chiba_Japan
4. Fushimi M, Inoue T, Yamada D, Kojima Y, Hosoya A, Watabe T, Watanabe M, Okamoto R, Nagaishi T. APL downregulation in T cells in an animal model of chronic colitis. The 52nd Annual Meeting of the Japanese Society for Immunology 2024.01.19 Chiba_Japan

Department of Nutrition and Metabolism in Cardiovascular Disease

Makiko Egawa
Maki Gau

(1) Outline

This course was established as a donated research division attached to the Department of Life Sciences and Medical Ethics.

The main themes are investigating the mechanism of arteriosclerosis development, which are one of the main causes of lifestyle-related diseases such as cardiovascular diseases and diabetes. This course also has been interested in the treatment and prevention of atherosclerosis and its relationship toward pregnancy in women. Our education is being developed with the aim of training excellent researchers and highly specialized professionals with specialized knowledge and abilities capable of playing an active role in the international community.

(2) Publications

[Original Articles]

1. Eriko Adachi, Ryuichi Nakagawa, Atsumi Tsuji-Hosokawa, Maki Gau, Shizuka Kirino, Analia Yogi, Hisae Nakatani, Kei Takasawa, Tomomi Yamaguchi, Tomoki Kosho, Masanori Murakami, Toshihiro Tajima, Tomonobu Hasegawa, Tetsuya Yamada, Tomohiro Morio, Osamu Ohara, Kenichi Kashimada. A MinION-based Long-Read Sequencing Application With One-Step PCR for the Genetic Diagnosis of 21-Hydroxylase Deficiency. *J Clin Endocrinol Metab.* 2024.02; 109(3); 750-760
2. Egawa M, Ikeda M, Miyasaka N, Harada-Shiba M, Yoshida M. Physicians' Perspective Toward Hypertensive Disorders of Pregnancy and Future Cardiovascular Diseases in Japan. *Journal of atherosclerosis and thrombosis.* 2024.02;

[Conference Activities & Talks]

1. Fumika Morokuma, Makiko Egawa, Masakazu Nishigaki, Haruka Hamanoue, Hideaki Masuzaki, Kiyonori Miura, Tomoko Kobhashi, Masayuki Yoshida. Effectiveness and usability of 'Ninshiru.jp', a website about pregnancy, childbirth, and prenatal testing. 日本人類遺伝学会第 69 回大会 2024.10.11 札幌市
2. Makiko Egawa, Kinya Ishikawa, Eriko Takamine, Sayako Takahashi, Mariko Komine, Hiroko Kohbata, Taro Ishiguro, Maki Gau, Yusuke Ebana, Masayuki Yoshida. Predictive genetic testing for late-onset, inherited neurological diseases: a case series of 40 clients. 日本人類遺伝学会第 69 回大会 2024.10.10 札幌市

Department of Collaborative Medicine for Gastroenterology and Hepatology (CMGH)

Associate Professor : Toshimitsu Fujii
Junior Associate Professor : Kento Takenaka

(1) Outline

Our department was established for the aim to support the medical care at Tokyo Medical and Dental University (TMDU), and to foster experts in the field of gastroenterology and hepatology who engaged a community medicine such as Ibaraki prefecture. In collaboration with the Department of Gastroenterology and Hepatology in TMDU, we will strengthen an information sharing system and an education training support system that build up with Tsuchiura Kyodo General Hospital and other related facilities. We hope to develop the community medicine through the communication and personal exchanges between such hospitals and us.

(2) Research

- Clinical research on liver diseases related to lifestyle-related diseases
- Establishment of optimized therapy in hepatobiliary diseases
- Development of evaluation and treatment of small bowel lesions in Crohn's disease.
- Development of support technology for diagnosis of digestive and liver diseases by artificial intelligence (AI).

(3) Education

Primary goal for education in our department is to train highly educated and experienced clinicians in the field of gastroenterology and hepatology. Therefore, our goal for education of graduate students is to produce clinicians thinking from a wide perspective and to bring up leaders of the next generation in the field of gastroenterology and hepatology.

(4) Lectures & Courses

Our lectures and courses for medical students are collaboration with the Department of Gastroenterology and Hepatology in School of Medicine, TMDU. We also educate clinical residents in Medical Hospital of TMDU and graduate students of the Department of Gastroenterology and Hepatology, TMDU in collaboration with such department.

(5) Clinical Services & Other Works

In collaboration with the Department of Gastroenterology and Hepatology, we mainly provide outpatient and inpatient care of gastrointestinal and hepatobiliary diseases. In addition, we are managing a lot of multicenter studies including Tsuchiura Kyodo General Hospital. We are conducting industry-academic collaborative research in the field of AI research using the comprehensive collaboration program of TMDU.

(6) Clinical Performances

In collaboration with the Department of Gastroenterology and Hepatology, TMDU, we provide a medical care of liver and inflammatory bowel diseases. We have recently established special outpatient clinics for chronic hepatitis, liver cirrhosis, hepatocellular carcinoma and inflammatory bowel diseases.

We are operating a lot of multicenter studies. One of the multicenter studies evaluates the efficacy of treatment against viral hepatitis, named as “Ochanomizu Liver Conference”, in which more than 2,000 patients have been enrolled. We approach to improve the safety and reliance of treatment for hepatocellular carcinoma, the patients are treated using multilateral approaches by dynamic contrast-enhanced ultrasonography, Gd-EOB-DTPA enhanced MRI, and real-time virtual ultrasonography (RVS). We have reported the utility and safety of such therapeutic approaches. We have also performed balloon-assisted enteroscopy for the small intestine. The patients' number were top-class in the world.

(7) Publications

[Original Articles]

1. Kento Takenaka, Tadakazu Hisamatsu, Taku Kobayashi, Hironori Yamamoto, Naoki Ohmiya, Ryohei Hayashi, Katsuyoshi Matsuoka, Masayuki Saruta, Akira Andoh, Norimasa Fukata, Kenji Watanabe, Hiroyuki Imaeda, Fumihito Hirai, Takayuki Matsumoto, Akihiro Hirakawa, Tomonori Yano, Minoru Matsuura, Ryuichi Okamoto, Kazuo Ohtsuka, Mamoru Watanabe. Inadequate Efficacy of Biologics for Treating Proximal Ileal Lesions in Crohn's Disease; A Prospective Multicenter Study. *Clin Gastroenterol Hepatol.* 2024.12; Online ahead of print;
2. Shimizu H, Aonuma Y, Hibiya S, Kawamoto A, Takenaka K, Fujii T, Saito E, Nagahori M, Ohtsuka K, Okamoto R. Long-term efficacy and safety of tofacitinib in patients with ulcerative colitis: 3-year results from a real-world study. *Intestinal research.* 2024.07;
3. Taku Kobayashi, Kei Moriya, Toshimitsu Fujii, Shigeki Bamba, Shinichiro Shinzaki, Akihiro Yamada, Takashi Hisabe, Shintaro Sagami, Shuji Hibiya, Takahiro Amano, Noritaka Takatsu, Katsutoshi Inagaki, Ken-Ichi Iwayama, Toshifumi Hibi. Early resolution of bowel urgency by budesonide foam enema results in improved quality of life in patients with ulcerative colitis: a multicenter prospective observational study. *Intest Res.* 2024.07; Online ahead of print;
4. Tatsuya Suzuki, Yuka Hayakawa, Shun Kaneko, Kento Takenaka, Keiya Watakabe, Yuko Kinowaki, Akira Takemoto, Kazuo Ohtsuka, Yasuhiro Asahina, Ryuichi Okamoto. Granulomatous hepatitis with Crohn's disease: a case report. *Clin J Gastroenterol.* 2024.06; 17(3); 551-556
5. Shintaro Akiyama, Kaoru Yokoyama, Soichi Yagi, Shinichiro Shinzaki, Kozo Tsuruta, Shinichiro Yoshioka, Minako Sako, Hiromichi Shimizu, Mariko Kobayashi, Toshiyuki Sakurai, Kei Nomura, Tomoyoshi Shibuya, Masahiro Takahara, Sakiko Hiraoka, Kyohei Sugai, Shunichi Yanai, Atsushi Yoshida, Miki Koroku, Teppei Omori, Masayuki Saruta, Takayuki Matsumoto, Ryuichi Okamoto, Kiichiro Tsuchiya, Toshimitsu Fujii. Efficacy and safety of filgotinib for ulcerative colitis: A real-world multicenter retrospective study in Japan. *Aliment Pharmacol Ther.* 2024.06; 59(11); 1413-1424
6. Motoki Makuuchi, Yoichi Kakuta, Junji Umeno, Toshimitsu Fujii, Tetsuya Takagawa, Takashi Ibuka, Miki Miura, Yu Sasaki, Sakuma Takahashi, Hiroshi Nakase, Hiroki Kiyohara, Keiichi Tominaga, Yosuke Shimodaira, Sakiko Hiraoka, Nobuhiro Ueno, Shunichi Yanai, Takeo Yoshihara, Kazuki Kakimoto, Katsuyoshi Matsuoka, Ryohei Hayashi, Sohachi Nanjo, Itaru Iwama, Yoh Ishiguro, Hirofumi Chiba, Katsuya Endo, Takashi Kagaya, Tomohiro Fukuda, Yasuhisa Sakata, Takahiro Kudo, Tomohisa Takagi, Kenichi Takahashi, Makoto Naganuma, Masaru Shinozaki, Noriyuki Ogata, Hiroki Tanaka, Kazuyuki Narimatsu, Haruka Miyazaki, Takashi Ishige, Motoyuki Onodera, Yu Hashimoto, Hiroshi Nagai, Yusuke Shimoyama, Takeo Naito, Rintaro Moroi, Hisashi Shiga, , Yoshitaka Kinouchi, Akira Andoh, Tadakazu Hisamatsu, Atsushi Masamune. Real-world NUDT15 genotyping and thiopurine treatment optimization in inflammatory bowel disease: a multicenter study. *J Gastroenterol.* 2024.06; 59(6); 468-482
7. Marc Ferrante, Peter M Irving, Maria T Abreu, Jeffrey Axler, Xiang Gao, Qian Cao, Toshimitsu Fujii, Astrid Rausch, Joana Torres, Ezequiel Neimark, Alexandra Song, Kori Wallace, Kristina Kligys, Sofie Berg, Xiaomei Liao, Qing Zhou, Jasmina Kalabic, Brian Feagan, Remo Panaccione. Maintenance

Risankizumab Sustains Induction Response in Patients with Crohn's Disease in a Randomized Phase 3 Trial. *J Crohns Colitis*. 2024.03; 18(3); 416-423

8. Ami Kawamoto, Kento Takenaka, Shuji Hibiya, Yoshio Kitazume, Hiromichi Shimizu, Toshimitsu Fujii, Eiko Saito, Kazuo Ohtsuka, Ryuichi Okamoto. Combination of leucine-rich alpha-2 glycoprotein and fecal markers detect Crohn's disease activity confirmed by balloon-assisted enteroscopy. *Intest Res*. 2024.01; 22(1); 65-74
9. Xiang Gao, Toshimitsu Fujii, Byong Duk Ye, Jen-Wei Chou, Ken Sugimoto, Qian Cao, Kristina Kligys, Kaoru Murakoshi, Dennis Teng, Yafei Zhang, Hiroshi Nakase. Efficacy and safety of risankizumab for Crohn's disease in patients from Asian countries: a post hoc subanalysis of the global phase 3 ADVANCE, MOTIVATE, and FORTIFY studies. *J Gastroenterol Hepatol*. 2024.01; 39(1); 55-65

[Conference Activities & Talks]

1. Ami Kawamoto, Toshimitsu Fujii, Ryuichi Okamoto. Serum leucine-rich alpha-2 glycoprotein is an accurate marker for endoscopic and histological healing in ulcerative colitis. JDDW2024 2024.11.01 Kobe_Japan
2. Shuji Hibiya, Kento Takenaka, Ryuichi Okamoto. Comparison of the efficacy of biologics for intestinal stricture in Crohn's disease. The 107th Congress of the Japan Gastroenterological Endoscopy Society 2024.05.31 Tokyo_Japan
3. Ami Kawamoto, Kento Takenaka, Ryuichi Okamoto. Efficacy of biomarkers in predicting prognosis of Crohn's disease patients with small bowel disease. The 107th Congress of the Japan Gastroenterological Endoscopy Society 2024.05.30 Tokyo_Japan
4. K Matsuoka, S Motoya, T Yamamoto, M Matsuura, T Fujii, S Shinzaki, Y Mikami, S Arai, J Oshima, Y Endo, H Yuasa, M Hoshi, K Sato, T Hisamatsu. Post-marketing surveillance of tofacitinib in patients with ulcerative colitis in Japan: a final report of safety and effectiveness data. DDW2024 2024.05.19 Walter E. Washington Convention Center_ Washington, D.C.
5. Hiroshi Nakase, Toshimitsu Fujii, Tadakazu Hisamatsu, Yasuo Suzuki, Mamoru Watanabe, Yoko Uchikawa, Shoichiro Goto, Go Fujimoto, Changliang Zhang, Toshifumi Hibi. Ozanimod as induction and maintenance therapy for ulcerative colitis: a randomized, double-blind, placebo-controlled study in Japan (J-True North). DDW2024 2024.05.19 Walter E. Washington Convention Center_ Washington, D.C.
6. Katsuyoshi Matsuoka, Satoshi Motoya, Takayuki Yamamoto, Minoru Matsuura, Toshimitsu Fujii, Shinichiro Shinzaki, Yohei Mikami, Shoko Arai, Junichi Oshima, Yutaka Endo, Hirotoshi Yuasa, Masato Hoshi, Keiko Sato, Tadakazu Hisamatsu. Post-marketing surveillance of tofacitinib in patients with ulcerative colitis in Japan: a final report of effectiveness and safety data. 19th Congress of ECCO 2024.02.23 Stockholmsmässan_Stockholm
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8. Katsuyoshi Matsuoka, Hiroshi Nakase, Toshimitsu Fujii, Tadakazu Hisamatsu, Yasuo Suzuki, Mamoru Watanabe, Yoko Uchikawa, Shoichiro Goto, Go Fujimoto, Changliang Zhang, Toshifumi Hibi. Ozanimod as a once-daily oral therapy for Japanese patients with ulcerative colitis: results from the induction period of a phase 2/3 study (J-True North). 19th Congress of ECCO 2024.02.23 Stockholmsmässan_Stockholm

Department of Child Health and Development

Professor: Hirokazu KANEGANE
Junior Assistant Professor: Akihiro Hoshino

(1) Outline

In addition to acute diseases of medicine and child health care, “growth and medical care” include transition to the chronic phase, long-term medical treatment of patients with intractable diseases, medicine encompassing healthy growth of children. As a philosophy of “growth and medical care”, we establish a developmental and medical system closely related to regional medical care in the suburbs of the metropolitan area, and to foster human resources of pediatricians responsible for next-generation medical care.

(2) Research

We conduct survey research and education based on the organic collaboration between Tokyo Medical and Dental University and Kashiwa City Kashiwa Hospital.

The current main projects are the following.

- 1.Establishment of pediatric medical system in Kashiwa city.
- 2.Study of primary immunodeficiency (PID) predisposing to Epstein-Barr virus infection
- 3.Study of primary antibody deficiency

(3) Education

We conduct a broader range of more specialized clinical education for acquiring pediatric specialists at the University Hospital.

(4) Lectures & Courses

We mainly train young pediatric researchers and specialists. We make them to be familiar with chronic diseases and intractable diseases of childhood and to be responsible for next generation medical care.

(5) Clinical Services & Other Works

We treat children with PID, hematological malignancies, hematological disorders, and malignant solid tumors in the University Hospital.

At Kashiwa City Kashiwa Hospital, we provide pediatric medicine mainly for acute diseases, cooperating with medical facilities in the suburbs, and establish a reliable medical system for children in the local residents.

(6) Clinical Performances

We provide diagnosis, treatment of pathological analysis of primary immunodeficiency (PID) and hematological malignancies, and perform hematopoietic cell transplantation for refractory diseases. Especially, we treat the largest number of patients with PID in Japan.

(7) Publications

[Original Articles]

1. Inoue K, Tomomasa D, Nakagama Y, Takeuchi H, Tanaka Y, Tanimoto K, Kamiya T, Isoda T, Takagi M, Tanaka K, Yoshifuji K, Miwa Y, Ohnishi H, Okada S, Mori T, Yasuda S, Kido Y, Morio T, Kanegane H. Real-world experience of tixagevimab/cilgavimab prophylaxis in Japanese patients with immunodeficiency. *Journal of infection and chemotherapy : official journal of the Japan Society of Chemotherapy*. 2024.12; 31(2); 102577
2. Hitoshi Irabu, Shuya Kaneko, Futaba Miyaoka, Dan Tomomasa, Asami Shimbo, Akira Nishimura, Takahiro Kamiya, Takeshi Isoda, Hirokazu Kanegane, Masaki Shimizu. Yang and Ying of ruxolitinib administration for macrophage activation syndrome complicated by systemic juvenile idiopathic arthritis. *Rheumatology (Oxford)*. 2024.12;
3. Shiro Beppu, Takuro Nishikawa, Dan Tomomasa, Atsushi Hijikata, Hiroshi Kasabata, Hideyuki Terazono, Kazuro Ikawa, Tatsuro Nakamura, Shogo Horikawa, Jun Nagahama, Aki Nakamura, Takanari Abematsu, Shunsuke Nakagawa, Kaoru Oketani, Hirokazu Kanegane, Yasuhiro Okamoto. Perspectives in newborn screening for SCID in Japan. Case report: newborn screening identified X-linked severe combined immunodeficiency with a novel IL2RG variant *Front Immunol*. 2024.11; 15; 1478411
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6. Dan Tomomasa, Tasuku Suzuki, Ichiro Takeuchi, Kimitoshi Goto, Shin-Ichiro Hagiwara, Dai Keino, Satoshi Saida, Takashi Ishige, Takahiro Kudo, Katsuhide Eguchi, Masataka Ishimura, Yusuke Matsuda, Taizo Wada, Yoshiya Ito, Motohiro Kato, Yoji Sasahara, Tomohiro Morio, Katsuhiko Arai, Holm H Uhlig, Hirokazu Kanegane. Successful Allogeneic Hematopoietic Cell Transplantation for Patients with IL10RA Deficiency in Japan. *J Clin Immunol*. 2024.09; 45(1); 6
7. Dan Tomomasa, Kay Tanita, Yuriko Hiruma, Akihiro Hoshino, Ko Kudo, Shohei Azumi, Mitsutaka Shiota, Masayoshi Yamaoka, Katsuhide Eguchi, Masataka Ishimura, Yuka Tanaka, Keiji Iwatsuki, Keisuke Okuno, Asahito Hama, Ken-Ichi Sakamoto, Takashi Taga, Kimitoshi Goto, Haruka Ota, Akihiro Ichiki, Kaori Kanda, Takako Miyamura, Saori Endo, Hidenori Ohnishi, Yoji Sasahara, Ayako Arai, Benjamin Fornier, Ken-Ichi Imadome, Tomohiro Morio, Sylvain Latour, Hirokazu Kanegane. Highly sensitive detection of Epstein-Barr virus-infected cells by EBER flow FISH. *Int J Hematol*. 2024.08; 120(2); 241-251
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10. Takanori Utsumi, Miyuki Tsumura, Masato Yashiro, Zenichiro Kato, Kosuke Noma, Fumiaki Sakura, Reiko Kagawa, Yoko Mizoguchi, Shuhei Karakawa, Hidenori Ohnishi, Charlotte Cunningham-Rundles, Peter D Arkwright, Masao Kobayashi, Hirokazu Kanegane, Dusan Bogunovic, Bertrand Boisson, Jean-Laurent Casanova, Takaki Asano, Satoshi Okada. Exclusive Characteristics of the p.E555K Dominant-Negative Variant in Autosomal Dominant E47 Deficiency. *J Clin Immunol.* 2024.07; 44(7); 167
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 12. Tanja C Vallée, Jannik S Glasmacher, Hannes Buchner, Peter D Arkwright, Uta Behrends, Anastasia Bondarenko, Michael J Browning, David Buchbinder, Alessandro Cattoni, Liudmyla Chernyshova, Peter Ciznar, Theresa Cole, Wojciech Czogała, Gregor Dueckers, John David M Edgar, Fatih Erbey, Anders Fasth, Francesca Ferrua, Renata Formankova, Eleonora Gambineri, Andrew R Gennery, Frederick D Goldman, Luis I Gonzalez-Granado, Carsten Heilmann, Tarja Heiskanen-Kosma, Hanna Juntti, Leena Kainulainen, Hirokazu Kanegane, Neslihan E Karaca, Sara S Kilic, Christoph Klein, Sylwia Koltan, Irina Kondratenko, Isabelle Meyts, Gulnara M Nasrullayeva, Lucia D Notarangelo, Srdjan Pasic, Isabelle Pellier, Claudio Pignata, Siraj Misbah, Ansgar Schulz, Gesmar R Segundo, Anna Shcherbina, Mary Slatter, Robert Sokolic, Pere Soler-Palacin, Polina Stepensky, Joris M van Montfrans, Samppa Ryhänen, Beata Wolska-Kuśnierz, John B Ziegler, Xiaodong Zhao, Alessandro Aiuti, Hans D Ochs, Michael H Albert. Wiskott-Aldrich syndrome: a study of 577 patients defines the genotype as a biomarker for disease severity and survival. *Blood.* 2024.06; 143(24); 2504-2516
 13. Sho Hashiguchi, Dan Tomomasa, Takuro Nishikawa, Shuji Ishikawa, Harumi Akaike, Hidehiko Kobae, Tsuyoshi Shirai, Toshikage Nagao, Kosuke Noma, Satoshi Okada, Kazuhiro Kamuro, Yasuhiro Okamoto, Hirokazu Kanegane. 18q Deletion Syndrome Presenting with Late-Onset Combined Immunodeficiency. *J Clin Immunol.* 2024.06; 44(7); 154
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- lymphohistiocytosis (EBV-HLH) patient with cytokine storm enabling allogeneic hematopoietic cell transplantation. *Transl Pediatr.* 2024.04; 13(4); 663-672
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 21. Hirokazu Kanegane, Akifumi Endo, Satoshi Okada, Hidenori Ohnishi, Masataka Ishimura, Ryuta Nishikomori, Kohsuke Imai, Shigeaki Nonoyama, Hideki Muramatsu, Taizo Wada, Atsushi Kuga, Ko Sakamoto, Sharon Russo-Schwarzbaum, Liang-Hui Chu, Barbara McCoy, Zhaoyang Li, Leman Yel. Pharmacokinetics, safety, and efficacy of 20% subcutaneous immunoglobulin (Ig20Gly) administered weekly or every 2 weeks in Japanese patients with primary immunodeficiency diseases: a phase 3, open-label study. *Immunother Adv.* 2024.03; 4(1); ltae001
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[Books etc]

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2. Kanegane, H., Miyamoto, S., Nishimura, A., Yoshida, N. *Comprehensive Hematology and Stem Cell Research.* 2024.08

[Misc]

1. Ayami Ohya, Dan Tomomasa, Fumiaki Sakura, Takaki Asano, Atsuko Arisaka, Takumi Akashi, Menno C van Zelm, Tomohiro Morio, Satoshi Okada, Hirokazu Kanegane. A case of primary ciliary dyskinesia with DRC1 deletion and literature review: Additional evidence on the founder effect. *Pediatr Int.* 2024.12; 66(1); e15808
2. Qin Zhao, Qian Zhao, Xuemei Tang, Yunfei An, Zhiyong Zhang, Dan Tomomasa, Atsushi Hijikata, Xi Yang, Hirokazu Kanegane, Xiaodong Zhao. Atypical familial hemophagocytic lymphohistiocytosis type 3 in children: A report of cases and literature review. *Pediatr Allergy Immunol.* 2024.05; 35(5); e14136

[Conference Activities & Talks]

1. Hirokazu Kanegane. Challenges faced in managing antibody deficiencies and application of SCIG. *APAAACI 2024* 2024.12.11 Kuala Lumpur
2. Hirokazu Kanegane. Allogeneic hematopoietic cell transplantation rescue monogenic IBD. *Translational Gastroenterology and Liver unit Seminar* 2024.10.22 Oxford
3. Hirokazu Kanegane. APSID's 10—Year History and Future Prospects.. *ESID 2024* 2024.10.17 Marseille

4. Satoshi Miyamoto, Kevin Y. Urayama, Akira Nishimura, Setsuo Ota, Riski Muhaimin, Yui Namikawa, Miho Koizumi, Yuki Arakawa, Katsuyoshi Koh, Yuki Yuza, Daisuke Hasegawa, Yuichi Taneyama, Yasuishi Noguchi, Masakatsu Yanagimachi, Takeshi Inukai, Hiroyuki Takahashi, Dai Keino, Daisuke Toyama, Junko Takita, Daisuke Tomizawa, Kazutoshi Koike, Koichi Moriwaki, Yuya Sato, Junya Fujimura, Daisuke Morita, Yujin Sekinaka, Kozue Nakamura, Kazuo Sakashita, Hiroaki Goto, Takeshi Isoda, Kosuke Imai, Hirokazu Kanegane, Tomohiro Morio, Atsushi Manabe, Hiroaki Honda, Masatoshi Takagi. Germline Variants of Transcription Factors Involved in B-Cell Development Associate with B=ALL and Immunodeficiency. The 14th JSH International Symposium 2024 2024.07.13 Hokkaido,Japan
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6. Satoshi Miyamoto, Daiki Niizato, Yohei Nishiyama, Yuya Sasaki, Keisuke Tanaka, Akihiro Hoshino, Takahiro Kamiya, Takeshi Isoda, Masatoshi Takagi, Shohei Azumi, Kenichi Sakamoto, Kenji Kishimoto, Katsutsugu Umeda, Kenichiro Watanabe, Tatsuo Ichinohe, Takehiko Mori, Tomohiro Morio, Hirokazu Kanegane. Allogenic hematopoietic cell transplantation with alemtuzumab in patients with XIAP deficiency. The 14th JSH International Symposium 2024 2024.07.13 Hokkaido,Japan
7. Hoshino A. Pathophysiology and recent topics in EBV-LPD. 16th Congress of Asia continental branch of International Society of Paediatric Oncology 2024.06.24 Kanagawa,Japan
8. Hirokazu Kanegane. Ten-year prospective for the region (APSID role). IPOPI 5th Regional Asian PID Meeting 2024.03.25 Tokyo

Hyperbaric Medical Center

Director and Professor; Kazuyoshi YAGISHITA
Junior Associate Professor ; Takuya OYAIZU, Takashi HOSHINO
Specially Appointed Assistant Professor ; Saisei ANN (2024.4~) , Masaki AMEMIYA (~2024.3)
Senior Resident ; Yasue Niwa
Adjunct Lecturer; Yasushi KOJIMA, Toshiyuki OHHARA
Researcher; Masaki HORIE, Naohiro MITSUMOTO
Staff Assistant; Kiyomi ITOH

(1) Outline

Hyperbaric oxygen therapy (HBO), which can dissolve oxygen in serum in population to atomic pressure and transport oxygen to ischemic tissue, is an established therapy for treatment of several conditions, including decompression illness, carbon monoxide poisoning, acute anterior disturbance, and peripheral ischemic disease. The mechanism of HBO can be described as hyperoxygenation in ischemic soft tissues, reduction of edema, stimulation of fibroblast proliferation and differentiation, increased collagen formation and cross-linking, angiogenesis, and improved preservation of energy metabolism.

This curious treatment has clinically many kinds of efficacy, however, the mechanism of the effect has not been fully understood, and many researchers in the world still attempt to reveal the mechanism of the effect of HBO. This HBO can stimulate the interest of medical students, basic researchers, and clinical doctors, and this hyperbaric medical center can provide opportunities to study hyperbaric oxygen therapy field.

(2) Research

Research Subjects

- 1) Soft tissue injuries related with sports activities
- 2) HBO for conditioning in sports activities
- 3) Diving medicine
- 4) Hyperbaric oxygen therapy

(3) Education

HBO can stimulate the interest of medical students, basic researchers, and clinical doctors, and this hyperbaric medical center can provide opportunities to study hyperbaric oxygen therapy field.

(4) Clinical Services & Other Works

In 2024, 5,271 times hyperbaric oxygen therapy (HBO) in 433 patients were performed in the university hospital.

(5) Publications

[Original Articles]

1. Hotta K, Shimotsu R, Behnke BJ, Masamoto K, Yagishita K, Poole DC, Kano Y. Effect of diabetes on microvascular morphology and permeability of rat skeletal muscle: in vivo imaging using two-photon laser scanning microscopy. *Journal of applied physiology* (Bethesda, Md. : 1985). 2024.10; 137(4); 963-974
2. Ohji S, Aizawa J, Hirohata K, Ohmi T, Mitomo S, Koga H, Yagishita K.. Relationship Between Single-Leg Vertical Jump and Drop Jump Performance, and Return to Sports After Primary Anterior Cruciate Ligament Reconstruction Using Hamstring Graft *Int. J. Sports Phys. Ther.* 2024.09;
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10. Jae-Sung An, Christophe Jacquet, Glauco Loddo, Ahmed Mabrouk, Hideyuki Koga, Jean-Noël Argenson, Matthieu Ollivier. Deformity in valgus knee malalignment is not only in the femur but also in tibia or both, based on demographic and morphological analysis before and after knee osteotomies. *Knee Surg Sports Traumatol Arthrosc.* 2024.05; 32(5); 1087-1095
11. Nobutake Ozeki, Hideyuki Koga, Tomomasa Nakamura, Yusuke Nakagawa, Takashi Hoshino, Masaki Amemiya, Ichiro Sekiya. Real-time virtual sonography-guided ossicle removal in unresolved Osgood-Schlatter disease. *Arthrosc Tech.* 2024.04; 13(4); 102897
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15. Murofushi K, Oshikawa T, Kaneoka K, Akuzawa H, Mitomo S, Hatano G, Furuya H, Hirohata K, Yagishita K. Light weights are as effective as heavy weights for muscle activation in the Hammerobics exercise. PloS one. 2024; 19(9); e0308640

[Conference Activities & Talks]

1. 柳下 和慶. 軟部組織損傷の浮腫軽減に及ぼす高圧酸素の影響. 【第 5 回】アジア太平洋潜水・高気圧環境医学会 2024.08.24 台湾
2. 小柳津 卓哉, 川畑 篤礼, Jonathan G. Schoenecker, 吉井 俊貴. 自家移植骨由来の前駆細胞は移植後も生存し, 軟骨内骨化を誘導し, 腰椎癒合に寄与する. 第 97 回日本整形外科学会学術総会 2024.05.23 福岡市

Sports Dentistry

Department Chair: Hiroshi CHUREI
Section Chief: Kairi HAYASHI
Medical Staff : Kaito TOGAWA, Yoko HOTTA

(1) Outline

We study the effects of sports and exercise on the body from a dental perspective, and conduct research aimed at contributing to dental health management and injury (trauma and disability) diagnosis, treatment, and safety measures for athletes and sports enthusiasts. We also strive to disseminate information so that research findings can be quickly fed back to clinical (medical care) and sports settings.

(2) Research

- Maintaining and improving the oral health of athletes
- Safety measures for sports dental injuries, development of preventive equipment, and enhancement of function
- Correlation between occlusion and skeletal muscle control function
- Relationship between dental diseases and athletic ability

(3) Education

Education of Sports Dentistry

(4) Lectures & Courses

- Education on treatment and prevention methods tailored to the characteristics of athletes
- Education on how to make and use mouth guards and face guards

(5) Clinical Services & Other Works

We aim to maintain, manage, restore and improve the dental health of athletes and enthusiasts. In addition to providing general dental treatment, we also adjust face guards to prevent maxillofacial injuries and mouth guards to prevent dental injuries.

(6) Clinical Performances

We provide dental treatment and oral hygiene instruction tailored to the lifestyle and sporting characteristics of athletes. If necessary, we provide devices to prevent maxillofacial and oral injuries, such as mouth guards and face guards.

(7) Publications

[Original Articles]

1. G Tanabe, T Hasunuma, Y Takeuchi, H Churei, K Hayashi, K Togawa, N Moriya, T Ueno. Assessment of Exercise-Induced Dehydration Status Based on Oral Mucosal Moisture in a Field Survey Dentistry Journal. 2024.12; 13(1); 5
2. S.Shimizu, K.Hayashi, Y.Takeuchi, G.Tanabe, H.Churei, H.Kobayashi, T.Ueno, K.Fueki. Effect of Porphyromonas gingivalis Infection on Healing of Skeletal Muscle Injury: An In Vivo Study Dentistry Journal. 2024.10; 12(11); 346
3. Chenyuan Li, Takahiro Wada, Yumi Tsuchida, Kairi Hayashi, Gen Tanabe, Toshiaki Ueno, Hiroshi Churei. Optimizing additively manufactured mouthguards: An evaluation of multi-layer materials for improved shock absorption and durability compared to conventionally fabricated samples 2024.03;
1. Tanabe G, Komazawa Y, Hasunuma T, Togawa K, Hayashi K, Churei H, Moriya N, Yasui T, Ueno T. Assessment of similarity of association between athlete's subjective fatigue and subjective oral-maxillofacial symptoms Journal of Sports Dentistry. 2024.08; 28(1); 14-19

[Conference Activities & Talks]

1. Gen Tanabe, Tetsuya Hasunuma, Kaito Togawa, Yoko Hotta, Kairi Hayashi, Hiroshi Churei, Kei Miyazawa, Noki Moriya, Toshiaki Ueno. Similarity of subjective condition assessment indices during athlete training camps. 35th congress of Japanese society of clinical sports medicine 2024.11.16
2. Hiroshi CHUREI. To Enjoy the Olympic and Paralympic Games More - A closer look at the relationship between dentistry and sports! . 35th congress of Japanese society of clinical sports medicine 2024.11.16 Niigata
3. Thida Aung, Hiroshi Churei, Kairi Hayashi, Kaung Sithu, Chang Liu, YunChia Lian, Kazuyoshi Tsuchiya, Kazuma Sasaki, Gen Tanabe, Toshiaki Ueno. Simultaneous Measurement of Salivary pH Using Sensors at multiple sites in the oral cavity. 35th congress of Japan Academy of Sports Dentistry 2024.10.13
4. Jahan Esha Ishrat, K.Hayashi, H.Churei. A Case of Competition-Induced Injury to Spectator Leading to Severe Wound Myiasis. 35th congress of Japan Academy of Sports Dentistry 2024.10.13
5. Zequn Li, Kairi Hayashi, Qiushuang Zhu, Yunchia Lian, Shintaro Shimizu, GenTanabe, Hiroshi Churei, Toshiaki Ueno. Investigation of the Association between Salivary secretion and Spatial working memory in vivo. 35th congress of Japan Academy of Sports Dentistry 2024.10.13
6. Yoko Ohara, Kairi Hayashi, Gen Tanabe, Hiroshi.Churei, Toshiaki Ueno. Case of nutritional guidance with a sport's nutritionist's corporation for bodybuilder who was suspected "Relative Energy Deficiency in sport (REDs) " during weight loss. 35th congress of Japan Academy of Sports Dentistry 2024.10.13
7. Hiroshi CHUREI, Chenyuan, Takahiro Wada, Yumi Tsuchida, Kairi Hayashi, Gen Tanabe, Toshiaki Ueno. Study to optimize the shock absorption and durability of additive manufacturing 3D mouthguards.. The 133rd Annual Meeting of the Japan Prothodontic Society 2024.07.01

[Social Contribution]

1. Representative of Japan Association of Sports Dentistry, 2024.06 - Now

Clinical Laboratory

General Manager
-Professor : Shuji Tohda
Associate Manager
-Professor : Hiroyuki Harada
Associate Manager
-Junior Associate Professor : Tadashi Kanouchi
Assistant Professor : Ayako Nogami
Assistant Professor : Sayuri Nitta
Assistant Professor : Mie Ochida
Medical Staff : Naoto Aoyama

(1) Outline

The Clinical Laboratory is a central clinical department that conducts laboratory tests in order to obtain information about the diagnosis, treatment, and prevention of diseases. Physiological tests such as electrocardiogram, echocardiography, pulmonary function tests, and electroencephalogram are also performed at our facility.

(2) Research

Our research subjects are

- 1) New genetic tests for hematological disorders,
- 2) Development of tests for molecular pathology and drug sensitivity of hematological malignancies,
- 3) Genotypic analysis of bacteria for monitoring those transmission in the hospital,
- 4) Development of electrophysiological diagnostic tests for peripheral neuropathies,
- 5) Clinical and electrophysiological study for amyotrophic lateral sclerosis,
- 6) Quality control of nerve conduction study,
- 7) Molecular mechanisms of treatment for hepatitis C.
- 8) Novel methods to analyze cardiac function using echocardiography.

(3) Education

We lecture on clinical laboratory medicine and give technical training on clinical laboratory tests and physiological function tests to not only the medical students and medical technologist students in the faculty of medicine of the university but also those in the other vocational school for medical technologists. We give a labo tour and practice to master course graduate students, too. We gave a general training for clinical laboratory medicine to 17 junior residents of university hospital in 2024.

(4) Clinical Services & Other Works

Clinical laboratory bears an important responsibility for advanced and high quality medical care. Our clinical laboratory is based on the principle of providing the speedy and high quality tests. The highest level of advanced tests, such as qualitative and quantitative analysis of various viral DNA by the PCR method, are also introduced here. In the night time and holidays, the clinical laboratory provides blood products for transfusion in cooperation with the blood transfusion service of the hospital. The updated information on antibiotic sensitivity of the pathogens in each ward is also provided online regularly. Together with the division of infection control and prevention, we monitor the nosocomial transmission of bacteria such as MRSA by genotypic analysis of those. Our clinical laboratory and blood transfusion service have received accreditation of ISO15189 (Medical laboratories - Particular requirements for quality and competence) in June 2014, and renewed it with the latest version in June 2018. It means that the clinical laboratory is an international standard on quality and that our hospital is allowed to conduct the international clinical trials. We give a lecture on laboratory tests at meetings of laboratory medicine-related societies.

(5) Clinical Performances

We are developing new diagnostic methods collaborating with various clinical departments. We are also supporting them in their diagnostic procedure.

(6) Publications

[Original Articles]

1. Nogami, A; Amemiya, HJ; Fujiwara, H; Umezawa, Y; Tohda, S; Nagao, T. Targeting USP14/UCHL5: A Breakthrough Approach to Overcoming Treatment-Resistant FLT3-ITD-Positive AML INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES. 2024.10; 25(19);
2. Umezawa Y, Yoshifuji K, Tanaka K, Nogami A, Nagano K, Tsuji A, Nagao T, Yamamoto M, Kajiwarra M, Tohda S, Mori T. Impact of BK polyomavirus viremia on the outcomes of allogeneic hematopoietic stem cell transplantation. Annals of hematology. 2024.05; 103(5); 1737-1744
3. Kumada H, Itoh M, Tohda S. Effect of Ferroptosis Inducers and Inhibitors on Cell Proliferation in Acute Leukemia. Anticancer research. 2024.03; 44(3); 1003-1010
4. Itoh M, Sasaki S, Tohda S. Renin-Angiotensin System Inhibitors Suppress the Growth of Leukemia Cells. Anticancer Research. 2024.03; 44(3); 1183-1192
5. Goto Y, Nagamine Y, Hanafusa M, Kawahara T, Nawa N, Tateishi U, Ueki Y, Miyamae S, Wakabayashi K, Nosaka N, Miyazaki Y, Tohda S, Fujiwara T. Association of excess visceral fat and severe illness in hospitalized COVID-19 patients in Japan: a retrospective cohort study. International journal of obesity (2005). 2024.01; 48(5); 674-682

[Conference Activities & Talks]

1. Yamazaki A., Yoshimoto A., Ichimura N., Tohda S., Ohkawa R. Validation and Application of Direct Measurement Method for Erythrocytes Cholesterol Content. 17th Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB) Congress 2024.11.01 Sydney
2. Itoh M, Tohda S. ERK inhibitors suppress the growth of leukemia cells. 53rd Annual Scientific Meeting, International Society for Experimental Hematology 2024.07.29
3. Yamazaki A., Yokoyama S., Okazaki M., Ai M., Miyake S., Takahashi J., Kameda T., Ichimura N., Tohda S., Ohkawa R. Influence of lipoprotein(a) on the accuracy of LDL-cholesterol measurement. European Atherosclerosis Society 92nd Congress 2024.05.27 Lyon

Center for Transfusion Medicine and Cell Therapy

Director: Ichiro Sekiya (Center for Stem Cell and Regenerative Medicine/Professor)
Vise Director: Hisako Katano (Center for Stem Cell and Regenerative Medicine/ Associate Professor)
Vise Director: Michiko Kajiware (Center for Transfusion Medicine and Cell Therapy/Junior Associate Professor)
Quality control manager: Hisako Katano (Center for Stem Cell and Regenerative Medicine/
Associate Professor) until Nov 22, 2024
Quality control manager: Michiko Kajiware (Center for Transfusion Medicine and Cell Therapy/
Junior Associate Professor) from Nov 22, 2024
Product manager: Mitsuru Mizuno (Center for Stem Cell and Regenerative Medicine/
Assistant Professor) from May 1, 2023
Specially Appointed Assistant Professor: Takahiro Tomoda (Center for Transfusion Medicine and Cell Therapy)
Head Medical Technologist: Naoki Ohtomo
Section Chief Medical Technologist: Keiko Aikawa, Yukari Usui
Assistant Section Chief Medical Technologist: Yukiko Ohishi, Chihiro Itoh
Medical Technologist: Tomoko Kamiyama, Misaki Chiba, Akiko Shiraishi, Sumire Fujiki, Akemi Fukuoka,
Nozomi Oda, Eriko Okazaki, Fuka Hirose, Mayumi Yoshimori, Mizuki Inagaki
Technician: Saeri Kimbara
Clerical Assistant: Yuka Shinkai

(1) Outline

Center for Transfusion Medicine and Cell Therapy provides “Blood Transfusion”, “Cell Therapy” and “Regenerative Medicine” to assist and regenerate dysfunctional tissues and organs.

In the Blood Transfusion group, Japan Society of Blood Transfusion and Cell Therapy Association certified doctors, certified blood transfusion laboratory staffs, and cell therapy certified administrators enroll. We cover blood transfusion testing, blood product management, safety measures up to the implementation of blood transfusion including blood transfusion certification, and blood transfusion history management. We perform safe and appropriate blood transfusion therapy and hematopoietic stem cell transplantation.

In the Cell Therapy group, we set up a cell processing facility with the aim of putting the world’s top level of regenerative medicine and cell therapy into practical use. Japan Society of Regenerative Medicine certified doctors and clinical culture specialists process cells for clinical research and trials there. We support the practical application of useful regenerative medicine procedures inside and outside our university.

(2) Research

· Blood Transfusion group

1. Study of safe and appropriate blood transfusion implementation and prevention measures for transfusion accidents

With the goal of implementing safe transfusion therapy based on appropriate transfusion tests, we conduct research on testing methods, authentication systems, and in-hospital product processing for reducing side effects (product division and platelet washing).

2. Basic research and clinical application of cell therapy focusing on hematopoietic cell transplantation

The Pediatrics and Hematology Departments perform hematopoietic stem cell transplantation, including unrelated transplants through bone marrow and cord blood banks. We conduct research on cell collection,

preservation, and post-transplant complications to develop low-risk transplantation methods for both patients and donors, leading to clinical applications.

· Cell Therapy group

1. Development of multi-virus specific T lymphocytes for adoptive immunotherapy (Department of Pediatrics and Developmental Biology)

Through collaborative research with Baylor University and the Institute of Medical Science, University of Tokyo, we have advanced research to establish cytotoxic T cells specific to 5 viruses using overlapping peptides from 5 viruses/11 antigens and optimal cytokines. Using this technology, we conducted clinical research from 2016 for treating refractory viral infections after hematopoietic cell transplantation using multi-virus antigen-specific T cells prepared from HLA-haploidentical or more matched related donors. We have implemented cell therapy for 3 cases and submitted a completion notification for the regenerative medicine provision plan in December 2022. Meanwhile, in pursuit of effective and rapid virus-specific T-cell therapy, we are advancing the introduction of pre-prepared and cryopreserved third-party multi-virus antigen-specific T-cell therapy. With support from the Japan Agency for Medical Research and Development (AMED) "Regenerative Medicine Practical Application Research Project" (Principal Investigator: Tomohiro Morio, Research Project Title: Development and Research of Third-party Multi-virus Specific T-cell Therapy for Treatment-resistant Viral Infections after Hematopoietic Cell Transplantation), we established cell culture and quality testing systems and conducted non-clinical safety trials. After approval by the Specially Certified Regenerative Medicine Committee in May 2023, it was approved as a Class I Regenerative Medicine Technology by the Health Science Council's Regenerative Medicine Evaluation Committee on September 1, 2023. Cell cultivation began in September, and by 2024, we manufactured 21 batches of third-party multi-virus specific T-cells, of which 13 lots (sufficient for 124 administrations) were cryopreserved as qualified products. Currently, patient recruitment is underway, and we plan to implement cell administration in the near future.

2. Research on regeneration system of the cartilage from the synovial membrane (Department of Orthopedic Surgery)

With the aim of establishing a new treatment for knee osteoarthritis (OA), we have developed a minimally invasive cell transplantation method using synovium-derived mesenchymal stem cells (synovial MSCs). Since the meniscus is difficult to regenerate and meniscectomy is a risk factor for OA, there is a need to establish a treatment that promotes repair by transplanting synovial MSCs for meniscal injuries that would typically be treated with resection.

From 2017 to 2019, we conducted an "Investigator-initiated clinical trial of autologous synovial MSCs" for meniscal injuries (10 cases), confirming improvements in clinical scores and arthroscopic findings (J. Orthop Sci. 2021). Based on these favorable results, we initiated a corporate clinical trial as a verification study in January 2022.

Additionally, with the aim of developing a treatment using a new administration route for synovial MSCs, we conducted a clinical study "Intra-articular injection of synovial MSCs for osteoarthritis" (Principal Investigator: Ichiro Sekiya) from 2017 to 2020, supported by the Japan Agency for Medical Research and Development (AMED) Regenerative Medicine Research Project. We confirmed clinical score improvements in all 8 knees (Scientific Reports 2022). Furthermore, from April 2023, we began a double-blind comparative trial as part of the AMED Regenerative Medicine Research Project (Principal Investigator: Ichiro Sekiya, Project title: "Investigator-initiated clinical trial of intra-articular injection of synovial MSCs for knee osteoarthritis"). Additionally, from September 2024, we initiated a clinical study titled "Intra-articular injection of post-thaw recultured autologous synovial MSCs for knee osteoarthritis" targeting participants who discontinued the clinical trial.

3. Physician-initiated clinical trial and clinical research on platelet-rich plasma therapy

As part of developing new treatments for osteoarthritis (OA) besides those already mentioned, we are also developing regenerative medicine technologies that are simpler and serve as conservative treatment methods without using cells. Although Platelet-Rich Plasma (PRP) therapy is performed at many facilities, it is mostly offered as an elective treatment, and administration is being carried out with insufficient evidence. Therefore, to scientifically verify the effectiveness of PRP therapy, we are conducting the physician-initiated clinical trial "JC-5724-01". In this trial, Japanese osteoarthritis patients are divided into placebo and treatment groups to evaluate the efficacy and safety of PRP prepared using domestically produced separation equipment. Additionally, in conjunction with the clinical trial, we are analyzing the relationship between PRP component composition and therapeutic effects, searching for biomarkers, and implementing technological development toward practical application. Since this physician-initiated trial includes a placebo group and places a significant

burden on patients, we are concurrently conducting clinical research to rescue patients, manufacturing and administering PRP. Through these efforts, we aim to increase the options for evidence-based conservative treatments and provide appropriate therapy to patients.

4. Development of organoid-based therapy for inflammatory bowel disease (Department of Gastroenterology & Hepatology, Advanced Research Institute)

With the aim of establishing new treatments for inflammatory bowel disease (ulcerative colitis and Crohn's disease), we have developed highly efficient culture methods for intestinal epithelial organoids using patient-derived endoscopic biopsy tissues, quality control methods for safety and in-process control tests for these organoids, and endoscopic intestinal epithelial stem cell transplantation methods using these organoids. Based on the results of these developments and research, we designed a clinical study targeting ulcerative colitis patients, completed the review procedure by a Specially Certified Regenerative Medicine Committee, and in February 2020, it was published on jRCT as a Class II Regenerative Medicine Provision Plan under the Act on the Safety of Regenerative Medicine (after ministerial ordinance revision) (Certification No. NA81400003). After making partial modifications to the plan in response to the revised ministerial ordinance, we have begun recruiting patients who meet the criteria and started implementing transplantations based on the approved provision plan.

5. Foundation Development for the Practical Application of Regenerative Medicine

With the aim of conducting clinical research and investigator-initiated clinical trials in regenerative medicine, we are establishing a contract system for cell culture and cell processing that targets both internal and external seeds, utilizing the cell processing facility within the Transfusion and Cell Therapy Center in cooperation with Keio University Hospital's cell processing facility. To build this system, in April 2021, we employed a senior clinical cell culture technician certified by the Japanese Society for Regenerative Medicine and began preparing the necessary documentation for cell processing contracts. In 2022, as achievements in regenerative medicine product transplantation, we performed 11 cases of Kymriah and 2 cases of HeartSheet.

This research was supported by the Japan Agency for Medical Research and Development (AMED) research grant "Promotion of Infrastructure Development for Practical Application of Regenerative Medicine" (Co-Investigator: Ichiro Sekiya, Project title: "Building a Model Hospital for Promoting Clinical Research of iPS Cells, etc. in Eastern Japan," 2021-2023). Furthermore, from 2024 to 2026, the project has been continued under the title "Enhancement of the Model Hospital for Promoting Clinical Research of iPS Cells, etc. in Eastern Japan," with further infrastructure strengthening in progress.

6. Development of Highly Sensitive and Rapid Comprehensive Virus and Microorganism Testing Methods

Using real-time PCR and solid-phase reagent methodology developed by the Center for Regenerative Medicine, we have established a system for rapid, highly sensitive, and cost-effective testing of HSV1, HSV2, VZV, EBV, CMV, HHV6, HHV7, HHV8, BKV, JCV, B19, and ADV, and have begun research-based testing of specimens from Tokyo Medical and Dental University Hospital. Following the approval of this testing system as "Advanced Medical Care," we transferred the technology to the Department of Laboratory Medicine, which now handles the research-based testing. Meanwhile, we have transferred the technology for multiplex PCR methods and solid-phase reagent manufacturing, resulting in the release of opportunistic infection test kits (Opportunistic Infection Virus Detection Kit) from Shimadzu Corporation and virus test kits for cell preparations (VirFinder) from Shimadzu Diagnostics as research reagents. In addition to qualitative testing for pathogenic microorganisms, we have made it possible to rapidly quantify detected microorganisms using quantitative testing reagents (quantitative strips) with immobilized microorganisms. We are continuously working to increase the types of detectable pathogens and are advancing applications for rapid testing of various viruses as well as bacteria, fungi, and protozoa. We have demonstrated that a multiplex PCR-based mycoplasma detection system (patents granted in Japan, US, and Europe) meets the validation criteria listed in the Reference Information of the 17th Edition of the Japanese Pharmacopoeia. This patent has been licensed to Nissui Pharmaceutical and Takara Bio, with reagent kits now being sold as "MycFinder" by Nissui Pharmaceutical and "Takara Mycoplasma Detection Kit" by Takara Bio. Furthermore, to achieve faster sterility testing methods for bacteria and fungi, we have developed a comprehensive detection system targeting common regions in bacterial and fungal ribosomal RNA genes using real-time PCR methods.

(3) Education

・ Blood Transfusion group

In addition to educating internal students (School of Medicine, Health Sciences and Technology Program in

Laboratory Sciences, Nursing Program, and Master's Program at the Graduate School of Medical and Dental Sciences), we also accept external students and facility training for the certification system of the Japan Society of Transfusion Medicine and Cell Therapy.

1. School of Medicine:

General Introduction to Transfusion in Clinical Medicine

Preclinical Clerkship in Transfusion Testing

2. School of Health Sciences, Laboratory Sciences Program:

Lectures on Immunological Testing and Transfusion Testing

Clinical Practicum in Transfusion Testing

3. School of Health Sciences, Nursing Program:

Practicum in Integration and Implementation of Nursing

4. Clinical Practicum in Transfusion Testing for: Showa Medical Technology College, Nitobe University Junior College, Tokyo University of Technology, Teikyo University, Saitama Medical University, Azabu University

5. Hospital Training for Certified Transfusion Laboratory Technicians of the Japan Society of Transfusion Medicine and Cell Therapy

6. Hospital Training for Society-Certified Clinical Transfusion Nurses of the Japan Society of Transfusion Medicine and Cell Therapy

7. Postgraduate Education on Transfusion and Hematopoietic Cell Transplantation for Physicians and Allied Health Professionals

· Cell Therapy group

Our center completed renovation work in March 2015, establishing facilities with five cell preparation rooms in an aseptic processing area, and an educational facility in a separate building. The educational facility includes one open-system cell preparation room and one closed-system cell preparation room, with the latter equipped with a cell processing isolator. This facility is used for both cold runs and training, providing education on procedures for entering clean rooms, donning and removing aseptic and dust-free clothing, and environmental monitoring. The facility is also equipped with surveillance cameras, enabling movement pattern analysis.

The cell processing procedures at our center are defined and recorded/managed according to standards and Standard Operation Procedures (SOPs). We provide education and training to those who perform work within the facility, and offer guidance on SOP development methods to new fields requiring cell preparation work at the center.

(4) Clinical Services & Other Works

· Blood Transfusion group

We provide testing and technical services necessary for safe blood transfusion and cell therapy centered on hematopoietic stem cell transplantation.

1. We conduct transfusion testing, autologous blood collection, and storage management of blood products, supplying appropriate products promptly as needed.

2. We perform collection, evaluation, processing, and preservation of hematopoietic stem cells.

3. We provide systems and information for safe transfusion therapy and cell therapy.

· Blood Transfusion -Related Performance 2024

1. Blood Product Usage

Red Blood Cell Products: 11,016 units (5,653 bags)

Platelet Products: 23,930 units (2,108 bags)

Fresh Frozen Plasma: 8,324 units (3,945 bags)

Allogeneic Cryoprecipitate: 1,140 units (285 bags)

2. Autologous Blood Collection and Transfusion

Autologous Blood Collection: 190 procedures, 374 units

Autologous Blood Transfusion: 153 cases (300 units)

Autologous Cryoprecipitate Preparation: 63 cases, administered in 35 cases

3. Transfusion-Related Testing

Blood Type Testing: 11,239 cases

Red Blood Cell Antibody Testing: 8,820 cases

Cross-matching Tests: 7,246 cases

4. After-hours Transfusion Support

24-hour coverage by dedicated clinical laboratory technicians in the transfusion department

· Cell Therapy-Related Performance 2024

1. Hematopoietic Stem Cell Collection

Autologous Peripheral Blood Stem Cell Collection: 4 cases, 4 procedures

Allogeneic Peripheral Blood Stem Cell Collection: 3 cases, 3 procedures

Allogeneic Bone Marrow Collection: 9 cases, 9 procedures (including bone marrow bank donors)

2. Hematopoietic Stem Cell Transplantation (with cell evaluation and preservation)

Autologous Peripheral Blood Stem Cell Transplantation: 6 cases, 6 procedures

Allogeneic Peripheral Blood Stem Cell Transplantation: 3 cases, 3 procedures

Allogeneic Bone Marrow Transplantation: 16 cases, 16 procedures

Allogeneic Cord Blood Transplantation: 4 cases, 4 procedures

3. CAR-T Therapy

a. Tisagenlecleucel (Kymriah®) Related

Obtained Kymriah facility certification in October 2019

Autologous peripheral blood mononuclear cell collection in 2024: 5 cases, 5 procedures
Tisagenlecleucel administration: 5 cases, 5 procedures

b. Axicabtagene ciloleucel (Yescarta®) Related

Obtained Yescarta facility certification in November 2023

Autologous peripheral blood mononuclear cell collection in 2024: 10 cases, 10 procedures

Axicabtagene ciloleucel administration: 9 cases, 9 procedures

c. Lisocabtagene maraleucel (Breyanzi®) Related

Obtained Breyanzi facility certification in November 2024

Autologous peripheral blood mononuclear cell collection in 2024: 1 case, 1 procedure

Lisocabtagene maraleucel administration scheduled for 2025 onwards

d. Idecabtagene vicleucel (Abecma®) Related

Obtained Abecma facility certification in November 2024

Mononuclear cell collection completed; administration scheduled for 2025 onwards

· Regenerative Medicine-Related Performance 2024

1. Physician-initiated Clinical Trial: "Physician-initiated Clinical Trial of Intra-articular Injection of Synovial Stem Cells for Knee Osteoarthritis" (Department of Orthopedic Surgery)

Target Disease: Knee Osteoarthritis

We store the clinical trial product (synovial stem cells) for the physician-initiated clinical trial that began in April 2023 until administration.

Storage of clinical trial product (synovial stem cells) for physician-initiated clinical trial: 10 cases, 10 instances

2. Physician-initiated Clinical Trial to Verify the Efficacy of Intra-articular Injection of Platelet-Rich Plasma (PRP) for Knee Osteoarthritis: Multi-center Randomized Double-blind Comparative Study, and Platelet-Rich Plasma Treatment for Knee Osteoarthritis for Participants who Completed the JC-5724-01 Physician-initiated Clinical Trial (Department of Orthopedic Surgery)

Target Disease: Knee Osteoarthritis

This treatment involves separating and concentrating autologous blood collected from patients and transplanting it into the knee joint.

Preparation of regenerative medicine products: 22 cases, 22 instances

3. PRP Knee Joint Injection (Department of Orthopedic Surgery)

Target Disease: Knee Osteoarthritis

This treatment aims to relieve pain in patients with knee osteoarthritis by injecting autologous protein solution (APS), which is obtained by further concentrating platelet-rich plasma (PRP) separated by centrifugation from the patient's own blood, into the knee joint. This regenerative medicine provision plan was accepted by the Kanto-Shinetsu Regional Bureau of Health and Welfare on December 15, 2020.

Manufacturing of specific cell products for clinical research (APS (concentrated PRP)): 16 cases, 17 instances

4. PRP Hip Joint Injection (Department of Orthopedic Surgery)

Target Disease: Hip Osteoarthritis

This regenerative medicine provision plan was accepted by the Kanto-Shinetsu Regional Bureau of Health and Welfare on November 25, 2021.

Manufacturing of specific cell products for self-pay medical care (APS (concentrated PRP)): 49 cases, 55 instances

5. PRP Injection for Muscle, Tendon, and Ligament Injuries and Disorders (Department of Orthopedic Surgery)
Target Disease: Muscle, Tendon, and Ligament Injuries and Disorders

This regenerative medicine provision plan was accepted by the Kanto-Shinetsu Regional Bureau of Health and Welfare on December 21, 2021.

Manufacturing of specific cell products for self-pay medical care (GPS III): 5 cases, 5 instances

6. Clinical Research: "Mucosal Regenerative Treatment for Inflammatory Bowel Disease Using Autologous Intestinal Epithelial Stem Cell Transplantation"

Target Disease: Ulcerative Colitis

Manufacturing of specific cell products for clinical research (autologous intestinal epithelial organoids): 2 cases, 2 instances

7. Clinical Research: "Cell Therapy for Treatment-resistant Viral Infections after Hematopoietic Cell Transplantation Using Antigen-specific T Cells for Multiple Viruses Derived from Third Parties"

Target Disease: Treatment-resistant Viral Infections after Hematopoietic Cell Transplantation

Manufacturing of specific cell products for clinical research (third-party multi-virus specific T cells): 11 instances

(5) Clinical Performances

· Blood Transfusion group

Regarding transfusion, we respond to high-urgency transfusions for the Emergency and Critical Care Center and specialized transfusions for departments such as the NICU. For cell therapy, we work in close cooperation with clinical departments for hematopoietic stem cell transplantation (Department of Hematology and Pediatrics), including unrelated donor transplants. The Transfusion Department takes the lead in collecting, evaluating, processing, and preserving cells.

· Cell Therapy group

Our facility was renovated in March 2015 and continues to operate as a sterile operation area equipped with five open-system cell processing rooms for the safe handling of human cells. The entire facility is maintained at positive pressure relative to the external environment, creating a structure that completely shields against outside air. Internal air passes through HEPA filters to remove microparticles containing infectious agents. The open-system cell processing rooms require a high level of cleanliness and maintain a Class 10,000 (+5Pa, Grade B) environment, with actual cell processing conducted in safety cabinets with Class 100 or below cleanliness (Grade A). Entry to the open-system cell processing rooms requires wearing full-body sterile dust-free clothing, masks, and gloves. The facility's structure and equipment layout are designed to prevent contamination and facilitate cleaning, meeting all required standards. Our facility received approval for the Specific Cell Processing Facility Manufacturing Notification from the Kanto-Shinetsu Regional Bureau of Health and Welfare on April 8, 2015 (Facility Number: FC3150001). All cell processing is conducted according to Standard Operating Procedures (SOPs), with quality testing at each stage, and only products that meet standards and are confirmed to be free of microbial contamination are provided. Sample storage is also performed at each stage to ensure traceability. Regarding cell processing, our facility has established systems that comply with both hardware and software requirements according to the standards prescribed by regulations and guidelines that must be followed by physician-initiated clinical trials and clinical research. Currently, we support research and treatments from multiple clinical departments aiming for clinical applications of stem cell medicine and regenerative medicine, accommodating participation from various fields. Additionally, the Bone Marrow Transplantation-related Room, which serves as a cell processing facility for PRP-related applications, received acceptance of the Specific Cell Processing Facility Manufacturing Notification from the Kanto-Shinetsu Regional Bureau of Health and Welfare on November 20, 2020 (Facility Number: FC3200138).

(6) Publications

[Original Articles]

1. Mitsuru Mizuno, Yoshitaka Maeda, Sho Sanami, Takahisa Matsuzaki, Hiroshi Y Yoshikawa, Nobutake Ozeki, Hideyuki Koga, Ichiro Sekiya. Noninvasive total counting of cultured cells using a home-use scanner

with a pattern sheet. *iScience*. 2024.03; 27(3); 109170

2. Yusuke Fuchioka, Kentaro Endo, Yuriko Sakamaki, Takahiro Tanimoto, Nobutake Ozeki, Yusuke Nakagawa, Hideyuki Koga, Makoto Tomita, Ichiro Sekiya. Scanning electron microscopy analysis of synovial and adipose mesenchymal stem cells adhering to cartilage. *Regen Ther*. 2024.12; 27; 488-495
3. Hayato Kodama, Kentaro Endo, Ichiro Sekiya. Macrophage depletion in inflamed rat knees prevents the activation of synovial mesenchymal stem cells by weakening Namp1 and Spp1 signaling. *Inflamm Regen*. 2024.11; 44(1); 47
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5. Hisako Katano, Nobutake Ozeki, Mitsuru Mizuno, Kentaro Endo, Hideyuki Koga, Jun Masumoto, Ichiro Sekiya. Femoral cartilage defects initiate from medial meniscus extrusion or tibial cartilage lesions and expand in knee osteoarthritis as revealed by 3D MRI analysis. *Sci Rep*. 2024.10; 14(1); 25937
6. Naoko Araya, Hideyuki Koga, Yusuke Nakagawa, Mikio Shioda, Nobutake Ozeki, Yuji Kohno, Tomomasa Nakamura, Ichiro Sekiya, Hiroki Katagiri. Risk factors for delayed bone union in opening wedge high tibial osteotomy. *Jt Dis Relat Surg*. 2024.08; 35(3); 546-553
7. Seiya Matsuta, Kentaro Endo, Nobutake Ozeki, Yusuke Nakagawa, Hideyuki Koga, Ichiro Sekiya. Synovial mesenchymal stem cells secrete more lubricin than adipose mesenchymal stem cells after injection into rat osteoarthritis knees. *Biochem Biophys Res Commun*. 2024.07; 729; 150354
8. Takahiro Tomoda, Akira Nishimura, Takahiro Kamiya, Kumi Inoue, Harutaka Katano, Shun Iida, Akihiro Hoshino, Takeshi Isoda, Kohsuke Imai, Michiko Kajiwarra, Masatoshi Takagi, Hirokazu Kanegane, Nozomu Hanaoka, Tomohiro Morio. Immune reconstitution and cidofovir administration rescue human adenovirus hepatitis after allogeneic hematopoietic cell transplantation. *Transpl Immunol*. 2024.07; 102093
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17. Mitsuru Mizuno, Koki Abe, Takashi Kakimoto, Hisashi Hasebe, Ichiro Sekiya. Decreasing electricity costs of clean room for cell products during non-operation. *Regen Ther.* 2024.06; 26; 1117-1123
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20. Hisako Katano, Kanto Nagai, Haruka Kaneko, Eiji Sasaki, Naofumi Hashiguchi, Ryosuke Kuroda, Muneaki Ishijima, Yasuyuki Ishibashi, Nobuo Adachi, Makoto Tomita, Jun Masumoto, Ichiro Sekiya. Variations in knee cartilage thickness: Fully automatic three-dimensional analysis of MRIs from five manufacturers. *Eur J Radiol.* 2024.05; 176; 111528
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22. Nobutake Ozeki, Hideyuki Koga, Tomomasa Nakamura, Yusuke Nakagawa, Takashi Hoshino, Masaki Amemiya, Ichiro Sekiya. Real-time virtual sonography-guided ossicle removal in unresolved Osgood-Schlatter disease. *Arthrosc Tech.* 2024.04; 13(4); 102897
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24. Yugo Miura, Kentaro Endo, Ichiro Sekiya. Histological and biochemical changes in a rat rotator cuff tear model with or without the subacromial bursa. *Tissue Cell.* 2024.03; 88; 102370
25. Yang Yang, Hideyuki Koga, Yusuke Nakagawa, Tomomasa Nakamura, Hiroki Katagiri, Ryohei Takada, Mai Katakura, Kunikazu Tsuji, Ichiro Sekiya, Kazumasa Miyatake. Characteristics of the synovial microenvironment and synovial mesenchymal stem cells with hip osteoarthritis of different bone morphologies. *Arthritis Res Ther.* 2024.01; 26(1); 17

[Conference Activities & Talks]

1. Yuki Hidaka, Kentaro Endo, Ichiro Sekiya. Single Cell RNA Sequencing analysis of human synovial and adipose mesenchymal stem cells for knee osteoarthritis treatment. ORS 2024 Annual Meeting 2024.02.06 Long Beach, Los Angeles, United States
2. Hideto Furuoka, Kentaro Endo, Ichiro Sekiya. Mesenchymal stem cells in synovial fluid increase in number in response to synovitis and display more tissue-reparative phenotypes in osteoarthritis. Orthopaedic Research Society 2024 Annual Meeting 2024.02.02 California, USA
3. Hisako Katano. Morphological analysis of three-dimensional MR images of patellofemoral joints in asymptomatic subjects. Orthopaedic Research Society 2024 Annual Meeting 2024.02.02 California, USA

1. Keisuke Tanaka, Kota Yoshifuji, Yoshihiro Umezawa, Ayako Nogami, Yuya Sasaki, Hisako Nakamaki, Maho Kawakami, Aina Tomori, Yasumasa Nakata, Makiko Ogawa, Toshikage Nagao, Masahide Yamamoto, Michiko Kajiwara, Takehiko Mori. Stem cell mobilization with pegfilgrastim in healthy donor.. The 46th annual meeting of Japanese society for transplantation and cellular therapy 2024.03.24

Clinical Center for Sports Medicine and Sports Dentistry

Director and Professor; Kazuyoshi YAGISHITA
Junior Associate Professor ; Takashi HOSHINO
Specially Appointed Assistant Professor ; Saisei ANN, Masaki AMEMIYA
Head Physical Therapist ; Kenji HIROHATA
Physical Therapist ; Takehiro OHMI, Tomoko KASAKI,
Shougo OKAMOTO, Hidenobu TERADA
Adjunct Lecturer ; Tomohiko TATEISHI, Sho MITOMO, Shunsuke OHJI
Staff Assistant; Kiyomi ITOH

(1) Publications

[Original Articles]

1. Hotta K, Shimotsu R, Behnke BJ, Masamoto K, Yagishita K, Poole DC, Kano Y. Effect of diabetes on microvascular morphology and permeability of rat skeletal muscle: in vivo imaging using two-photon laser scanning microscopy. *Journal of applied physiology* (Bethesda, Md. : 1985). 2024.10; 137(4); 963-974
2. Ohji S, Aizawa J, Hirohata K, Ohmi T, Mitomo S, Kawasaki T, Koga H, Yagishita K.. The relationship between whole-body muscle mass and the isokinetic knee extensor strength of the non-operated side following anterior cruciate ligament reconstruction *Isokinetics Exerc. Sci.* 2024.09;
3. Ohji S, Aizawa J, Hirohata K, Ohmi T, Mitomo S, Koga H, Yagishita K.. Relationship Between Single-Leg Vertical Jump and Drop Jump Performance, and Return to Sports After Primary Anterior Cruciate Ligament Reconstruction Using Hamstring Graft *Int. J. Sports Phys. Ther.* 2024.09;
4. Murofushi K, Katagiri H, Mitomo S, Hirohata K, Furuya H, Hanazawa R, Hirakawa A, Yagishita K, Kaneoka K. Exploring age-related changes in motor function: insights from the peak decline found in Koji Awareness screening test. *Scientific reports.* 2024.08; 14(1); 18903
5. Goto K, Miyazaki S, Oyaizu T, Negishi M, Ikenouchi T, Yamamoto T, Kawamura I, Nishimura T, Takamiya T, Tao S, Takigawa M, Yagishita K, Sasano T. The impact of hyperbaric oxygen treatment for cardiovascular implantable electronic devices. *Journal of arrhythmia.* 2024.08; 40(4); 958-964
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8. Ryu Yoshida, Hideyuki Koga, Tomomasa Nakamura, Yusuke Nakagawa, Mai Katakura, Masaki Amemiya, Takashi Hoshino, Aritoshi Yoshihara, Shoichi Hasegawa, Yasumasa Tokumoto, Ichiro Sekiya, Nobutake Ozeki. Steep medial posterior tibial slope angle and ramp lesion are independent risk factors for an increase in quantitatively measured pivot shift in patients with ACL-deficient knees. *J Exp Orthop.* 2024.07; 11(3); e70011

9. Ozeki N, Koga H, Nakamura T, Katagiri H, Nakagawa Y, Hoshino T, Katakura M, Amemiya M, Yoshihara A, Katano H, Mizuno M, Endo K, Masumoto J, Sekiya I. The association of the medial meniscus covering ratio with knee cartilage thickness at 15 medial compartment subregions as found by three-dimensional analysis using MRI. *Journal of experimental orthopaedics*. 2024.07; 11(3); e70005
10. Koji Murofushi, Sho Mitomo, Kenji Hirohata, Hidetaka Furuya, Hiroki Katagiri, Koji Kaneoka, Kazuyoshi Yagishita. Comparative Analysis of Thoracic Rotation Exercises: Range of Motion Improvement in Standing and Quadruped Variants. *Acta Med Okayama*. 2024.06; 78(3); 251-258
11. Takehiro Ohmi, Hiroki Katagiri, Masaki Amemiya, Koji Ikematsu, Midori Miyazaki, Hideyuki Koga, Kazuyoshi Yagishita. Gait analysis of patients with knee osteoarthritis who can run versus cannot run. *Gait Posture*. 2024.05; 112; 67-72
12. Ohji S, Aizawa J, Hirohata K, Ohmi T, Mitomo S, Koga H, Yagishita K.. Association of knee function at 6 postoperative months with second ACL injury within 2 years after primary ACL reconstruction JOSPT Open. 2024.05; 2(1); 20-28
13. Jae-Sung An, Christophe Jacquet, Glauco Loddo, Ahmed Mabrouk, Hideyuki Koga, Jean-Noël Argenson, Matthieu Ollivier. Deformity in valgus knee malalignment is not only in the femur but also in tibia or both, based on demographic and morphological analysis before and after knee osteotomies. *Knee Surg Sports Traumatol Arthrosc*. 2024.05; 32(5); 1087-1095
14. Nobutake Ozeki, Hideyuki Koga, Tomomasa Nakamura, Yusuke Nakagawa, Takashi Hoshino, Masaki Amemiya, Ichiro Sekiya. Real-time virtual sonography-guided ossicle removal in unresolved Osgood-Schlatter disease. *Arthrosc Tech*. 2024.04; 13(4); 102897
15. Tomoko Kawasaki, Shunsuke Ohji, Junya Aizawa, Tomoko Sakai, Kenji Hirohata, Taiichi Koseki, Hironobu Kuruma, Atsushi Okawa, Tetsuya Jinno. Characteristics of head and neck alignment and function of deep cervical flexor muscles in patients with nonspecific neck pain *Journal of Bodywork and Movement Therapies*. 2024.03; 39; 565-571
16. Sora Kawabata, Kaichi Ozone, Yuki Minegishi, Yuichiro Oka, Hidenobu Terada, Chiharu Takasu, Takuma Kojima, Takuma Kano, Naohiko Kanemura, Kenji Murata. Chronic Ankle Joint Instability Induces Ankle Sensorimotor Dysfunction: A Controlled Laboratory Study. *The American journal of sports medicine*. 2024.03; 52(3); 739-749
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18. Murofushi K, Morito T, Akuzawa H, Oshikawa T, Okubo Y, Kaneoka K, Mitomo S, Yagishita K. External focus instruction using a paper balloon: impact on trunk and lower extremity muscle activity in isometric single-leg stance for healthy males. *Frontiers in sports and active living*. 2024; 6; 1343888
19. Yuki Sagawa, Takumi Yamada, Takehiro Ohmi, Yoshinao Moriyama, Junpei Kato. Differences in lower extremity kinematics during single-leg lateral drop landing of healthy individuals, injured but asymptomatic patients, and patients with chronic ankle instability- a cross-sectional observational study. *PLoS One*. 2024; 19(3); e0297660
20. Sho Mitomo, Junya Aizawa, Kenji Hirohata, Takehiro Ohmi, Shunsuke Ohji, Hidetaka Furuya, Tomoko Kawasaki, Yayoi Sakai, Kazuyoshi Yagishita, Atsushi Okawa. Effects of differences in femoral anteversion and hip flexion angle on hip abductor muscles activity during clam exercise in females. *PLoS One*. 2024; 19(6); e0305515
21. Shunsuke Ohji, Junya Aizawa, Kenji Hirohata, Takehiro Ohmi, Tomoko Kawasaki, Hideyuki Koga, Kazuyoshi Yagishita. Relationship Between Single-Leg Vertical Jump and Drop Jump Performance, and Return to Sports After Primary Anterior Cruciate Ligament Reconstruction Using Hamstring Graft. *Int J Sports Phys Ther*. 2024; 19(10); 1204-1215
22. Murofushi K, Oshikawa T, Kaneoka K, Akuzawa H, Mitomo S, Hatano G, Furuya H, Hirohata K, Yagishita K. Light weights are as effective as heavy weights for muscle activation in the Hammerobics exercise. *PLoS one*. 2024; 19(9); e0308640

[Misc]

1. 岡元翔吾. 【ジムで有用なトレーニング・エクササイズ機器】持久力トレーニングに有用な機器-トレッドミル, その他 臨床スポーツ医学. 2024.10;

[Conference Activities & Talks]

1. Ohji S, Aizawa J, Hirohata K, Ohmi T, Kawasaki T, Koga H, Yagishita K.. Relationship between the International Knee Documentation Committee Subjective Knee Form scores before and after anterior cruciate ligament reconstruction. World Physiotherapy Asia Western Pacific Region Congress 2024 2024.09.26
2. 柳下 和慶. 軟部組織損傷の浮腫軽減に及ぼす高圧酸素の影響. 【第 5 回】アジア太平洋潜水・高気圧環境医学会 2024.08.24 台湾

Sports Science Center

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12. Sho Mitomo, Junya Aizawa, Kenji Hirohata, Takehiro Ohmi, Shunsuke Ohji, Hidetaka Furuya, Tomoko Kawasaki, Yayoi Sakai, Kazuyoshi Yagishita, Atsushi Okawa. Effects of differences in femoral anteversion and hip flexion angle on hip abductor muscles activity during clam exercise in females. PLoS One. 2024; 19(6); e0305515
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1. Ohji S, Aizawa J, Hirohata K, Ohmi T, Kawasaki T, Koga H, Yagishita K.. Relationship between the International Knee Documentation Committee Subjective Knee Form scores before and after anterior cruciate ligament reconstruction. World Physiotherapy Asia Western Pacific Region Congress 2024 2024.09.26
2. 柳下 和慶. 軟部組織損傷の浮腫軽減に及ぼす高圧酸素の影響. 【第 5 回】アジア太平洋潜水・高気圧環境医学会 2024.08.24 台湾

Department of Integrated Analytics

Satoru Miyano, Specially Appointed Professor

Takanori Hasegawa, Associate Professor

Yoko Tanaka, Assistant Professor

Asako Suzuki, Technical Assistant

Seishi Okamoto, Visiting Professor (Fellow at Fujitsu Limited)

Koji Maruhashi, Visiting Professor (Project Manager, Fujitsu Laboratories, Fujitsu Limited)

Kazuki Yoshimura, Visiting Assistant Professor

(1) Outline

Our laboratory aims to uncover new insights in medicine and life sciences and ultimately elucidate living systems by analyzing multidimensional and highly heterogeneous bio-big data. This data integrates omics information—such as genomes, epigenomes, transcriptomes, proteomes, and metabolomes—which are rapidly accumulating in the life sciences and medical/dental fields, with human body composition values, medical interview items, blood test results, blood gas analysis values, electrocardiograms, ventilator data, and more. We achieve this using cutting-edge information processing technologies—including supercomputers and GPUs—alongside bioinformatics, statistical science, and machine learning methods (such as Bayesian theory and deep learning).

In particular, our field focuses on understanding and applying existing bioinformatics methodologies and actively develops new mathematical analysis techniques for processing emerging biomedical data and multidimensional, ultra-heterogeneous bio-data. Through these new methods and our broad understanding of medicine and life sciences, we enable the analysis of in vivo systems, elucidate pathologies caused by genomic and epigenomic factors, predict the prognosis and future conditions of patients with acute and chronic diseases, and even formulate treatment strategies.

For further details, please refer to the Integrated Analysis Field website.

(2) Research

[Prediction of In Vivo States Using Mathematical Modeling]

The pathology of diseases is characterized by complex and interacting multidimensional, heterogeneous factors—such as genes, metabolites, and bacterial flora in the gut and skin—that lead to abnormalities, while a healthy state is one in which these factors are balanced within the body. Our laboratory combines large-scale patient data from omics information (including genomes, transcriptomes, and proteomes) and clinical/health check data with mathematical modeling of in vivo states and pathologies. This integrated analysis elucidates the complex relationships among these data, revealing the in vivo states of healthy individuals and patients. As a result, we can identify factors contributing to disease onset, predict the severity and prognosis of individual patients, and propose appropriate treatment strategies. Moreover, by applying these techniques, it becomes possible to estimate disease risk—for instance, by predicting blood test values from partial medical information such as body composition values and interview items—or to pinpoint areas of abnormal in vivo states.

[Development of Neoantigen Prediction Methods Targeting Inflammation-Inducing Cells such as Tumor and Senescent Cells]

Sequence analysis has become an indispensable standard technique in cancer research with the advancement of next-generation sequencers. For many years, our field has pursued studies aimed at elucidating the mechanisms

of cancer pathology through mathematical analysis of sequencing results. One such research area focuses on neoantigens—tumor-specific antigens that have attracted considerable attention recently. Our work involves developing analytical methods for predicting neoantigens from information such as identified somatic mutations, analyzing the role of neoantigens in the cancer-immune system, and evaluating immune pathologies within tumors. In particular, recent studies suggest that using T cells or checkpoint inhibitors designed to target senescent cells may partially eliminate tumor cells and senescent cells, thereby accelerating research in this area. Our team is developing mathematical analysis techniques for evaluating and elucidating cellular-level immune pathology and for accurate neoantigen prediction to control immune cells and appropriately eliminate these cells.

[Elucidation of the Origin and Diversity of Cancer through Large-Scale Data Analysis and Artificial Intelligence Technologies]

Through decades of cancer research, significant progress has been made in identifying genes associated with invasion and epithelial-mesenchymal transition (EMT), which are deeply involved in cancer metastasis. However, because genes in every cell form complex inter-regulatory networks, merely identifying associated genes is insufficient to elucidate the mechanisms of invasion or EMT fully. It is necessary to clarify how these genes form networks, to determine which network structures play critical roles in invasion and EMT, and to identify the key regulatory genes—or “command centers”—within these networks. Our research team uses supercomputers at the University of Tokyo Institute of Medical Science Human Genome Analysis Center and “K computer” and “Fugaku” to run programs for network profiling. By extracting network structures formed by genes highly likely to be associated with cancer metastasis and recurrence, we are uncovering mechanisms of metastasis and recurrence that cannot be revealed at the level of individual genes and discovering novel mechanisms.

[Construction of an Integrated Analysis Platform for M&D Data and Promotion of Collaborative Research with Medical, Dental, and Hospital Institutions]

Medical, dental, and healthcare research has entered a new era in terms of both the quality and quantity of available information. In analyzing health conditions and diseases, acquiring and utilizing massive amounts of biological information through genome analysis and single-cell analysis has become common. Integrative analysis of such data has enabled the generation of new insights and treatment strategies for diseases. Our laboratory comprises research teams that have long been engaged in large-scale data analysis. In collaboration with external research institutions within Tokyo University of Science and the University of Tokyo, Kobe University, Kyushu University, and others, we are actively promoting research in biomedical sciences. Our research covers a broad spectrum of topics, including whole-genome analysis for COVID-19 suppression task forces, prediction of severe outcomes in COVID-19 patients in ICUs, and prognostic prediction studies for various acute diseases; comprehensive analyses of genomes (whole-genome, exome, transcriptome, single-cell analysis, cfDNA analysis, proteome analysis, metabolome analysis) for healthy individuals, patients, and tumors; and drug response prediction. Additionally, by organically collaborating with established organizations—such as through an umbrella agreement with the University of Tokyo Institute of Medical Science’s supercomputer SHIROKANE—we are both practicing integrated analysis of our university’s medical big data and promoting the development of the necessary information education and infrastructure for integrated analysis.

(3) Education

We joined the following activities:

[Undergraduate School]

- Introduction to Medical Care and AI / Big Data
- Mathematical/DS/AI Education Literacy Level WG
- Basic Research Physician Program
- Public Health Education Course
- Hosted the “National Medical and AI Contest” for undergraduate students - Respond to inquiries about data science from undergraduate students

【Graduate School】

- Introduction to Medical Data Science (Master Course)
- Data Science Special Lecture I (English version) (hosted by Professor Kunihiko Takahashi)
- Data Science Special Lecture II (English version) (by Associate Professor Hasegawa)
- Served as an academic advisor for Master’s students.
- Assigned as a secondary supervisor for four doctoral students (Associate Professor Hasegawa). - Support for research/career inquiries from graduate students

(4) Lectures & Courses

Our education policy is to enable students in clinical/basic research to independently perform data science. Not just for data analysis support, we foster world top-level biomedical data scientists at Tokyo Medical and Dental University.

(5) Clinical Services & Other Works

1. To support COVID-19, Tokyo Medical and Dental University, Keio University School of Medicine, Department of Oncology, Graduate School of Medicine, Kyoto University, Department of Genetic Statistics, Graduate School of Medicine, Osaka University, Human Genome Analysis Center, Institute of Medical Science, University of Tokyo Became the main founder and created a network-type research organization called "the Coronavirus Task Force". About 120 hospitals from all over the country participated, and currently, about 6,000 samples had been collected. Host whole-genome analysis and RNA sequence analysis are performed on more than 1,200 of these samples to search for aggravating factors. These results have been accepted by several international journals, including Nature.
2. Through this task force, we are participating in the International COVID-19 Consortium.
3. We actively conducted cancer genomics research with a group such as Professor Seishi Ogawa of Kyoto University.

(6) Publications**[Original Articles]**

1. Okuda R, Ochi Y, Saiki R, Yamanaka T, Terao C, Yoshizato T, Nakagawa MM, Zhao L, Ohyashiki K, Hiramoto N, Sanada M, Handa H, Kasahara S, Miyazaki Y, Sezaki N, Shih LY, Kern W, Kanemura N, Kitano T, Imashuku S, Watanabe M, Creignou M, Chonabayashi K, Usuki K, Ishikawa T, Gotoh A, Atsuta Y, Shiraishi Y, Mitani K, Chiba S, Takaori-Kondo A, Miyano S, Kamatani Y, Haeflrich T, Hellström-Lindberg E, Matsuda K, Yoshida Y, Makishima H, Nannya Y, Ogawa S. Genetic analysis of myeloid neoplasms with der(1;7)(q10;p10). *Leukemia*. 2024.12;
2. Tanaka H, Toya E, Chubachi S, Namkoong H, Asakura T, Azekawa S, Otake S, Nakagawara K, Fukushima T, Watase M, Sakurai K, Masaki K, Kamata H, Ishii M, Hasegawa N, Okada Y, Koike R, Kitagawa Y, Kimura A, Imoto S, Miyano S, Ogawa S, Kanai T, Fukunaga K. Combined use of serum ferritin and KL-6 levels as biomarkers for predicting COVID-19 severity. *Respiratory investigation*. 2024.11; 62(6); 1132-1136
3. Pérez-Saldívar M, Nakamura Y, Kiyotani K, Imoto S, Katayama K, Yamaguchi R, Miyano S, Martínez-Barnette J, Godoy-Lozano EE, Ordoñez G, Sotelo J, González-Conchillos H, Martínez-Palomo A, Flores-Rivera J, Santos-Argumedo L, Sánchez-Salguero ES, Espinosa-Cantellano M. Comparative analysis of the B cell receptor repertoire during relapse and remission in patients with multiple sclerosis. *Clinical immunology (Orlando, Fla.)*. 2024.11; 269; 110398
4. Park H, Miyano S. Network-Constrained Eigen-Single-Cell Profile Estimation for Uncovering Crucial Immunogene Regulatory Systems in Human Bone Marrow. *Journal of computational biology : a journal of computational molecular cell biology*. 2024.11; 31(11); 1158-1178
5. Wang QS, Hasegawa T, Namkoong H, Saiki R, Edahiro R, Sonehara K, Tanaka H, Azekawa S, Chubachi S, Takahashi Y, Sakaue S, Namba S, Yamamoto K, Shiraishi Y, Chiba K, Tanaka H, Makishima H, Nannya Y, Zhang Z, Tsujikawa R, Koike R, Takano T, Ishii M, Kimura A, Inoue F, Kanai T, Fukunaga K, Ogawa S, Imoto S, Miyano S, Okada Y, Japan COVID-19 Task Force. Publisher Correction: Statistically and functionally fine-mapped blood eQTLs and pQTLs from 1,405 humans reveal distinct regulation patterns and disease relevance. *Nature genetics*. 2024.10; 56(10); 2281
6. Wang QS, Hasegawa T, Namkoong H, Saiki R, Edahiro R, Sonehara K, Tanaka H, Azekawa S, Chubachi S, Takahashi Y, Sakaue S, Namba S, Yamamoto K, Shiraishi Y, Chiba K, Tanaka H, Makishima H, Nannya Y, Zhang Z, Tsujikawa R, Koike R, Takano T, Ishii M, Kimura A, Inoue F, Kanai T, Fukunaga K, Ogawa S, Imoto S, Miyano S, Okada Y, Japan COVID-19 Task Force. Statistically and functionally fine-mapped blood eQTLs and pQTLs from 1,405 humans reveal distinct regulation patterns and disease relevance. *Nature genetics*. 2024.09; 56(10); 2054-2067

7. Ashida S, Kawada C, Tanaka H, Kurabayashi A, Yagyu KI, Sakamoto S, Maejima K, Miyano S, Daibata M, Nakagawa H, Inoue K. Cutibacterium acnes invades prostate epithelial cells to induce BRCAness as a possible pathogen of prostate cancer. *The Prostate*. 2024.08; 84(11); 1056-1066
8. Maruhashi K, Kashima H, Miyano S, Park H. Meta graphical lasso: uncovering hidden interactions among latent mechanisms. *Scientific reports*. 2024.08; 14(1); 18105
9. Azekawa S, Maetani T, Chubachi S, Asakura T, Tanabe N, Shiraishi Y, Namkoong H, Tanaka H, Shimada T, Fukushima T, Otake S, Nakagawara K, Watase M, Terai H, Sasaki M, Ueda S, Kato Y, Harada N, Suzuki S, Yoshida S, Tateno H, Yamada Y, Jinzaki M, Hirai T, Okada Y, Koike R, Ishii M, Kimura A, Imoto S, Miyano S, Ogawa S, Kanai T, Fukunaga K. CT-derived vertebral bone mineral density is a useful biomarker to predict COVID-19 outcome. *Bone*. 2024.07; 184; 117095
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13. Tanaka H, Chubachi S, Asakura T, Namkoong H, Azekawa S, Otake S, Nakagawara K, Fukushima T, Lee H, Watase M, Sakurai K, Kusumoto T, Masaki K, Kamata H, Ishii M, Hasegawa N, Okada Y, Koike R, Kitagawa Y, Kimura A, Imoto S, Miyano S, Ogawa S, Kanai T, Fukunaga K. Prognostic significance of chronic kidney disease and impaired renal function in Japanese patients with COVID-19. *BMC infectious diseases*. 2024.05; 24(1); 527
14. Otake S, Shiraishi Y, Chubachi S, Tanabe N, Maetani T, Asakura T, Namkoong H, Shimada T, Azekawa S, Nakagawara K, Tanaka H, Fukushima T, Watase M, Terai H, Sasaki M, Ueda S, Kato Y, Harada N, Suzuki S, Yoshida S, Tateno H, Yamada Y, Jinzaki M, Hirai T, Okada Y, Koike R, Ishii M, Hasegawa N, Kimura A, Imoto S, Miyano S, Ogawa S, Kanai T, Fukunaga K. Lung volume measurement using chest CT in COVID-19 patients: a cohort study in Japan. *BMJ open respiratory research*. 2024.04; 11(1);
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16. Park H, Miyano S. Differential Gene Regulatory Network Analysis between Azacitidine-Sensitive and -Resistant Cell Lines. *International journal of molecular sciences*. 2024.03; 25(6);
17. Nakagawara K, Shiraishi Y, Chubachi S, Tanabe N, Maetani T, Asakura T, Namkoong H, Tanaka H, Shimada T, Azekawa S, Otake S, Fukushima T, Watase M, Terai H, Sasaki M, Ueda S, Kato Y, Harada N, Suzuki S, Yoshida S, Tateno H, Yamada Y, Jinzaki M, Hirai T, Okada Y, Koike R, Ishii M, Kimura A, Imoto S, Miyano S, Ogawa S, Kanai T, Fukunaga K. Integrated assessment of computed tomography density in pectoralis and erector spinae muscles as a prognostic biomarker for coronavirus disease 2019. *Clinical nutrition (Edinburgh, Scotland)*. 2024.03; 43(3); 815-824

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19. Okawa Y, Sasagawa S, Kato H, Johnson TA, Nagaoka K, Kobayashi Y, Hayashi A, Shibayama T, Maejima K, Tanaka H, Miyano S, Shibahara J, Nishizuka S, Hirano S, Seto Y, Iwaya T, Kakimi K, Yasuda T, Nakagawa H. Immuno-genomic analysis reveals eosinophilic feature and favorable prognosis of female non-smoking esophageal squamous cell carcinomas. *Cancer letters*. 2024.01; 581; 216499
20. Ito S, Ono K, Miyano S. Large-scale WGS Analysis on the supercomputer Fugaku ICBBB '24: Proceedings of the 2024 14th International Conference on Bioscience, Biochemistry and Bioinformatics. 2024.01; 14-20
21. Park H, Miyano S. Sparse spectral graph analysis and its application to gastric cancer drug resistance-specific molecular interplays identification. *PloS one*. 2024; 19(7); e0305386
22. Maeda-Minami A, Yoshino T, Katayama K, Horiba Y, Hikiami H, Shimada Y, Namiki T, Tahara E, Minamizawa K, Muramatsu SI, Yamaguchi R, Imoto S, Miyano S, Mima H, Uneda K, Nogami T, Fukunaga K, Watanabe K. Machine learning model for predicting the cold-heat pattern in Kampo medicine: a multicenter prospective observational study. *Frontiers in pharmacology*. 2024; 15; 1412593
1. Satoshi Ito, Kenji Ono, Satoru Miyano. Large-scale WGS Analysis on the supercomputer Fugaku. ICBBB. 2024; 14-20

[Conference Activities & Talks]

1. 庄子 皓太, 吉田 健一, 伊与田 真寿, 田中 美羽, 石川 百恵, 野邊 道大, 河下 咲紀, 南谷 泰仁, 大和 玄季, 辻本 信一, 柴 徳生, 林 泰秀, 白石 友一, 宮野 悟, 清河 信敬, 富澤 大輔, 多賀 崇, 多和 昭雄, 滝田 順子, 錦織 桃子, 足立 壯一, 小川 誠司, 松尾 英将. AMLにおける FLT3-ITD と CCND3 変異の共存に伴う予後不良と薬剤耐性化. 日本血液学会学術集会 2024.10.01
2. 奥田 瑠璃花, 越智 陽太郎, 佐伯 龍之介, 中川 正宏, 後藤 明彦, 熱田 由子, 白石 友一, 三谷 絹子, 千葉 滋, 高折 晃史, 宮野 悟, 牧島 秀樹, 南谷 泰仁, 小川 誠司. Der(1;7)(q10;p10) を有する骨髓異形成症候群や関連疾患の特徴. 日本血液学会学術集会 2024.10.01
3. 越智 陽太郎, Markus Liew, 南谷 泰仁, 笠原 千嗣, 平本 展大, 兼村 信宏, 瀬崎 伸夫, 櫻田 麻希, 岩崎 惇, 諫 田 淳也, 上田 恭典, 吉原 哲, Albin Osterroos, 本村 公則, 中川 正宏, 佐伯 龍之介, 福島 英人, 岡崎 幸治, 依田 成玄, 奥田 瑠璃花, Lanying Zhao, 白石 友一, 石川 隆之, 宮野 悟, 鈴木 洋, 高折 晃史, Soren Lehmann, 小川 誠司. クロマチンアクセシビリティ解析による急性骨髄性白血病の新規分子サブグループの同定. 日本血液学会学術集会 2024.10.01
4. 佐伯 龍之介, 枝廣 龍哉, 曾根原 究人, 王 青波, 南宮 湖, 長谷川 嵩矩, 田中 拓, 阿瀬川 周平, 中鉢 正太郎, 難波 真一, 中西 智子, 甲斐 千舟, 山本 賢一, 垣内 伸之, 越智 陽太郎, 白石 友一, 千葉 健一, 田中 洋子, 南谷 泰仁, 小池 竜司, 高野 友美, 石井 誠, 木村 彰方, 井元 清哉, 宮野 悟, 金井 隆典, 福永 興壺, 岡田 随象, 小川 誠司. クロウン性造血と重症 COVID19 およびその免疫制御異常の関連. 日本血液学会学術集会 2024.10.01
5. 本村 公則, 越智 陽太郎, 中川 正宏, 南谷 泰仁, 垣内 伸之, 黒田 隆, 中川 智恵, 趙 蘭英, 宮野 悟, 松田 秀一, 小川 誠司. クロウン性造血の単一細胞変異と単一細胞エピゲノムの同時解析. 日本血液学会学術集会 2024.10.01
6. 佐藤 知彦, 吉田 健一, 土岐 力, 金崎 理香, 照井 君典, 佐伯 龍之介, 小島 正美, 越智 陽太郎, 上地 珠代, 剣持 直哉, 田中 司朗, 松林 潤, 工藤 耕, 湯沢 健太郎, 高橋 佑果, 村松 秀城, 長谷川 大輔, 出口 隆生, 松尾 英将, 足立 壯一, 林 泰秀, 多賀 崇, 齋藤 明子, 堀部 敬三, 渡邊 健一郎, 富澤 大輔, 宮野 悟, 高橋 智, 小川 誠司, 伊藤 悦朗. ダウン症候群の骨髄性白血病における体細胞変異の全体像とその臨床的影響. 日本血液学会学術集会 2024.10.01
7. 佐伯 龍之介, 枝廣 龍哉, 曾根原 究人, 王 青波, 南宮 湖, 長谷川 嵩矩, 田中 拓, 阿瀬川 周平, 中鉢 正太郎, 難波 真一, 中西 智子, 甲斐 千舟, 山本 賢一, 垣内 伸之, 越智 陽太郎, 白石 友一, 千葉 健一, 田中 洋子, 南谷 泰仁, 小池 竜司, 高野 友美, 石井 誠, 木村 彰方, 井元 清哉, 宮野 悟, 金井 隆典, 福永 興壺, 岡田 随象, 小川 誠司. クロウン性造血と重症 COVID19 およびその免疫制御異常の関連. 日本血液学会学術集会 2024.10.01

8. 奥田 瑠璃花, 越智 陽太郎, 佐伯 龍之介, 中川 正宏, 後藤 明彦, 熱田 由子, 白石 友一, 三谷 絹子, 千葉 滋, 高折 晃史, 宮野 悟, 牧島 秀樹, 南谷 泰仁, 小川 誠司. Der(1;7)(q10;p10) を有する骨髓異形成症候群や関連疾患 (Myeloid neoplasms with der(1;7)(q10;p10)). 日本癌学会総会記事 2024.09.01
9. 本村 公則, 越智 陽太郎, 中川 正宏, 南谷 泰仁, 垣内 伸之, 黒田 隆, 中川 智恵, 趙 蘭英, 宮野 悟, 松田 秀一, 小川 誠司, 小川 誠司. クローン性造血の単一細胞変異と単一細胞エピゲノムの同時解析 (Simultaneous single cell genetic and epigenetic analysis of clonal hematopoiesis). 日本癌学会総会記事 2024.09.01
10. 笠島 理加, 清水 英悟, 廣島 幸彦, 片山 琴絵, 山口 類, 山口 貴世志, 古川 洋一, 宮野 悟, 井元 清哉, 宮城 洋平, 古川 洋一. ライブラリ作成可能 FFPE サンプルにおける質の悪い NGS データの評価と特徴 (Evaluation and characterization of poor quality NGS data for library preparable FFPE samples). 日本癌学会総会記事 2024.09.01
11. 平野 智紀, 垣内 伸之, 大山 智宏, 竹内 康英, 穴澤 貴行, 長井 和之, 増井 俊彦, 南口 早智子, 田中 雄志, 増田 充弘, 児玉 裕三, 田中 洋子, 宮野 悟, 宇座 徳光, 妹尾 浩, 小川 誠司, 宮野 悟. 同時性・異時性多発膵癌の起源 (Clonal origin of synchronous or metachronous multiple pancreatic cancers). 日本癌学会総会記事 2024.09.01
12. 前田 紘奈, 垣内 伸之, 伊藤 孝司, 小川 絵里, 塩川 雅広, 宇座 徳光, 田中 洋子, 南谷 泰仁, 片岡 竜貴, 児玉 裕三, 波多野 悦朗, 宮野 悟, 小川 誠司, 小川 誠司. 慢性炎症に伴う胆管上皮におけるクローン拡大 (Clonal expansion in bile duct associated with chronic inflammation). 日本癌学会総会記事 2024.09.01
13. 渡部 光一, 垣内 伸之, 家入 康輔, 前田 紘奈, 平野 智紀, 滝 真奈, 山ノ井 康二, 村上 隆介, 山口 建, 濱西 潤三, 田中 洋子, 宮野 悟, 万代 昌紀, 小川 誠司, 小川 誠司. 正常子宮内膜におけるクローン拡大と子宮内膜症関連卵巣癌との関連 (Clonal expansion in normal endometrium and its association with endometriosis-associated ovarian cancer). 日本癌学会総会記事 2024.09.01
14. 家入 康輔, 垣内 伸之, 平野 智紀, 渡部 光一, 前田 紘奈, 田中 洋子, 高松 大, 松元 崇, 門司 恵介, 塩田 真己, 宮野 悟, 江藤 正俊, 小川 誠司, 小川 誠司. 正常腎における遺伝子解析 (Genomic analysis of normal kidney). 日本癌学会総会記事 2024.09.01

[Awards & Honors]

1. The Okawa Prize, The Okawa Foundation for Information and Telecommunications, 2024.03
2. The Okawa Prize, The Okawa Foundation, 2024.03