CONTENTS

Section of Oral Pathology

1. Staff and Students

Professor	Akira YAMAGUCHI
Associate Professor (GCOE)	Tadahiro Iimura
Lecturer	Ken-ichi Katsube
Assistant Professor	Kei Sakamoto
Tokunin Assistant Professor	Sadahiro Tamamura
JSPS fellow	Ji-Won Lee
Technician	Miwako Hamagaki
Graduate Students	
Ph.D. Course	Kiyoshi Sato (Oral and Maxillofacial Surgery)
	Tsutomu Matsumoto (Maxxilofacial Orthognathics)
	Erika Oue (Maxillofacial Surgery)
	Kou Watanabe (Maxillofacial Surgery)
	Samir Kumar Pal
	Yuji Makino (Juntendou University)
	Akiko Himeno (Periodontology)
	Yuji Matsushita (Maxillofacial Surgery)
	Zhao Xin
	YYasuyuki Shimada (Oral and Maxillofacial Surgery)
	Rumana Khanom
	Zayar Lin（Implant）
	Rei Touyama
	Masita Mandasari
	Kenji Ogura（Maxxilofacial Orthognathics）
Secretary	Yumi Tanaka

2. Purpose of Education

Oral Pathology section lectures the Module “Pathology” to 3rd grade students. This Module is comprised of two categories; General Pathology and Oral Pathology. Main objective of General Pathology is to provide students various opportunities and knowledge about general aspects of various diseases. Oral Pathology provides details of pathogenesis, pathophysiology and histopathological characteristics in various oral diseases.

3. Research Subjevts

1) Clinico-patological research on oral and maxillofacial regions
2) Molecular mechanism of bone formation and bone regeneration
3) Roles of Notch signaling in skeletal formation and regeneration
4) Molecular mechanism of bone destruction by oral cancers
5) Evolutional changes in skeletal formation

4. Clinical Services

Our Dental Hospital has over 2,000 biopsy cases a year. Oral Pathology Section is involved in histopathological diagnosis of these biopsy cases.

5. Publications

Original Articles

1. Sakamoto K, Aragaki T, Kawachi H, Katsube K, Miki Y, Takizawa T, Omura K, Morita K, Okada N, Yamaguchi A: Down-regulation of keratin 4 and keratin 13 expression in oral squamous cell carcinoma and epithelial dysplasia: a clue for histopathogenesis. ***Histopathol*** 58:531-542,2011
2. Kihara K, Ichikawa S, Yonezawa T, Lee JW, Akihisa T, Woo JT, Michi Y, Amagasa T, Yamaguchi A: Acerogenin A, a natural compound isolated from *Acer nikoense* Maxim,stimulates osteoblast differentiation through bone morphogenetic protein action. ***Biochem Biophys Res Commun*** 406:211-217,2011

3. Cao L, Moriishi T, Miyazaki T, Iimura T, Tamamura S, Komori T, Yamaguchi A: Comparative morphology of osteocytes in aquatic and land vertebrates. ***J Bone Miner Metab*** 29:662-670,2011
4. Horiguchi K, Sakamoto K, Koinuma D, Semba K, Inoue A, Inoue S, Fujii H, Yamaguchi A, Miyazawa K, Miyazono K, Saitoh M: TGF-β drives epithelial-mesenchymal transition through δEF1-mediated downregulation of ESRP. ***Oncogene*** doi: 10.1038/onc.2011.493.
5. Himeno-Ando A, Izumi Y, Yamaguchi A, Iimura T: Structural differences in the osteocyte network between the calvaria and long bone revealed by three-dimensional fluorescence morphometry, possibly reflecting distinct mechano-adaptations and sensitivities. ***Biochem Biophys Res Commun*** 417:765-770,2011

Review

1. Iimura T, Sugiyama M, Makino Y, Nakane A, Watanabe T, Yamaguchi A: Illumination of vertebrate development by fluorescence live imaging. ***Cytometry Research*** 21: 57-63,2011

Case reports

1. Mochizuki Y, Omura K, Kayamori K, Sakamoto K, Shimamoto H, Yamaguchi A: Küttner's tumor of the submandibular gland associated with fibrosclerosis and follicular hyperplasia of regional lymph nodes: a case report. ***J Med Case Reports*** 5,121,2011

Bacterial Pathogenesis

1. Staffs and Students (April 2011)

Professor	Ichiro Nakagawa
Associate Professor	Fumito Maruyama
Associate Professor	Takuma Nakajima (Adminitrative leave)
Lecturer	Kenji Yamato
Postdontoral Student	Chihiro Aikawa
Graduate Student	Takayasu Watanabe
	Bijaya Haobam
	Amonrattana Roobthaisong (from Oct, 2011)
	Nayuta Furukawa
	Shingo Hosomi
	Akiko Endo (Section of Periodontics)
	Noriko Maruyama (Section of Periodontics)
	Akira Goda (Section of Craniofacial Surgery)

2. Purpose of Education

Research education for postgraduate students

Our major research interests are to elucidate the bacterial evolution to escape from the host immune responses, and cellular defence mechanisms against bacterial infections. Especially, we focus (1) comparative genomics analysis of pathogenic bacterial evolution by acquisition of foreign genes, and the experimental demonstration of the unique hypothesis from bioinformatics information (2) analysis of molecular dynamics of recognition systems and inflammatory induction against bacterial pathogens. To achieve our mission, we are analyzing complete genomic sequences of various bacterial pathogens and comparative genomics, including genus streptococci (*Streptococcus pyogenes and S. mutans*), *Porphyromonas gingivalis, etc*…, and cellular and molecular biological analyses for host responses.
These studies are collaborated not only with the other section of Tokyo Medical and Dental University, but also with Tokyo University, Tohoku University, Osaka University, and Nihon University.

Education for Undergraduate students

We took part in an education module “Infection and Host Defenses” for 3rd year students in School of Dentistry, and 1st and 2nd year students in School of Oral Health Care Sciences, and teaching pathogenic bacteriology and virology. In the dental field, infectious diseases such as dental caries and periodontitis are still major concerns. In addition, the prevention of iatrogenic infections such as HIV, Hepatitis B and C viruses are also important for dentistry. Therefore, our mission is not simply to give knowledge of microbiology but give talent to apply knowledge to lead appropriate diagnosis and treatment at the clinics. On this point of view, our lectures covered not only oral microbiology but also systemic microbiology and clinical microbiology to understand the variety of infectious diseases.

3. Research Subjects

1. Bacterial whole genome analysis.
2. Analysis of bacterial survival strategy based on bacterial whole genome gene expression.
3. Comparative genomics for bacterial gene acquisition and evolution systems.
4. Molecular analysis of recognition system and inflammation responses against bacterial infection.

4. Publications

Original articles

1. Nakano K, Hokamura K, Taniguchi N, Wada K, Kudo C, Nomura R, Kojima A, Naka S, Muranaka Y, Thura M, Nakajima A, Masuda K, Nakagawa I, Speziale P, Shimada N, Amano A, Kamisaki Y, Tanaka T, Umemura K, Ooshima T. The collagen-binding protein of *Streptococcus mutans* is involved in haemorrhagic stroke. Nat Commun. 27;2:485. (2011)
2. Nagahama M, Itohayashi Y, Hara H, Higashihara M, Fukatani Y, Takagishi T, Oda M, Kobayashi K, Nakagawa I, Sakurai J. Cellular vacuolation induced by *Clostridium perfringens* epsilon-toxin. FEBS J. 278(18):3395-407. (2011)
3. Watanabe T, Maruyama F, Nozawa T, Aoki A, Okano S, Shibata Y, Oshima K, Kurokawa K, Hattori M, Nakagawa

I, Abiko Y. Complete genome sequence of the bacterium *Porphyromonas gingivalis* TDC60, which causes periodontal disease. J Bacteriol. 193(16):4259-60. (2011)

4. Yamato K, Egawa N, Endo S, Ui-Tei K, Yamada T, Saigo K, Hyodo I, Kiyono T, **Nakagawa I.** Enhanced specificity of HPV16 E6E7 siRNA by RNA-DNA chimera modification. Cancer Gene Ther. 18: 587-97 (2011)
5. Nozawa, T., Furukawa, N., Aikawa, C., Watanabe, T., Haobam, B., Kurokawa, K., Maruyama, F., Nakagawa, I., CRISPR inhibiton of prophage acquisition in Streptotoccus pyogenes. PLoS One. 6:6(5): e19543. (2011)
6. T. Izumo, F. Izumi, I. Nakagawa, Y. Kitagawa, H. Shibata, S. Hamada, Y. Kiso. Influence of *Lactobacillus pentosus* S-PT84 ingestion on the mucosal immunity of healthy or *Salmonella* Typhimurium-infected mice. Biosci. Microflora. 30: 27-35, (2011)
7. S. Endo, K. Yamato, S. Hirai, T. Morikawa, K. Fukuda, H. Suzuki, M. Abei, I. Nakagawa, I. Hyodo. Potent in vitro and in vivo antitumor effects of MDM2 inhibitor nutlin-3 in gastric cancer cells. Cancer Sci. 102: 605-613 (2011)

Molecular Immunology

1. Staffs and Students (April, 2011)

Professor	Miyuki AZUMA	
Associate Professor	Yoshiko IWAI (June～)	
Assistant Professor	Tatsukuni OHNO	
Adjunct instructor	Hiroshi KIYONO	Masaaki HASHIGUCHI
	Yosuke KAMIMURA	
Graduate Students	Oto ARAMAKI (Cariology and Operative Dentistry) (~Oct.)	
	Chenyang ZHANG	Syougo MAEKAWA (Periodontology) (Apr.~)
	Arundhati C .Bhingare (Oct.~)	AL Mamun MD Abdullah (～Mar.)
	Lu ZHANG (~Sept.)	Keiko FUJIKI (Apr. ~ Sept.)
	Yuichi KODAMA (June~)	
Secretary	Hatsue TADANO	

2. Purpose of Education

Main objective of Molecular Immunology in the graduate course is to understand and study how the immune system works for biological defense. Students also learn immunopathology and immunophysiology of systemic and organ-specific immune diseases and how the immune diseases control and regulate.

3. Research Subjects

1) Roles of B7-CD28 and TNF-TNFR family costimulatory molecules
2) Lymphocyte functional molecules expressed on T cells and dendritic cells
3) Immune regulation by targeting costimulatory molecules
4) Dental and oral immunobiology

5. Publications

Original Article

1. Cao Y, Zhang L, Kamimura Y, Ritprajak P, Hashiguchi M, Hirose S, Azuma M. B7-H1 overexpression regulates epithelial-mesenchymal transition and accelerates carcinogenesis in skin. Cancer Res. 71: 1235-43, 2011.
2. Cao Y, Zhang L, Ritprajak P, Tsushima F, Youngnak-Piboonratanakit P, Kamimura Y, Hashiguchi M, Azuma M, Immunoregulatory molecules B7-H1 (CD274) contributes to skin carcinogenesis. Cancer Res 71: 4737-4741, 2011.
3. Ohno T, Oboki K, Kajiwara N, Tanaka S, Ikeda M, Iikura M, Akiyama T, Inoue J, Matsumoto K, Sudo K, Azuma M, Okumura K, Kamradt T, Saito H, Nakae S. Paracrine IL-33 stimulation enhances lipopolysaccharide-mediated macrophage activation. Plos One, 6(4): e18404, 2011.
4. Arae K, Oboki K, Ohno T, Hirata M, Nakae S, Taguchi H, Saito H, Nakajima T. Cimetidine enhances antigen-specific IgE and Th2 cytokine production. Allergol Int 60: 339-44, 2011.
5. Lee J, Chang Y, Lai W, Ko Z, Kuo MY, Chiang C, Azuma M, Chen CW, Chia J. Increased prevalence of interleukin-17-producing CD4+ tumor infiltrating lymphocytes in human oral squamous cell carcinoma. Head and Neck 33 (9): 1301-8, 2011.
6. Gutierrez FR, Mariano FS, Oliveira CJ, Pavanelli WR, Guedes PM, Silva GK, Campanelli AP, Milanezi CM, Azuma M, Honjo T, Teixeira MM, Aliberti JC, Silva JS. Regulation of Trypanosoma cruzi-induced myocarditis by programmed death cell receptor 1. Infection and Immunity 79 (5): 1873-81, 2011.
7. Newland SA, Phillips JM, Mastreni P, Azuma M, Zaccone P, Cooke A. PD-L1 blockade overrides Salmonella typhimurium-mediated diabetes prevention in NOD mice: No role for Tregs. Eur J Immunol 41: 2966-76, 2011.
8. Van der Werf N, Redpath SA, Phythian-Adams AT, Azuma M, Allen JE, Maizels RM, Macdonald AS, Taylor MD. Th2 responses to helminth parasites can be therapeutically enhanced by, but are not dependent upon, GITR-GITRL co-stimulation in vivo. J Immunol 187 (3): 1411-20, 2011.
9. Yang J, Riella LV, Chock S, Liu T, Zhao X, Yuan X, Paterson AM, Watanabe T, Vanguri V, Yagita H, Azuma M, Blazer BR, Freeman GJ, Rodig SL, Sharpe AH, Chandraker A, Sayegh MH. The novel costimulatory programmed death ligand 1/b7.1 pathway is functional in inhibiting alloimmune responses in vivo. J Immunol 187 (3): 1113-9, 2011.
10. Hams E, McCarron ML, Amu S, Yagita H, Azuma M, Chen L, Fallon PG. Blockade of B7-H1 (programmed death ligand 1) enhances humoral immunity by positively regulating the generation of T follicular helper cells. J Immunol

186 (10): 5648-55, 2011.
11. Zhou Q, Munger ME, Veenstra RG, Weigel BJ, HIrashima M, Munn DH, Murphy WJ, Azuma M, Anderson AC, Kuchroo VK, Blazar BR. Co-expression of T-cell immunoglobulin and mucin 3 protein and PD-1 identifies a CD8+ T-cell exhaustion phenotype in mice with acute myelogeneous leukemia. Blood 117 (17): 4501-10, 2011.
12. Aramaki O, Chalermsarp N, Otsuki M, Tagami J, Azuma M. Differentoal expression of co-signal molecules and migratory properties in four distinct subsets of migratory dendritic cells from the oral mucosa. Biochem Biophys Res Commun 413:407-413, 2011.
13. Essential Role of B7-H1 in Double-stranded RNA-induced Augmentation of an Asthma Phenotype in Mice. Matsumoto K, Kan-O K, Eguchi-Tsuda M, Fukuyama S, Asai Y, Matsumoto T, Moriwaki A, Matsunaga Y, Tsutsui H, Kawai T, Takeuchi O, Akira S, Yagita H, Azuma M, Nakanishi Y, Inoue H. Am J Respir Cell Mol Biol 45:31-9, 2011.
14. Kuroda S, Yamazaki M, Abe M, Sakimura K, Takayanagi H, Iwai Y. Basic leucine zipper transcription factor, ATF-like (BATF) regulates epigenetically and energetically effector CD8 T-cell differentiation via Sirt1 expression. Proc Natl Acad Sci USA., 108(36):14885-9, 2011.

Oral Radiation Oncology

1. Staffs and Students

Professor	Masahiko MIURA	
Tokunin Assistant Professor	Yu D, Yoko MORI	
Graduate Students(Doctor)	Atsushi KAIDA	Sara AHRABI
	Asumi HONDA,	Chisato YAMADA
Graduate Students(Mastor)	Shifumi Deguchi,	Itumi Oomori
Research Associate	Keisuke OHTA,	Masahiro ISHIMA
International Reserchер	Nguyen Duy SINH	

2. Purpose of Education

Oral Radiation Oncology is a branch of radiation oncology dealing with basic radiobiology, translational research, and radiotherapy for oral cancer. Main objective of this branch in the graduate course is to provide opportunities to study biological strategies for radiosensitization, development of radiosensitizers, molecular mechanism of tumor radioresistance, the state of the art technology of radiotherapy, and basis of individualized radiotherapy depending on each student's research projects.

3. Research Subjects

1) Visualization of radioresponse by moleculr imaging
2) Tumor radiosensitization and antiangiogenic mechanism by sulfoglycolipids
3) Signal transduction of insulin-like growth factor I (IGF-I) receptor
4) Radiotherapy for oral cancer

4. Clinical Services

Oral Radiation Oncology clinic provides radiotherapeutic treatment for head and neck cancer patients, especially brachytherapy for oral cancer, in cooperation with Diagnostic and Therapeutic Radiology clinic in the Medical Hospital.

5. Publications

Original article

1. Kaida A, Miura M: Visualizing the effect of hypoxia on fluorescence kinetics in living HeLa cells using the fluorescent ubiquitination-based cell cycle indicator (Fucci). ***Exp Cell Res***, Epub Nov 3 2011.
2. Yoshimura R, Shibuya H, Hayashi K, Nakagawa K, Toda K, Watanabe H, Kaida A, Miura M : Repeat brachytherapy for patients with resifual or recurrent tumors of oral cavity. ***Int J Radiat Oncol Biol Phys***, Epub Nov 16 2011.
3. Nakayama M, Kaida A, Deguchi S, Sakaguchi K and Miura M: Radiosensitivity of early and late M-phase HeLa cells isolated by a combination of Fluorescence ubiquitination-based cell cycle indicator (Fucci) and mitotic shake-off. ***Radiat Res***, 176: 407-411, 2011.
4. Yoshimura R, Shibuya H, Hayashi K, Toda K, Watanabe H, Miura M : Disease control using low-dose-rate brachytherapy is unaffected by comorbid severity in oral cancer patients. ***Br J Radiol***, 84: 930-938, 2011.
5. Kaida A, Sawai N, Sakaguchi K, and Miura M: Fluorescence Kinetics in HeLa cells after treatment with cell cycle arrest inducers visualized with the Fucci (fluorescent ubiquitination-based cell cycle indicator). ***Cell Biol Int***, 35:359-363, 2011.
6. Abe S, Hamada K, Yamaguchi S, Amagasa T and Miura M: Characterization of the radioresponse of human apical papilla-derived cells (APDCs). ***Stem Cell Res Ther***, 2:2, 2011.

6. Patent

1. No.7973145(USA)「Novel sulfonated sugar derivative, and use thereof for medical agent」July 5 201

Oral and Maxillofacial Surgery

1. Staffs and Students (April, 2011)

Professor	Ken OMURA	
Associate Professor	Hiroyuki HARADA	
Junior Associate Professor	Yusuke NAKAJIMA,	Jinkyo SAKURAI
Assistant Professor	Yuji KABASAWA,	Hiroaki SHIMAMOTO,
	Eriko MARUKAWA,	Masaru SATO,
	Kae TANAKA,	Hirofumi TOMIOKA
Project Junior Associate Professor	Keiichi MORITA	
Graduate Student	Takuma KUGIMOTO,	Kiyoshi SATO,
	Yukinobu TAKAHASHI,	Mitsuhiro YOSHIMOTO,
	Toshimitsu OSAKO,	Yasuyuki SHIMADA,
	Ichiro HATAKEYAMA,	Sho MATSUKAWA,
	Takahide TAGUCHI,	Shinsuke YAMAMOTO,
	Yukiko TAKAHASHI,	Junpei SHIRAKAWA,
	Atsushi KIMURA,	Pradit RUSHATAMUKAYANUNT,
	Namiaki TAKAHARA,	Aya NAKANO

2. 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.

3. 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) Clinical study on early detection of oral cancer by mouth washing.
5) Clinical study on skeletal and dental changes after distraction osteogenesis in patients with cleft lip and palate.
6) Clinical study on maxillomandibular skeletal and dental changes after orthognatic surgery.
7) Study on neurosensory disturbances using the heat flux technique.
8) Clinical study on pre-surgical nasoalveolar molding in patients with cleft lip and palate.
9) Clinical study on alveolar bone grafting with segmental osteotomy.
10) Multidisciplinary treatment of temporomandibular disorders.
11) Clinical and experimental studies on bone regeneration using β-TCP and/or platelet rich plasma.
12) Development of multidisciplinary treatment of oral mucosal diseases.

4. Clinical Services

The Oral and Maxillofacial Surgery Clinic examines yearly more than 6,000 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, jawbone defect, facial deformity, temporomandibular joint disease, cleft lip and palate, oral mucosal 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, temporomandibular joint disease, cleft lip and palate, facial deformity 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.

5. Publications

Original Article

1. Sakamoto K, Aragaki T, Morita KI, Kawachi H, Kayamori K, Nakanishi S, Omura K, Miki Y, Okada N, Katsube KI,

Takizawa T, Yamaguchi A: Down-regulation of keratin 4 and keratin 13 expression in oral squamous cell carcinoma and epithelial dysplasia: a clue for histopathogenesis. Histopathology. 58(4):531-542, 2011.

2. Cao Y, Zhang L, Ritprajak P, Tsushima F, Youngnak-Piboonratanakit P, Kamimura Y, Hashiguchi M, Azuma M: Immunoregulatory molecule B7-H1 (CD274) contributes to skin carcinogenesis. Cancer Res. 71(14):4737-4741, 2011.
3. Mochizuki Y, Omura K, Kayamori K, Sakamoto K, Shimamoto H, Yamaguchi A: Küttner's tumor of the submandibular gland associated with fibrosclerosis and follicular hyperplasia of regional lymph nodes: a case report. J Med Case Reports. 5(1):121, 2011.
4. Isobe K, Morita KI, Omura K: Enucleation and repeated dredging treatment for a large ameloblastic fibroma in growing young patient: Report of a case with difficult treatment planning. Asian J Oral Maxillofac Surg. 23(2):96-98, 2011.
5. Harada H, Omura K, Mogi S, Okada N: Cementoblastoma arising in the maxilla of an 8-year-old boy: a case report. Int J Dent. 2011:384578, 2011.
6. Marukawa E, Oshina H, Iino G, Morita K, Omura K: Reduction of bone resorption by the application of platelet-rich plasma (PRP) in bone grafting of the alveolar cleft. J Craniomaxillofac Surg. 39(4):278-283, 2011.
7. Murakoshi Y, Honda K, Sasazuki S, Ono M, Negishi A, Matsubara J, Sakuma T, Kuwabara H, Nakamori S, Sata N, Nagai H, Ioka T, Okusaka T, Kosuge T, Shimahara M, Yasunami Y, Ino Y, Tsuchida A, Aoki T, Tsugane S, Yamada T: Plasma biomarker discovery and validation for colorectal cancer by quantitative shotgun mass spectrometry and protein microarray. Cancer Sci. 102(3):630-638. 2011.
8. Uesugi A, Kozaki K, Tsuruta T, Furuta M, Morita K, Imoto I, Omura K, Inazawa J: The Tumor Suppressive MicroRNA miR-218 Targets the mTOR Component Rictor and Inhibits AKT Phosphorylation in Oral Cancer. Cancer Res. 71(17):5765-5778, 2011.
9. Tsuruta T, Kozaki K, Uesugi A, Furuta F, Hirasawa A, Imoto I, Susumu N, Aoki D, Inazawa J: miR-152 is a tumor suppressor microRNA that is silenced by DNA hypermethylation in endometrial cancer. Cancer Res. 71(20):6450-6462, 2011.

Oral and Maxillofacial Radiology

1. Staffs and Students (April, 2011)

Professor	Tohru KURABAYASHI	
Associate Professor	Hiroshi WATANABE	
Junior Associate Professor	Naoto OHBAYASHI,	Norio YOSHINO
Assistant Professor	Akemi TETSUMURA,	Shin NAKAMURA,
	Kiyoshi OKOCHI,	Ami KURIBAYASHI
Hospital Staff	Natsuko TAKATSUKA,	Tadanobu ARAGAKI
Graduate Student	Yoshikazu NOMURA,	Yosuke KAMIYAMA,
	Kretapirom KORNKAMOL,	Kamrun NAHAR,
	Akira TAKAHASHI,	Madoka SUZUKI
	Yoshihiro OZAKI	
Secretary	Izumi MOTOHASHI	

2. Purpose of Education

Oral and maxillofacial radiology is a branch of dental science which deals with the effective application of radiation energy to the diagnosis and treatment of oral and maxillofacial diseases. Main objective of oral and maxillofacial radiology in the graduate course is to provide students opportunity to study advanced imaging modalities including digital imaging, cone-beam CT, multi-detector row CT and MRI, and also to study image processing and image analysis technology. Students are also taught on basic radiation oncology and its related laboratory technology depending on their research project.

3. Research Subjects

1) Diagnosis of maxillofacial diseases by CT, MRI and PET imaging
2) Advantages of cone-beam CT for clinical dentistry
3) Development of high resolution MRI technology.
4) Novel MRI techniques for TMJ disorders.
5) Factors determining radioresistance of oral and maxillofacial cancers.

4. Clinical Services

Oral and maxillofacial radiology clinic provides a full spectrum of imaging examinations and diagnosis, including CT and MRI. Non-invasive, interventional radiology for patients with salivary gland stone is also performed in the clinic.

5. Publications

Original Article

1. Kanazawa M, Inokoshi M, Minakuchi S, Ohbayashi N. Trial of a CAD/CAM system for fabricating complete dentures. Dent Mater J 30: 93-96, 2011.
2. Nakamura S, Okochi K, Kurabayashi T. Dual-Time-Point Fluorodeoxyglucose Positron Emission Tomography for Diagnosis of Cervical Lymph Node Metastases in Patients With Head and Neck Squamous Cell Carcinoma. J Comput Assist Tomogr 35: 303-307, 2011.
3. Ng IW, Ono T, Inoue-Arai MS, Honda E, Kurabayashi T, Moriyama K. Application of MRI movie for observation of articulatory movement during a fricative /s/ and a plosive /t/. Angle Orthod 81: 237-244, 2011.
4. Okochi K, Kretapirom K, Sumi Y, Kurabayashi T. Longitudinal MRI follow-up of rheumatoid arthritis in the temporomandibular joint: importance of synovial proliferation as an early-stage sign. Oral Radiology 27: 83-86, 2011.
5. Watanabe H, Honda E, Tetsumura A, Kurabayashi T. A comparative study for spatial resolution and subjective image characteristics of a multi-slice CT and a cone-beam CT for dental use. European Journal of Radiology 77: 397-402, 2011.
6. Yoshimura R. Shibuya H, Hayashi K, Toda K, Watanabe H, Miura M. Disease control using low-dose-rate brachytherapy is unaffected by comorbid severity in oral cancer patients. British Journal of Radiology 84: 930-938, 2011.

Anesthesiology and Clinical Physiology

1. Staffs and Students (April, 2011)

Professor	Haruhisa Fukayama	
Associate Professor	Hikaru Kohase	
Junior Associate Professor	Shigeharu Jinno	
Assistant Professors	Fumihiro Yoshikawa,	Tomoyuki Miyamoto,
	Ryo Wakita	
Hospital Staffs	Tomoka Matsumura,	Kenzo Makino,
	Kiyoshi Kamiya,	Yukiko Baba,
	Taeka Hirasawa,	Ayako Mizutani,
	Yuko Hiruma	
Graduate Students	Haruka Haida,	Atsushi Nakajima,
	Kanako Saji,	Tomoko Ebisawa - Matsushita
Research Students	Hitomi Kunimori,	Hitomi Suzaki,
	Yuki Sato	
Secretary	Natsu Sato	

2. Purpose of Education

The goal of the section is to give to the undergraduate students; the knowledge and techniques of general anesthesia, local anesthesia, systemic management of medically compromised patients, and pain management of clinic in the oral and maxillofacial regions. Within a fiscal year the lectures include 1) general and local anesthesia, 2) psychosedation, 3) cardiopulmonary resuscitation. General anesthesia is composed of physiology of respiration and circulation, pharmacodynamics of inhalation anesthetics, intravenous anesthetics, and muscle relaxants. Psychosedation includes theory and technique for dentally phobic patients and medically compromised patients. Since local anesthesia is often used in routine dental procedures, pharmacology of local anesthetics, techniques and complications are given to the undergraduate students. Cardiopulmonary resuscitation has principles of CPR, updated guidelines of CPR, in addition to simulated training. Out training systems also include infiltration anesthesia, conduction anesthesia, and nitrous oxide inhalation sedation.

3. Research Subjects

1) Noninvasive drug delivery system
2) Development of local anesthesia techniques for dentistry
3) Neuropathic pain in oral and maxillofacial regions
4) Diffuse noxious inhibitory control
5) Clinical applications of psychosedation and systemic management

4. Clinical Services

1) Systemic management of medically compromised patients using psychosedation
2) Ambulatory anesthesia service for disabled patients
3) Emergencies in the hospital
4) Low invasive local anesthesia

5. Publications

Original Article

1. Wakita R, Nakajima A, Haida Y, Umino M, Fukayama H: The relation between the duty cycle and anesthetic effect in lidocaine iontophoresis using alternating current. Pain Practice, 2011:11(3)261-266.
2. Matsumura T, Kubota K, Sakamoto K, Yoshikawa F, Suzuki Y, Shimada M, Yamaguchi A, Fukayama H: Lidocaine promotes NGF expression in cultured human skin fibroblasts. European Journal of Pain Supplements, 5(2011) 113.
3. Oono Y, Wang K, Svesson P, Arendt-Nielsen L: Conditioned pain modulation evoked by different intensities of mechanical stimuli applied to the craniofacial region in healthy men and women. J Orofac Pain, 2011;25:364-75.
4. Oono Y, Nie H, Matos RL, Wang K, Arendt-Nielsen L: The inter- and intra-individual variance in descending pain modulation evoked by different conditioning stimuli in healthy men. Scandinavian Journal of Pain, 2011;2:162-169
5. Mizutani A, Maeda N, Toku S, Higa-Nakamine S, Isohama Y, Sunakawa H, Sugahara K, Yamamoto H: Interaction of

ethyl pyruvate in vitro with NF-κB subunits, RelA and p50. Eur J Pharmacol. 2011 Jan 10;650(1):151-6.
6. Kurihara N, Hiruma Y, Yamana K, Michou L, Rousseau C, Morissette J, Galson DL, Teramachi J, Zhou H, Dempster DW, Windle JJ, Brown JP, Roodman GD: Contributions of the measles virus nucleocapsid gene and the SQSTM1/p62(P392L) mutation to Paget's disease. Cell Metab. 2011 Jan 5;13(1):23-34.
7. Yoshimatsu T, Moriyama K, Iwao Y, Yorozu T and Iijima T: Involvement of the mu-opioid receptor in opioid tolerance induced by the intermittent administration of fentanyl in a rat chronic neuropathic pain model. Journal of the Kyorin Medical Society 42(2) 63-69, 2011

Congress

1. Fukayama H: Intravenous sedation for dentistry. 30th Myanmar Dental Conference and 11th FDI-MDA Joint Educational Meeting, Yangon, Myanmar, 27, January, 2011.
2. Yoshikawa F, Tanaka S, Kubota Y, Yamamoto M, Nakamura H: Gas blow-assisted 3D laser process for machining zirconia crowns. IADR, San Diego, 17, March, 2011.
3. Nonaka M, Inoue T, Nishimura A, Nakayama K, Mochizuki A, Nakamura S, Yoshimura S, Iijima T: Properties of synaptic transmission from regions surrounding the trigeminal motor nucleus to trigeminal motoneurons in neonatal rats. 8th IBRO world congress of neuroscience, Florence, Italy, 18, July, 2011.
4. Wakita R, Nakajima A, Haida H, Fukayama H: The efficacy of iontophoresis using the bipolar square wave with duty cycle. 30th Annual ESRA Congress 2011, Dresden, Germany, 8, September, 2011.
5. Matsumura T, Kubota K, Sakamoto K, Yoshikawa F, Suzuki Y, Shimada M, Yamaguchi A, Fukayama H: Lidocaine promotes NGF expression in cultured human skin fibroblasts. Pain in Europe VII, 7th Congress of the European Federation of IASP Chapters (EFIC). Hamburg, Germany, September, 2011.
6. Oono Y, Wang K, Svensson P, Arendt-Nielsen L: Conditioned pain modulation evoked by mechanical craniofacial pain is not influenced by experimental temporomandibular joint pain. 7th Congress of the European Federation of IASP Chapters (EFIC), Hamburg, Germany, September 2011.
7. Saito N, Yoshioka T, Ikoma T, Ohashi N, Haida H, Nakajima A, Wakita R, Fukayama H, Umino M, Tanaka J: Lidocaine Releasing Properties of Alginic Acid Gel Electrode Prepared by Electrochemical Deposition. The 28th Japan-Korea International Seminar on Ceramics, Okayama, Japan, November, 2011.

Lecture

1. Iijima T; Current status of transfusion and infusion therapy in Japan, NATA meeting in Japan, Okinawa, Nov. 5th, 2011

Orofacial Pain Management

1. Staffs and Students (April, 2011)

Professor	Masahiko SHIMADA	
Assistant Professor	Yoko YAMAZAKI	
Hospital Staff	Tomoko TAKAHASHI,	Yuko ANDOH
Graduate Student	Daisuke TOMIZAWA,	Akitoshi HOSODA(April~),
	Hiroko IMURA(April~)	

2. Purpose and Education

Orofacial Pain Management is a branch of dental science which deals with dental anesthesiology. Main objective of orofacial pain management in the graduate course is to provide students opportunity to study the pain, abnormal sensation, sensory paralysis, abnormal movement and motor paralysis in the orofacial area and the treatment for the patients of orofacial pain.

3. Research Subjects

1) New Treatment methods for neuropathic pain
2) Analyses of abnormal orofacila pain
3) Study on Biological Response to Dental Interventions
4) Analyses and new treatment of dysgeusia

4. Clinical Services

Orofacial Pain Clinic is concerned with the pain, abnormal sensation, sensory paralysis, abnormal movement and motor paralysis. Management of orofacial pain clinic is pharmacotherapy, nerve block, stimulation of the pheripheral nerves including acupuncture and psychotherapies.

5. Publication

Original Article & Clinical report

1. Ohmori J, Maeda S, Higuchi H, Ishii M, Arai Y, Tomoyasu Y, Kohjitani A, Shimada M, Miyawaki T : **Propofol increases the rate of albumin-unbound free midazolam in serum albumin solution.** J Anesth. , 25(4):618-20, 2011
2. Miyawaki T, Kohjitani A, Maeda S, Shimada M: Combination of midazolam and a cyclooxygenase-2 inhibitor inhibits lipopolysaccharide-induced interleukin-6 production in human peripheral blood mononuclear cells, Immunopharmacol.Immunotoxicol.. in press
3. Arai Y, Maeda S, Higuchi H, Tomoyasu Y, Shimada M, Miyawaki T.: Effects of midazolam and phenobarbital on brain oxidative reactions induced by pentylenetetrazole in a convulsion model. Immunopharmacol Immunotoxicol. in press.

Diagnostic Oral Pathology

1. Staffs and Students (Apr. 2011)

Associate Professor	Norihiko OKADA	
Hospital Staff	Chieko MICHIKAWA,	Yuuichi YAMADA,
	Kiyoko NAGUMO,	Kana IIDA,
	Akino INOUE,	Kana ENDOH,
	Tomoko ASANO	

2. Purpose of Education;

The department of Diagnostic Oral Pathology is functioning as a central clinical laboratory for clinical examinations in the dental hospital, which deal with hematological,biochemical,bacteriological,and histopathological samples. The purpose of education is instructing the undergradate students to study the clinicopathological problems and techniques for accurate diagnoses. Main object of the education are to provide the graduate students in the department to study advanced research and diagnostic skills for their studies. For example, immunohistochemical,electronmicroscopic techniques for researches, hematological, and immunological methods are also involved. Another purpose of education is training young pathological doctors to get enough skills to make a accurate diagnosis of the histopathological examinations.

3. Research Subjects;

1. Clinicopathological and histopathological studies of the various neoplastic lesions in the maxillofacial regions.
2. Clinico-bacteriological analysis of the infectious diseases in the orofacial regions.
3. Immunohistochemical and histopathological study of the various oral mucous membrane diseases.

4. Clinical Services;

The department of Diagnostic Oral Pathology provided the following results ; Electrocardiogram(1,134 patients), Hematology(42,405 items), Biochemistry and Immunochemistry(194,704 items), Bacteriology(8,697 items), Pathological examinations(2,738 samples).

These results may contribute to exact procedures for the patients.

5. Publications;

Original Article

1. Michikawa C, Uzawa N, SatoH, Ohyama Y, Okada N and Amagasa T: Epidermal growth factor receptor gene copy number aberration at the primary tumor is significantly associated with extracapsular spread in oral cancer. Brit J Cancer 104:850-855, 2011.
2. Sakamoto K, Aragaki T, Morita K, Kawachi H, Kayamori K, Nakanisi S,Omura K, Miki Y, Okada N, Katsube K, Takizawa T and Yamaguchi A:Downregulation of keratin 4 and 13 expression in oral squamous cell carcinoma and epithelial dysplasia: A clue for the histopathogenesis. Histopathology 58:531-542, 2011.
3. Nakata Y, Uzawa N, Takahasi K, Sumino J, Michikawa C, Sato H, Sonoda I, Ohyama Y, Okada N and Amagasa T: EGFR gene copy number alteration is a better prognostic indicator than protein overexpression in oral tongue squamous cell carcinomas. Europ J Cancer 47:2364-2372, 2011.

Case Report

1. Harada H, Omura K, Mogi S and Okada N : Cementoblastoma Arising in the Maxilla Of an 8-Year Old Boy : A Case Report. Int J Dentistry(E-pub Article ID384578), May 17, 2011.

Developmental Oral Health Sciences

1. Staffs and Students (April, 2011)

Professor	Yuzo TAKAGI.	
Junior Associate Professor	Yoshiaki ONO, Zenzo MIWA	
Assistant Professor	Yoshiaki HASHIMOTO,	Michiyo MIYASHIN,
	Haruko FUJITA,	Mizuho MOTEGI
Hospital Staff	Satoko KAKINO,	Yuki IMAMURA,
	NaokoUEHARA(April~),	Makiko TAKASHI,
	Sachi GOTOH(April~)	
Secretary	Mai INOUE	
Graduate Student	Akira OHIRA(~Mar),	Naoko UEHARA(~Mar),
	Yuriko IWABUCHI(~Mar),	Tomonobu HOSHINO(~Mar),
	Moriyuki KATO(~Mar),	Sun MEINA,
	Isidro Sharon YAMBAO,	Natsumi TSUCHIHASHI,
	Yukie NAKAJIMA,	Atsushi OISHI,
	Seiko OHBA,	Ayako NAKANE,
	Kaori SHOI,	Taki SEKIYA(April~),
	Sachiko ITOH(April~),	Daiki HORIKAWA(April~)

2. Purpose of Education

Pediatric dentistry is a subject of clinical dentistry that deal with education and research of not only developmental oral health sciences but also prevention and treatment methods of the diseases which disturb oro-facial growth and development of children. The main objective of pediatric dentistry in this graduate course is to provide students an opportunity to study the theory and the method for the guidance of the oro-facial growth and development and for the diagnosis, prevention and treatment of diseases and malfunctions which disturb the oro-facial growth and development during the period of childhood.

Oral pediatrics is a subject of clinical dentistry that deal with education and research of not only maintenance and promotion of the oral health for growing children but also prevention and treatment methods of diseases and malfunctions which disturb oral health of growing children. The main objective of oral pediatrics in this graduate course is to provide students an opportunity to understand that a child is a living body with mental, physical, and physiological characteristics which are different from those of adults and to study the pathogenesis, prevention, and treatment of the particular oral diseases in childhood. Students are also taught the theory and the method of ongoing health care that is necessary for maintaining and promoting oral health from infant to adult. In addition, they are taught the clinical significance and importance of the behavioral management of child patients and the necessity and importance of understanding and cooperation of the parents to it.

3. Research Subjects

1) Physiological and biological studies on the stomatognathic function of children
2) Studies on the development and developmental disturbance of the teeth
3) Studies on the growth and development of the maxillofacial cranium and the dentition
4) Development of the new materials for endodontic treatment of deciduous and immature permanent teeth
5) Basic research on clinical pediatric dentistry

4. Clinical Services

The pediatric dentistry clinic in the department of oro-facial development and function provides the comprehensive dental treatment for a child while growing. The examination, diagnosis, and treatment of the oral diseases and the oral abnormalities are performed in the clinic. In addition, health guidance, preventive measures, and the long-term oral health management by the periodical checking system are carried out, in order to keep and promote oral health from infant to adult.

5. Publication

Original Article

1. Wada K, Miyashin M, Nango N, Takagi Y. Wear of resin composites and primary enamel and their applicability to full crown restoration of primary molars. Am J Dent, 24(2):67-73, 2011
2. Ohira A, Ono Y, Yano N, Takagi Y. The effect of of chewing exercise in preschool children on maximum bite force and masticatory performance. International Journal of Paediatric Dentistry, published online: 22 July, 2011
3. Nagano K, Alles N, Mian AH, Shimoda A, Morimoto N, Tamura Y, Shimokawa H, Akiyoshi K, Ohya K, Aoki K. The tumor necrosis factor type 2 receptor plays a protective role in tumor necrosis factor-α-induced bone resorption lacunae on mouse calvariae. Bone Miner Metab. 29(6):671-81, 2011.

Review Articles

1. Iimura T, Nakane A, Sugiyama M, Sato H, Makino Y, Watanabe T, Takagi Y, Numano R, Yamaguchi A. A fluorescence spotlight on the clockwork development and metabolism of bone. Journal of Bone and Mineral Metabolism, published online: 16 July, 2011.

Orthodontic Science

1. Staffs and Students

Professo	Takashi ONO	
Associate Professor		
Junior Associate Professor	Yoshiro MATSUMOTO,	Zuisei KANNO
Assistant Professor	Sawa KANEKO,	Mariko HORIUCHI(-Mar),
	Jun HOSOMICHI,	Kazuo SHIMAZAKI,
	Ippei WATARI,	Satoshi KOKAI
Graduate Students	Koji HONDA(-Mar),	Yukiko KURODA(-Mar),
	Satomi NAITOU(-Mar),	Yasuhiro SHIMIZU(-Mar),
	Ikuko HATTORI,	Maya HIRANUMA,
	Chiho KATOU,	Mariko MIZUMACHI,
	Risa USUMI,	Haruki IMAI,
	Takako KANESHIMA,	Sarina KOIKE,
	Sachiko KOMORI,	Takeru KYURAGI,
	Chisa SHITANO,	Yukiha FUNAKI(Apr-),
	Ayako KAWABE(Apr-),	Arisa KOBAYASHI(Apr-),
	Hidemasa OKIHARA(Apr-),	Rieko ONO(Apr-),
	Jutiporn PRIVATANANUPUNT(Apr-),	
	Emina WAKASUGI(Apr-),	Yuhei IKEDA(Apr-),
	Toshihiro IMAMURA(Apr-),	Jui-Chin HSU(Apr-),
	Minami MIYASAKA(Apr-),	Mutsumi MIYAZAKI(Apr-),
	Asuka OKITOU(Apr-),	Kulthida NUNTHAYANON(Oct-)

2. Purpose of Education

Orthodontics is one of the dental sciences which propose to control the craniofacial growth and development in equilibrium with the whole body, and also deals with the prevention and/or treatment of malocclusion and related disorders, by which the alteration of maxillofacial function with aging could be kept to the most suitable condition.

Subjects of Education:

Orthodontic Science

1) To explain the unhealthy physiological condition of malocclusion and deepen the scientific basis for orthodontic treatment.
2) To understand the biological reaction and adaptation of occlusal tissues to mechanical stresses such as occlusal force or orthodontic force, and also the changes with aging.
3) To explain the art for controlling the morphologic and functional problems of occlusion in orthodontic treatment, from the view points of biomaterials and biomechanics.
4) To enlighten the social dentistry for the needs and demands of orthodontic treatment.

Pathophysiology for Malocclusion

To understand the alteration of occlusal function and morphology with aging, and to explain the pathological condition of malocclusion from the viewpoint of physiology, biomechanics, biology and sociology.

Biology for Functional Adaptation

To understand the procedure of biological reaction and adaptation of occlusal system to the orthodontic stimuli, including the influence of aging, and to provide the control of the surroundings of the occlusal system.

3. Research Subjects

1) Biomechanical study of occlusion
2) Studies on biological response and functional adaptation followed by orthodontic and occlusal stimulation
3) Clinical application of autotransplantation in orthodontic treatment
4) Studies on interrelation between malocclusion and temporomandibular joint
5) Studies on occlusion and age-related changes in cranio-maxillofacial morphology and function
6) Studies on interrelation between cranio-maxillofacial complex and whole body
7) Development of mechanics and materials for orthodontic treatment

4. Clinical Service

In the field of practical orthodontic, with the development of materials and treatment techniques, we have taken initiatives in two big turning points at all time. Namely, one is the *Direct Bonding System* which has made it possible to attach brackets directly to the teeth surface without orthodontic metal bands. Another is the development of *Super-Elastic Ti-Ni Alloy Wire*, and following *Improved Super-Elastic Ti-Ni Alloy Wire*. With these new wires, we have provided an epoch-making orthodontic technique, where teeth could be moved more efficiently and safely with light continuous forces, and in consequences, the limits for teeth movement are expanded and the treatment outcomes are also improved. On the other hand, in order to determine the scientific basis for the needs of orthodontic treatment, we are engaging in the study of pathophysiology of malocclusion, and these research results are getting feedback to the orthodontic practices as soon as possible to stimulate the development of new treatment protocols.

Students in the graduate course not only pursue their scientific researches but also being educated in accordance with our curriculum for the post-graduated clinical program. In this program, we aim to bring up the leading persons of next generation who have highly specialized knowledge and skills of orthodontics as well as prominent minds of clinical researches.

With the cooperation of related field, we also provide comprehensive treatments for those patients with cleft lips and palates and other congenital anomalies, jaw deformities, maxillofacial functional disorders, periodontal diseases, impacted teeth, autotransplantation combined cases, and usages of implant anchorages.

5. Publications

Original Articles

1. Tomita D, Omura S, Ozaki S, Shimazaki K, Fukuyama E, Tohnai I, Torikai K. Maxillary movement in distraction osteogenesis using internal devices in cleft palate patients. Cleft Palate Craniofac J. 2011; 48(2):161-166.
2. Ng IW, Ono T, Inoue-Arai MS, Honda E, Kurabayashi T, Moriyama K. Application of MRI movie for observation of articulatory movement during a fricative /s/ and a plosive /t/. Angle Orthod. 2011; 81:237-44.
3. Naito S, Ishida T, Kokai S, Fujita K, Shibata M, Yabushita T, Ono T. Functional adaptability of temporomandibular joint mechanoreceptors after an increase in the occlusal vertical dimension in rats. Angle Orthod. 2011; 81(3):453-9.
4. Kuroda Y, Yonemitsu I, Hosomichi J, Watari I, Takei M, Ishida Y, Ono T. Intermittent posterior displacement of the rat mandible in the growth period affects the condylar cancellous bone. Angle Orthod. 2011; 81(6):975-82.
5. Shimizu Y, Hosomichi J, Kaneko S, Shibutani N, Ono T. Effect of sympathetic nervous activity on alveolar bone loss induced by occlusal hypofunction in rats. Arch Oral Biol. 2011; 56(11):1404-11.
6. Honda K, Watari I, Takei M, Ono T. Changes in the microstructure of the rat alveolar bone induced by unilateral molar extraction and estrogen deficiency. Orthodontic Waves 2011; 70(4): 143-50.
7. Takada J, Ono T, Miyamoto JJ, Yokota T, Moriyama K. Relationship between buccolingual position and inclination of mandibular molars and intraoral pressure in subjects with facial asymmetry. Eur J Orthod. 2011; 33:243-9.

Cariology and Operative Dentistry

1. Staffs and Students (April, 2011)

Professor	Junji Tagami	
Associate Professor	Masayuki Otsuki,	Yoshiyuki Sasaki
Junior Associate Professor	Toru Nikaido,	Masatoshi Nakajima
Assistant Professor	Takako Yoshikawa,	Yasushi Shimada,
	Yuichi Kitasako,	Ryuzo Kishikawa,
	Go Inoue,	Eitetsu Cho,
	Keiichi Hosaka,	Naoko Harada
Specially Appointed Junior Associate Professor (GCOE)		Alireza Sadr
Specially Appointed Junior Associate Professor		Shoji Nakashima
Specially Appointed Assistant Professor		Noriko Hiraishi
Hospital Staff	Tomohiro Takagaki,	Masahiro Takahashi,
	Rena Takahashi,	Naoko Seki
Technical assistant	Peththahandi Gayani Kanchana Waidyasekera,	
	Atia Anjum	
Secretary	Shiori Ogi,	Tomoko Okura
Graduate Student	Oto Aramaki,	Tomoyuki Takai,
	Hidenori Hanba,	Keisuke Kanbara,
	Sitthikorn Kunawarote,	Takehiro Oyangai,
	Miyuki Tanaka,	Eri Tano,
	Mako Tsubone,	Yuko Natsume,
	Chika Yahagi,	Hamid Nurrohman,
	Amir Nazari,	Ilnaz Hariri,
	Taweesak Prasansuttiporn,	Kanako Imai,
	Yumi Imamura,	Sachiko Utaka,
	Iori Gando,	Masaru Kirihara,
	Emi Kuribayashi,	Wakae Sakano,
	Hitomi Mita,	Turki Abdlsam Bakhsh,
	Gerardo Jose Joves Mendez,	Suppason Thittaweerat,
	Turki Abdulsam Bakhsh,	Azusa Tanaka,
	Kiminori Kinose,	Mona Mohammad Mandura,
	Md. Sofiqul Islam,	Hisaich Nakagawa,
	Haidil Akmla Mahdan,	Ena Lodha,
	Upoma Guha,	Shigeyuki Nagai,
	Naoko Matsui,	Ikumi Wada,
	Yumiko Uesugi,	Nariaki Yoshimine,
	Emi Oshima,	Ornnicha Thanatvarakorn,
	Alaa Turkistani,	Teerapong Mamanee,
	Sahar Jameel Khunkar,	Ka Kyou
Research Student	Shinji Ogura,	Mineo Kijima,
	Yen Yuan,	Kong kalian
Intern	Masahiro Ono,	Kanako Shida
JICA trainee	Patricia Makishi	

2. Purpose of Education

Cariology and Operative Dentistry section offers a four-year graduate program. First-year graduate students attend lectures and seminars given in the graduate school and are expected to gain an understanding of the fundamentals about methodology and the knowledge necessary for their research. The contents of the classes given in our section include topics related to cariology and operative dentistry: caries diagnosis, biocompatibility, caries treatment and restoration, prevention and control, dental materials, new instruments and equipment. In keeping with the internationally orientated philosophy of this section, lectures are conducted in English and are open to all foreign students. First-year graduate

students also undergo clinical training the procedures of modern adhesive restorations. Laboratory work, which commences in the first year, is performed under the supervision of our faculty staff. During the four-year program, several papers are required to be presented in domestic and / or international conferences and submitted to journals. The minimum requirements are completing the prescribed courses, a supervised research project and a dissertation for the degree published in a top international journal.

3. Research Subject

Mechanism of dentin bonding
Adhesive of resin restoration systems to tooth substance and other restorative materials
Structure, diagnosis and treatment of dentin caries
Physic-chemical and manipulative properties of restorative materials
Durability of restorative materials
Compensation of resin composite polymerization contraction stress
Pulpal response to restorative materials
Improvement of various restorative techniques for direct and indirect restorations
Improvement of various esthetic treatment techniques
Caries risk assessment and prevention of recurrent caries
Development and introduction for clinical works of OCT (Optical coherence tomography)

4. Clinical Servise

Operative Dentistry clinic provide restoration of teeth with fillings for dental cavities, trauma and tooth wear, and root canal treatments.

5. Publications

Original Articles

1. Aksornmuang J, Nakajima M, Senawongse P, Tagami J: Effect of C-factor and resin volume on the bonding to root canal with and without fibre post insertion., J Dent, 39(6): 422-429, 2011.
2. Aoki K, Kitasako Y, Ichinose S, Burrow MF, Ariyoshi M, Nikaido T, Tagami J: Ten-year observation of dentin bonding durability of 4-MATE/MMA-TBB resin cements – a SEM and TEM study., Dent Mater J, 30(4): 438-447, 2011.
3. Aramaki O, Chalermsarp N, Otsuki M, Tagami J, Azuma M: Differential expression of co-signal molecules and migratory properties in four distinct subsets of migratory dendritic cells from the oral mucosa., Biochem Biophys Res Commun, 413(3):407-413, 2011.
4. Bakhsh TA, Sadr A, Shimada Y, Tagami J, Sumi Y: Non-invasive quantification of resin-dentin interfacial gaps using optical coherence tomography: validation against conforcal microscopy., Dent Mater, 27(9): 915-25, 2011.
5. Bakry AS, Takahashi H, Otsuki M, Yamashita K, Tagami J: CO2 Laser Improves 45S5 Bioglass Interaction with Dentin., J Dent Res, 90(2):246-50, 2011.
6. Bakry AS, Tamura Y, Otsuki M, Kasugai S, Ohya K, Tagami J: Cytotoxicity of 45S5 bioglass paste used for dentine hypersensitivity treatment., J Dent, 39(9): 599-603, 2011.
7. Cho E, Sadr A, Inai N, Tagami J: Evaluation of resin composite polymerization by three dimensional micro-CT imaging and nanoindentation., Dent Mater, 27(11): 1070-8, 2011.
8. Foxton RM, Cavalcanti AN, Nakajima M, Pilecki P, Sherriff M, Melo L, Watson TF: Durability of resin cements to aluminum oxide and zirconia ceramics after air abrasion and laser treatment., J Prosthodont, 20(2): 84-92, 2011.
9. Fujii M, Kitasako Y, Sadr A, Tagami J: Roughness and pH changes of enamel surface induced soft drinks in vitro-applications of stylus profilometry, focus variation 3D scanning microscopy and micro pH sensor., Dent Mater J, 30(3): 404-410, 2011.
10. Hamba H, Nikaido T, Inoue G, Sadr A and Tagami J: The effects of CPP-ACP with sodium fluoride on inhibition of bovine enamel demineralization: a quantitative assessment using micro-computed tomography., J Dent, 39(6):405-13, 2011.
11. Hayati F, Okada A, Kitasako Y, Tagami J, Matin K: An artificial biofilm-induced secondary caries model for in vitro studies., Aust Dent J, 56(1):40-7, 2011.
12. Hiraishi N, Sono R, Islam MS, Otsuki M, Tagami J, Takatsuka T: Effect of hesperidin in vitro on root dentine collagen and demineralization., J Dent, 39:391-396, 2011.
13. Kishi A, Otsuki M, Sadr A, Ikeda M, Tagami J: Effect of light units on tooth bleaching with visible-light activating titanium dioxide photocatalyst., Dent Mater J, 30(5):723-729, 2011.

14. Kitasako Y, Tanaka M, Sadr A, Hamba H, Ikeda M, Tagami J: Effects of a chewing gum containing phosphoryl oligosaccharides of calcium (POs-Ca) and fluoride on remineralization and crystallization of enamel subsurface lesions in situ., J Dent, 39(11): 771-779, 2011.
15. Kitasako Y, Sadr A, Nikaido T, Tagami J: Relationship between perception of difficulty and clinical experience of approximal composite restorations in final-year undergraduate students at Tokyo Medical and Dental University., J Med Dent Sci, 58(1): 1-5, 2011.
16. Kitayama S, Nasser NA, Pilecki P, Wilson RF, Nikaido T, Tagami J, Watson TF, Foxton RM: Effect of resin coating and occlusal loading on microleakage of class II computer-aided design/computer-aided manufacturing fabricated ceramic restorations: a confocal microscopic study., Acta Odontol Scand, 69(3):182-192, 2011.
17. Komagamine Y, Kanazawa M, Minakuchi S, Uchida T, Sasaki Y: Association between masticatory performance using a colour-changeable chewing gum and jaw movement., J Oral Rehabil, 38(8): 555–563, 2011.
18. Kunawarote S, Nakajima M, Foxton RM, Tagami J: Pretreatment effect of mildly acidic hypochlorous acid on adhesion to caries-affected dentin using a self-etch adhesive., Eur J Oral Sci, 119(1): 86-92, 2011.
19. Li N, Takagaki T, Sadr A, Waidyasekera K, Ikeda M, Chen J, Nikaido T, Tagami J: Effect of curing modes of dual-cured core systems on microtensile bond strength to dentin and formation of acid-base resistant zone., J Adhes Dent, 13:527-35, 2011.
20. Makishi P, Shimada Y, Sadr A, Tagami J, Sumi Y: Non-destructive 3D imaging of composite restorations using optical coherence tomography: marginal adaptation of self-etch adhesives., J Dent, 39(4): 316-25, 2011.
21. Natsume Y, Nakashima S, Sadr A, Shimada Y, Tagami J, Sumi Y: Estimation of lesion process in artificial root caries by swept source optical coherence tomography in comparison to transverse microradiography., Journal of Biomedical Optics, 16(7): 071408: 1-8, 2011.
22. Nikaido T, Chikawa C, Li N, Takagaki T, Sadr A,Yoshida Y, Suzuki K, Tagami J: Effect of functional monomers in all-in-one adhesive systems on formation of enamel/dentin acid-base resistant zone., Dent Mater J, 30(5):576-582, 2011.
23. Nurrohman H, Nikaido T, Sadr A, Takagaki T, Kitayama S, Ikeda M, Waidyasekera K, Tagami J: Long-term regional bond strength of three MMA-based adhesive resins in simulated vertical root fracture., Dent Mater J, 30(5):655-663, 2011.
24. Prasansuttiporn T, Nakajima M, Kunawarote S, Foxton RM, Tagami J: Effect of reducing agents on bond strength to NaOCl-treated dentin., Dent Mater, 27 (3): 229-234, 2011.
25. Seki N, Nakajima M, Kishikawa R, Hosaka K, Foxton RM, Tagami J: The influence of light intensities irradiated directly and indirectly through resin composite to self-etch adhesives on dentin bonding., Dent Mater J, 30(3): 315-322, 2011
26. Senawongse P, Pongprueksa P, Hannirattisai C, Sumi Y, Otsuki M, Shimada Y, Tagami J: Non-destructive assessment of cavity wall adaptation of class V composite restoration using swept-source optical coherence tomography., Dent Mater J, 30(4): 517-22, 2011.
27. Shinoda Y, Nakajima M, Hosaka K, Otsuki M, Foxton RM, Tagami J: Effect of smear layer characteristics on dentin bonding durability of HEMA-free and HEMA-containing one-step self-etch adhesives., Dent Mater J, 30(4): 501-510, 2011.
28. Shinoki.T, Kato J, Otsuki M, Tagami J: Effect of cavity preparation with Er:YAG laser on marginal integrity of resin composite restorations., Asian Pac J Dent, 11(1):19-25, 2011.
29. Takahashi M, Nakajima M, Hosaka K, Ikeda M, Foxton RM, Tagami J: Long-term evaluation of water sorption and ultimate tensile strength of HEMA-containing/-free one-step self-etch adhesives., J Dent, 39(7):506-12, 2011.
30. Tanno K, Hiraishi N, Otsuki M, Tagami J: Evaluation of cavity adaptation of low-shrinkage composite resin., Asian Pac J Dent, 11(1):27-33, 2011.
31. Tsai Y-L, Nakajima M, Wang C-Y, Foxton RM, Lin C-P, Tagami J: Influence of etching ability of one-step self-etch adhesives on bonding to sound and non-carious cervical sclerotic dentin., Dent Mater J, 30(6): 941-947, 2011.
32. Uchida R, Matin K, Tagami J: An *in vitro* study to assess the efficacy of OH- ion superadded alkali-ion water in inhibiting caries and secondary caries., Asian Pac J Dent, 11:1-8, 2011.

Review Articles

1. Nakajima M. Kunawarote S, Prasansuttiporn T, Tagami J: Bonding to caries-affected dentin., The Japanese Dental Science Review, 47(2): 102-114, 2011.
2. Nikaido T, Inoue G, Takagaki T, Waydeasekera K, Iida Y, Shinohara SM, Sadr A, Tagami J: New strategy to create "Super Dentin" using adhesive technology; Reinforcement of adhesive-dentin interface and protection of tooth structures., The Japanese Dental Science Review, 47: 31-42, 2011.
3. Nikaido T: Interviste a cura della redazione., Doctor OS Gen, 22: 32-33, 2011

Fixed Prosthodontics

1. Staffs and Students(April, 2011)

Professor	Hiroyuki MIURA	
Associate Professor	Keiichi YOSHIDA	
Junior Associate Professot	Daizo OKADA	
Assistant Professor	Wataru KOMADA,	Chiharu SHIN,
	Kosuke NOZAKI(to March),	Asano KAWAZU(to March),
	Kumiko KAWASHIMA,	Yuko KIZUKI,
	Yuji FUKUI,	Shiho OTAKE(from April),
	Kenichi GOSHIMA(from April)	
Graduate Student	Haruomi ABE,	Jinbao MA,
	Reiko OGURA,	Naosuke KUMAGAE,
	Ning Xu,	Satoshi OMORI,
	Reina NEMOTO,	Sachi MAKINO,
	Yoji UEDA,	Izumi KATAOKA,
	Tasuku INAGAKI,	Rie FUJITA,
	Hiroyuki OAMOTO,	Miho SATO,
	Asami YANO	

2. Purpose of Education

The major subjects of the studies are occlusion of Cr-Br prostheses (fixed restoration such as crown and fixed partial denture), analysis of mandibular movement, influence of crown and periodontal tissue and its systemic affect, accuracy of manufacturing processes of crown (i.e. casting, soldering, luting and adjustment of occlusion), functional analysis of stomatognathic system and development of apatite ceramic implant. The research themes are investigated with measurement systems of mandibular movement, measuring instruments of tooth micro-displacement, electromyography, measurement apparatus of dimensional accuracy, EPMA (electron probe microanalyzer) for analyzing very small amount of dental alloy and histopathological methods. Clinical training and general lecture on prosthodontics are prepared for the graduate students in the first year. After the second year they will have special training for their research methods and experiments will be performed according to the research plan. In the last year the students will write the paper for thesis under the direction of the professor.

3. Research Subjects

1) Occlusion and Mastication.(mandibular position, mandibular movement, articulator, masticatory efficiency)
2) Influence of mechanical stress caused by occlusal contact on stomatognathic system. (Tooth displacement, distortion of alveolar bone, occlusal contact, proximal contact etc.)
3) Relationship of main occluding area and occlusal contact
4) Research on post and core(materials, stress analysis etc.)
5) Clinical application of latest technology and development of new materials (CAD/CAM, Zirconia, optical impression etc.)
6) Influence of occlusal contact for an important prosthesis on the periodontal tissues of the antagonist.
7) Application of laser welding in crown and bridge restorations.
8) Influence of dental materials for periodontal tissues and biological body.
9) Functional analysis of abnormal stomatognathic function.

4. Clinical Services

1) Clinic for prosthodontics (Prosthodontics practice clinic)

This clinic is organized by clinical teams, and 4 to 8 dentists compose 1 team working in cooperation between teams. Here offers a complete range of restorative, rehabilitative, and esthetic dentistry, treatment types include since simple one teeth to complete oral rehabilitation using the latest technologies.

2) Clinic for dental allergy (Dental allergy clinic)

This clinic provides allergy tests test for dental alloys and dental materials on potential patients before dental

treatment, besides, patients with skin and/or oral deseases histories induced by previous dental restorations. The causal allergen/s is/are identified by patch tests or if some metal restoration is allergy set on, is analyze by Electron Probe Micro Analyzer (EPMA), removing out only restoration such content allergens.

5. Publications

Original Article

1. Abe H, Miura H, Okada D, Kato H, Shin C: The main occluding area in patients with fixed partial dentures. J Med Dent Sci, 58, 41-48, 2011.
2. Ma J, Miura H, Okada D, Yusa K: Photoelastic stress analysis of endodontically treated teeth restored with different post systems: normal and alveolar bone resorption cases. Dent Mater J. 2011.(Epub ahead of print)

Pulp Biology and Endodontics

1. Staffs and Students (April 2011)

Professor	Hideaki SUDA	
Associate Professor	Chihiro KOBAYASHI,	Mitsuhiro SUNAKAWA
Junior Associate Professor	Atsushi TAKEDA,	Hideharu IKEDA
Assistant Professor	Arata EBIHARA,	Nobuyuki KAWASHIMA,
	Hiroyuki MATSUMOTO,	Reiko WADACHI,
	Noriyuki SUZUKI,	Hitomi HANADA
Graduate Student	Jing XU,	Jun KAWAMURA,
	Yu KOIZUMI,	Chizuko KOKUZAWA,
	Hitoshi SAKAUE,	Toshihiko YOSHIOKA,
	Bolortuya GOMB,	Uraiwan CHOKECHANACHAISAKUL,
	Kouyou TAKIMOTO,	Mengyu ZHOU,
	Ying LI,	Kei KOMATSU,
	Kana MIYARA,	Mioko YAMAMOTO,
	Ahmed Osama JAMLEH,	Jindan PIAO,
	Kazuto HURUHATA,	Saliman AIERKIN,
	Jie GU	

2. Purpose of Education

The aim of the course is to train and educate graduate dental students so that they can act as leading clinical scientists, researchers or practitioners of endodontics in the world. 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 pulp biology, neuroscience, bacteriology, immunology and material 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. The graduates from this course are expected to disseminate new principles and techniques on endodontics among general dental practitioners and endodontic specialists.

3. Research Subjects

1) Defense systems in the dental pulp/periapical tissue
2) Regulation of periapical bone destruction in apical periodontitis
3) Dental pulp stem cells/ Differentiation of pulp cells/ Horizon of pulpal regeneration
4) Root canal irrigation
5) Development of new apex locators
6) Strain produced in the root canal wall dentin
7) Application of medicaments to endodontics
8) Evaluation of endodontic technique using computational fluid dynamics(CFD)
9) Histochemical study using cultured mandible tissue model
10) Application of laser to endodontics
11) Application of optical coherence tomography
12) Analysis of nickel-titanium endodontic instruments
13) Electrophysiological approach to cell-to-cell couplings between odontoblasts
14) Diffusion through enamel and dentin
15) Lymphangiogenesis in the dental pulp
16) Neuro-scientific research for dental pain
17) Diagnosis using CBCT
18) Logistic regression equation to screen for vertical root fractures using cone-beam CT (3DX)
19) Global Center of Excellence (GCOE) Program
"International Research Center for Molecular Science in Tooth and Bone Diseases"
20) Molecular biological approach to the alveolar bone resorption associated with pulpal diseases

4. Clinical Services

Pulp Biology and Endodontics is in charge of the Endodontic Clinic in our Dental Hospital, and offers the global standard of endodontics to our patients. The representative treatments provided in our clinic are as follows:

- Diagnosis and treatment of pulpal and periapical diseases
- Protective procedures for the dental pulp
- Nonsurgical endodontic treatment
- Surgical endodontic treatment
- Bleaching discolored teeth
- Restoration of endodontically treated teeth

The latest development of endodontics is remarkable as seen in root canal instrumentation by super-elastic NiTi rotary files, root canal length measurement with newly developed electronic apex locators, diagnosis by cone beam computed tomography, and microendodontics by using a surgical microscope. Especially, microendodontics has dramatically changed conventional "blind" endodontics into more predictable endodontics by efficient and reliable procedures under a lightened and magnified view. Also, we seek to provide evidence-based endodontic treatment based on our clinical research.

5. Publications

Original articles

1. Hou XM, Yahata Y, Hayashi Y, Ebihara A, Hanawa T, Suda H: Phase transformation behaviour and bending property of twisted nickel-titanium endodontic instruments., International Endodontic Journal, 44(3):253-258, 2011.
2. Ebihara A, Yahata Y, Miyara K, Nakano K, Hayashi Y, Suda H: Heat treatment of nickel-titanium rotary endodontic instruments: effects on bending properties and shaping abilities., International Endodontic Journal, 44(9):843-849, 2011.
3. Bolortuya G, Ebihara A, Ichinose S, Watanabe S, Anjo T, Kokuzawa C, Saegusa H, Kawashima N, Suda H: Initial fibroblast attachment to Erbium:YAG laser-irradiated dentine., International Endodontic Journal, 44(12):1134-1144, 2011.
4. Chokechanachaisakul U, Yamanaka Y, Kaneko T, Katsube K, Kobayashi H, Okiji T, Suda H: Gene expression analysis of resident macrophages in lipopolysaccharide-stimulated rat molar pulp., Journal of Endodontics, 37(9):1258-1263, 2011.
5. Kaneko M, Kaneko T, Kaneko R. Chokechanachaisakul U, Kawamura J, Sunakawa M, Okiji T, Suda H: The role of N-methyl-D-aspartate receptor subunits in the rat thalamic mediodorsal nucleus during central sensitization., Brain Research, 1371():16-22, 2011.
6. Adorno CG, Yoshioka T, Suda H: Crack initiation on the apical root surface caused by three different nickel-titanium rotary files at different working lengths., Journal of Endodontics, 37(4):522-5, 2011.
7. Yoshioka T, Kikuchi I, Adorno C, Suda H: Periapical bone defects of root filled teeth with persistent lesions evaluated by cone-beamcomputed tomography., International Endodontic Journal, 44(3):245-252, 2011.
8. Kaneko T, Sakaue H, Okiji T, Suda H: Clinical management of dens invaginatus in a maxillary lateral incisor with the aid of cone-beam computed tomography - a case report., Dental Traumatology, 27(6):478-483, 2011.
9. Kaneko T, Okiji T, Kaneko R, Suda H, Nor JE: Laser- capture microdissection for factor Ⅷ-expressing endothelial cells in cancer tissues., Methods Mol Biol., 755():395-403, 2011.
10. Wang HG, Kawashima N, Iwata T, Xu J, Takahashi S, Sugiyama T , Suda H: MEPE Activated by Furin Promotes Pulpal Cell Adhesion., Journal of Dental Research, 90(4):529-534, 2011.

Advanced Biomaterials

1. Staffs and Students

Professor	Motohiro Uo	
Research Associate	Hideo Nakamura	
Graduate Student	Maho Shiozawa,	Yuya Asakawa,
	Koottathape Natthavoot	

2. Purpose of Education

1. Lecture of unit "Biomaterials and Dental Materials"

A series of lectures on the "science on biomaterials", "properties of dental and biomedical materials", "application of dental materials" will be taught through the lecture and practice.

2. Lecture of unit "Advanced Biomaterials" (graduate school)

Evaluation methods of various dental and biomedical materials will be taught.

3. Research subjects:

1. Development of the functional dental and biomedical materials using glass and ceramics.

Research is aimed to develop and evaluate the new glass and ceramics based materials as the dental and biomedical materials, e.g. composite resins, glass ionomer cements, dental porcelains and zirconia ceramics.

2. Analysis of Dental and biomedical materials and biological tissue using the synclotron radiation.

Research is aimed to apply the new analysis method using synchrotron radiation for the estimation of various properties of the dental and biomedical materials.

4. Publications

Original Articles

1. Uo M., Akasaka T., Watari F., Sato Y., Tohji K.: Toxicity evaluations of various carbon nanomaterials(Review), Dental Materials Journal, 30, 245-263, 2011.
2. Kawai Y., Uo M., Wang Y., Kono S., Ohnuki S., Watari F., Phase transformation of zirconia ceramics by hydrothermal degradation, Dental Materials Journal, 30, 286-292, 2011.
3. Hirata E., Uo M., Takita H., Akasaka T., Watari F., Yokoyama A.: Multiwalled carbon nanotube-coating of 3D collagen scaffolds for bone tissue engineering, Carbon, 49, 3284-3291, 2011.
4. Neupane MP., Lee SJ., Park IS., Lee MH., Bae TS., Kuboki Y., Uo M., Watari F.: Synthesis of gelatin-capped gold nanoparticles with variable gelatin concentration, Journal of Nanoparticle Research, 13, 491-498, 2011.
5. Bai Y., Park I.S., Lee S.J., Bae T.S., Watari F., Uo M., Lee M.H.: Aqueous dispersion of surfactant-modified multiwalled carbon nanotubes and their application as an antibacterial agent, Carbon, 49, 3663-3671, 2011.
6. Neupane MP., Park IS., Bae TS., Yi HK., Uo M., Watari F., Lee MH.: Titania nanotubes supported gelatin stabilized gold nanoparticles for medical implants, Journal of Materials Chemistry, 21, 12078-12082, 2011.

Presentations

1. Uo M, Asakura K, Honda S, Kogo Y, Soga K, Nakatsuka T, Watari F: Sr enriched teeth; structural analysis and mechanical properties, International Dental Materials Congress 2011 (Seoul)
2. Uo M, Watari F, Yokoyama A, Hamada K, Ohnuki S: TEM observation of TiO_2 nano particles in the oral mucosa contacted with titanium dental implant, The 3rd International Symposium on Surface and Interface of Biomaterials (Sapporo)
3. Nakamura H, Tanaka H, Kubota S, Yamamoto M, Yoshikawa F: Gas blow-assisted 3D laser process for machining zirconia crowns, IADR2011 (San Diego)
4. Asakawa Y, Takahashi H, Kobayashi M, Iwasaki N: Diametral tensile strength of calcium phosphate cement reinforced with fiberglass length, International Dental Materials Congress 2011 (Seoul)
5. Shiozawa M, Takahashi H, Iwasaki N, Koottathape N, Asakawa Y, Zoljargal P, Wang F: Fluoride release and mechanical properties of restorative glass ionomer cements, International Dental Materials Congress 2011 (Seoul)
6. Shiozawa M, Takahashi H, Iwasaki N, Koottathape N: Mechanical properties and fluoride release of recent restorative glass-ionomer cement, 25th IADR SEA Division Annual Scientific Meeting (Singapore)
7. Koottathape N: Influence of third body media on wear of composite resins, International Dental Materials Congress

2011 (Seoul)

8. Koottathape N: Effect of surface-profile measuring machine on composite resins wear properties, 25th IADR SEA Division Annual Scientific Meeting (Singapore)

Organic Biomaterials

1. Staffs and Students (April, 2011)

Professor	Nobuhiko YUI	
Associate Professor	Yoshihiro SASAKI	
Assistant Professor	Ji-Hun SEO	
Project Assistant Professor	Atsushi TAMURA	
Secretary	Nanae NISHI	
Graduate Student	Yuki MORITANI,	Sayaka TOITA,
	Koki KAMIYA,	Asako SHIMODA,
	Haruko TAKAHASHI,	Yurina SEKINE,
	Takashi NAKAI,	Junichi YASUOKA,
	Yuji TSUCHIDO,	Aya NAKAJIMA,
	Keita ABE,	Daisuke IIDA,
	Kei KUROSU,	Yoshitaka ITOU,
	Kimiko OKAZAKI,	Satoshi KOSUGE,
	Nanako Yokoyama	

2. Purpose of Education

Courses: Biomaterials, Advanced Medical Materials, Advanced Organic Materials

3. Research Subjects

1) Design of Dynamic Biomaterials Surfaces
2) Modulation of Cellular Functions by Dynamic Ligand-Polymers
3) Design of Intracellularly Functionalizing Biomaterials
4) Design of Liposomal Device and Hybrid Nanomaterials

4. Clinical Services

5. Publications

Original Article

1. Hyun H, Yui N. Mono-, Di-, or Triazidated Cyclodextrin-Based Polyrotaxanes for Facile and Efficient Functionalization via Click Chemistry. Macromol Rapid Commun 32(3): 326-331, 2011.
2. Shaheen S. M., Akita H, Yamashita A, Katoono R, Yui N, Biju V, Ishikawa M, Harashima H. Quantitative analysis of condensation/decondensation status of pDNA in the nuclear sub-domains by QD-FRET. Nucleic Acids Res 39(7):e48(12pp.), 2011.
3. Ehashi T, Hyun H, Yui N. Anti-inflammatory response of mannose-conjugated polyrotaxane endocytosed into macrophage. Macromol Res 19(5): 495-500,2011.
4. Hyun H, Yui N. Ligand Accessibility to Receptor Binding Sites Enhanced by Movable Polyrotaxanes. Macromol Biosci 11(6):765-771,2011.
5. Shaheen S. M., Akita H, Nakamura T, Takayama S, Futaki S, Yamashita A, Katoono R, Yui N. Harashima H. KALA-modified multi-layered nanoparticles as gene carriers for MHC class-I mediated antigen presentation for a DNA vaccine. Biomaterials 32(26):6342-6350,2011.
6. Kobayashi Y, Katoono R, Yamaguchi M, Yui N. Modulation of reversible self-assembling of dumbbell-shaped poly(ethylene glycol)s and β-cyclodextrins: precipitation and heat-induced supramolecular crosslinking. Polym J 43: 893-900,2011.
7. Katoono R, Kobayashi Y, Yamaguchi M, Yui N. Heat-induced supramolecular crosslinking of dumbbell-shaped PEG with β-CD dimer based on reversible loose-fit rotaxanation. Macromol Chem Phys 212(3):211-215,2011.
8. Sasaki Y, Hirakura T, S. Sawada, Akiyoshi K. Metal Coordinative-Crosslinked Polysaccharide Nanogels with Redox Sensitivity. Chem Lett 40(2):182-183,2011.
9. Sasaki Y, Mukai M, Kawasaki A, Yasuhara K, Kikuchi J. Switching of the Enzymatic Activity Synchronized with Signal Recognition by an Artificial DNA Receptor on a Liposomal Membrane. Org Biomol Chem 9:2397-2402,2011.
10. Yasuhara K, Wang Z, Ishikawa T, Kikuchi J, Sasaki Y, Moritani Y, Hiyama S, Suda T. Specific delivery of transport

vesicles mediated by complementary recognition of DNA signals with membrane-bound oligonucleotide lipids. Supramol Chem 23(3,4):218-225,2011.
11. Sasaki Y, Asayama W, Niwa T, Sawada S, Ueda T, Taguchi H, Akiyoshi K. Amphiphilic Polysaccharide Nanogels as an Artificial Chaperone in Cell-Free Protein Synthesis. Macromol Bioscei 1(6):814-820,2011.
12. Sasaki Y, Tsuchido Y, Sawada S, Akiyoshi K. Construction of protein-crosslinked nanogels with vitamin B6 bearing polysaccharide. Polym Chem, 2:1267-1270,2011.
13. Sasaki Y, Iida D, Takahashi H, Sawada S, Akiyoshi K. Artificial Chaperone Polysaccharide Nanogels for Protein Delivery: A Thermodynamic Study of Protein-Nanogel Interactions using Fluorescence Correlation Spectroscopy. Curr Drug Discovery Technol 8(4):308-13.,2011.

Review Articles

1. Sasaki Y, Akiyoshi K. Nanogel engineering by associating polymers for biomedical applications, Hydrogel Micro- and Nanoparticles, L. A. Lyon and M. J. Serpe eds., Wiley-VCH, Weinheim, Germany, 2011 in press.

Functional Materials (Applied Functional Molecules)

1. Staffs and Students (April, 2011)

Professor	Akio KISHIDA	
Associate Professor	Yoshinori KADOMA	
Assistant Professor	Ayumi OHSAKI,	Tsuyoshi KIMURA
Tokunin Assistant Professor	Kwangwoo NAM,	Yoshihide HASHIMOTO
Secretary	Kaoru YAHAGI	
Graduate Student	Yukiko ITO,	Jun NEGISHI,
	Kwang-il KIM,	Naoko NAKAMURA,
	Marie SHIMADA,	XiaoNan WEN,
	Chie MINATO,	Rie MATSUSHIMA,
	Yuta ENDO,	Tepei KOMIYAMA
Research Student	PingLi WU,	Kosuke KASAHARA,
	Haruka TSUKADA,	Junya HAGIWARA

2. Purpose of Education

In order to develop technology which may contribute to the advance in the medical science, lectures on functional molecules from basic to advanced knowledge on molecular design for specific purpose, mainly concentrated on medical application would be executed. Theories on functional molecules and overviews on medical system would be lectured in Graduate School of Medical and Dental Sciences. Students would have chances to learn about Genomics and Bio-intelligent system in Graduate School of Biomedical Science.

3. Research Subjects

1) Decellularization of native tissue for regenerative medicine

In order to obtain a novel scaffold which can be applied for regenerative tissue, ultra-high pressurization method was developed for the complete elimination of the cells and inactivation of the viruses.

2) Inducing molecular aggregation using ultra-high pressurization

The basic and applied science on molecular aggregation triggered by hydrogen bonding at over 6,000 atm is studied. This technique is being applied for hybridization of DNA with polymer for drug delivery system.

3) Bio-interface

To investigate how the materials interact with biological cues such as phospholipids, proteins, or cells, precisely controlled surface via atomic transfer radical polymerization was prepared. The basic research on physical and biological properties of this surface is being investigated.

4) Control of cell functions by physical stimuli.

Using physical stimuli such as nano-vibration or pressure, the technology for the control of cell functions such as the proliferation and differentiation is being developed.

5) Search for novel drugs based on medicinal plants

There are countless natural medicines portions which are not revealed so far. By screening novel drugs originated from Brazil, China, or Japan area for the cancer or dementia treatments the novel bioactive compounds are isolated and being investigated.

6) Development of high functional adhesive

For the development of stable adhesive for precious metal and resin, high functional monomer possessing adhesivity to the precious metal is being developed.

4. Clinical Services

The development of functional molecules can provide novel materials for the clinical application such as blood vessel, cornea, skin, or bone. Unlike the conventional materials which have been used in clinics so far, it would be possible to promote or suppress specific biological response using functionalized materials. Furthermore, the screening essential drug compound for certain purpose, it would help the patients to be treated with higher efficiency and less pain.

5. Publications

Original Article

1. Ito Y, Kimura T., Nam K., Katoh A., Masuzawa T., Kishida A., Effects of vibration on differentiation of cultured PC12 cells, Biotechnology and Bioengineering, 108(3): 592-599, 2011.
2. Mutsuo S, Yamamoto K., Furuzono T., Kimura T., Ono T., Kishida A., Release behavior from hydrogen-bonded polymer gels prepared by pressurization, Journal of Applied Polymer Science, 119(5): 2725-2729, 2011.
3. Yamamoto K., Kimura T., Nam K., Funamoto S., Ito Y., Shiba K., Katoh A., Shimizu S., Kurita K., Higami T., Masuzawa T., Kishida A., Synthetic polymer–tissue adhesion using an ultrasonic scalpel, Surgical Endoscopy, 25: 1270-1275, 2011.
4. Negishi J., Funamoto S., Kimura T., Nam K., Higami T., Kishida A., Effect of treatment temperature on collagen structures of the decellularized carotid artery using high hydrostatic pressure, Journal of Artificial Organs, 14(3): 223-231, 2011.
5. Nam K., Sakai Y., Funamoto S., Kimura T., Kishida A., Engineering a Collagen Matrix that Replicates the Biological Properties of Native Extracellular Matrix, Journal of Biomaterials Science-Polymer Edition, 22: 1963-1982, 2011.
6. Kimura T., Nibe Y., Funamoto S., Okada M., Furuzono T., Ono T, Yoshizawa H., Fujisato T., Nam K., Kishida A., Preparation of a nano-scaled poly (vinyl alcohol)/hydroxyapatite/DNA complex using high hydrostatic pressure technology and in vitro and in vivo gene delivery, Journal of Drug Delivery, vol 2011: 8pages, 2011.
7. Hashimoto Y., Funamoto S., Kimura T., Nam K., Fujisato T., Kishida A., The effect of decellularized bone/bone marrow produced by high-hydrostatic pressurization on the osteogenic differentiation of mesenchymal stem cells, Biomaterials, 32(29): 7060-7067, 2011.
8. Ito Y., Kimura T., Ago Y., Nam K., Hiraku K., Miyazaki K., Masuzawa T., Kishida A., Nano-vibration effect on cell adhesion and its shape, Bio-Medical Materials and Engineering, 21(3): 149-158, 2011.
9. Ikemura K, Kojima K, Endo T, Kadoma Y. Effect of novel dithiooctanoate monomers, in comparison with various sulfur-containing adhesive monomers, on adhesion to precious metals and alloys. Dent Mater J 30(1): 72-78, 2011.
10. Kadoma Y, Fujisawa S. Radical-scavenging Activity of Melatonin, either Alone or in Combination with Vitamin E, Ascorbate or 2-Mercaptoethanol as Co-antioxidants, Using the Induction Period Method. In Vivo 25(1): 49-53, 2011.
11. Ikemura K, Fujii T, Negoro N, Endo T, Kadoma Y. Design of a metal primer containing a dithiooctanoate monomer and a phosphonic acid monomer for bonding of prosthetic light-curing resin composite to gold, dental precious and non-precious metal alloys. Dent Mater J 30(3): 300-307, 2011.
12. Ikemura K, Kojima K, Endo T, Kadoma Y. Effect of the combination of dithiooctanoate monomers and acidic adhesive monomers on adhesion to precious metals, precious metal alloys and non-precious metal alloys. Dent Mater J 30(4): 469-477, 2011.
13. Ikemura K, Tanaka H, Fujii T, Deguchi M, Endo T, Kadoma Y. Development of a new single-bottle multi-purpose primer for bonding to dental porcelain, alumina, zirconia, and dental gold alloy. Dent Mater J 30(4): 478-484, 2011.
14. Ikemura K, Tanaka H, Fujii T, Deguchi M, Negoro N, Endo T, Kadoma Y. Design of a new, multi-purpose, light-curing adhesive comprising a silane coupling agent, acidic adhesive monomers and dithiooctanoate monomers for bonding to varied metal and dental ceramic materials. Dent Mater J 30(4): 493-500, 2011.
15. Ikemura K, Jogetsu Y, Shinno K, Nakatsuka T, Endo T, Kadoma Y. Effects of a newly designed HEMA-free, multi-purpose, single-bottle, self-etching adhesive on bonding to dental hard tissues, zirconia-based ceramics, and gold alloy. Dent Mater J 30(5): 616-625, 2011.
16. Ikemura K, Kojima K, Endo T, Kadoma Y. Synthesis of novel acryloyloxyalkyl and methacryloyloxyalkyl 6,8-dithiooctanoates and evaluation of their bonding performances to precious metals and alloys. Dent Mater J 30(6): 827-836, 2011.
17. Kadoma Y, Fujisawa S. Radical-Scavenging Activity of Dietary Phytophenols in Combination with co-Antioxidants Using the Induction Period Method. Molecules 16(12): 10457-10470, 2011.
18. Ozawa M, Kishida A, Ohsaki A, Erythrinan alkaloids from seeds of *Erythrina velutina*. Chem Pharm Bull 59(5): 564-567, 2011.
19. Ohsaki A, Kawamata S, Ozawa M, Kishida A, Gong X, Kuroda C. Salviskinone A, a diterpene with a new skeleton from *Salvia przewalskii*. Tetrahedron Lett 52(50): 1375-1377, 2011.

Removable Partial Denture Prosthodontics

1. Staffs and Students (April, 2011)

Professor	Yoshimasa IGARASHI	
Associate Professor	Noriyuki WAKABAYASHI	
Junior Associate Professor	Masayuki HIDESHIMA,	Kenji FUEKI
Assistant Professor	Masayuki SATO,	Takeshi UENO,
	Ichirou MINAMI,	Teruyasu NAKAMURA,
	Jyurou WADACHI,	Syusuke INUKAI,
	Eiko YOSHIDA	
Hospital Staff	Tomohiro ANDO,	Masahiro Ona,
	Takeyoshi SUGIURA,	Kensuke KAGAYA,
	Akihiko KODA,	Kouta OKANO,
	Yuka ABE,	Jyunnichiro WADA
Secretary	Haruka MATSUURA	
Graduate Student	Kazuki ISHIHATA,	Yoshiyuki SAKAI,
	Kousuke UMEHARA,	Aiichirou AO,
	Yuuki IWAKI,	Kengo FUJIKI,
	Keita YODA,	Kazuhito SHOI,
	Atsushi TAKAICHI,	Natsuko MURAKAMI,
	Yusuke TOYOSHIMA,	Ryo HAYASHI,
	Takashi SEKINISHI,	Ryosuke HARAKAWA,
	Natsuki SUZUKI	

2. Purpose of Education

Removable partial denture prosthodontics is a branch of Oral Health Science that deals with replacement of missing teeth and oral tissues to restore and maintain oral form, function, appearance, and health. Main objective of removable partial denture prosthodontics is to provide students in the graduate course opportunity to master standard method of diagnosis, technical skill, applied skill in lectures and practical works. Students are also taught on how to adapt removable prosthesis in the mouth with missing teeth from a biological and science and engineering standpoints.

3. Research Subjects

1) Comparisons between a mixing ability test and masticatory performance tests using a brittle or an elastic test food.
2) Assessment of the Pronunciation in Subjects with Sound Dentition.
3) Follow-up study and risk assessments for periodontitis of abutment teeth in patients with removable partial dentures.
4) Assessment of psychological stress during dental treatments.
5) Application of polyester copolymer to denture material.
6) Application of cobalt chrome alloy to telescopic denture material.
7) Three-dimensional analysis of occlusal curvature.
8) Fabrication of precision metal frameworks with cast-on method.
9) Analysis of the mechanism on the bone resorption of the residual ridge.

4. Clinical Services

Patients with missing teeth have increased in step with the aging of the population, so improving their quality life has been required. Dental prosthesis clinic provides removable partial dentures to patients with missing teeth by the best treatment technique. The dentures are individually designed from mobility of dentures, oral sense, pronunciation and aesthetic points of view.

5. Publications

Original Article

1. Ona M, Watanabe C, Igarashi Y, Wakabayashi N. Influence of Preparation Design on Failure Risks of Ceramic Inlays: A Finite Element Analysis. J Adhes Dent. 13(4):367-73, 2011.
2. Borák L, Florian Z, Bartáková S, Prachár P, Murakami N, Ona M, Igarashi Y, Wakabayashi N. Bilinear elastic

property of the periodontal ligament for simulation using a finite element mandible model. Dent Mater J. 30(4):448-454, 2011.
3. Sawada A, Wakabayashi N, Ona M, Suzuki T. Viscoelasticity of human oral mucosa: Implications for masticatory biomechanics. J Dent Res. 90(5):590-595, 2011.
4. Hudeab M, Wakabayashi N, Kasugai S. Magnitude and direction of mechanical stress at the osseointegrated interface of the microthread implant. J Periodontol. 82(7):1061-1070, 2011.
5. Takaichi A, Wakabayashi N, Igarashi Y. Prefabricated light-polymerizing plastic pattern for partial denture framework. Contemp Clin Denty. 2(4):402-404, 2011.
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7. Ueno T, Yamada M, Sugita Y, Ogawa T. N-acetyl cysteine protects TMJ chondrocytes from oxidative stress. Journal of Dental Research, 90(3): 353-359, 2011.
8. Tsukimura N, Yamada M, Iwasa F, Minamikawa H, Att W, Ueno T, Saruwatari L, Aita H, Chiou WA, Ogawa T. Synergistic effects of UV photofunctionalization and micro-nano hybrid topography on the biological properties of titanium. Biomaterials, 32(19):4358-4368, 2011.
9. Hori N, Iwasa F, Tsukimura N, Sugita Y, Ueno T, Kojima N, Ogawa T. Effects of UV photofunctionalization on the nanotopography enhanced initial bioactivity of titanium. Acta Biomaterialia, 7(10): 3679-3691, 2011.
10. Ueno T, Tsukimura N, Yamada M, Ogawa T. Enhanced bone-integration capability of alkali- and heat-treated nanopolymorphic titanium in micro-to-nanoscale hierarchy. Biomaterials, 32(30): 7297-7308, 2011.
11. Sugita Y, Ishizaki K, Iwasa F, Ueno T, Minamikawa H, Yamada M, Suzuki T, Ogawa T. Effects of pico-to-nanometer-thin TiO(2) coating on the biological properties of microroughened titanim. Biomaterials. 32(33): 8374-8384. 2011.
12. Tsukimura N*, Ueno T*, Iwasa F, Minamikawa H, Sugita Y, Ishizaki K, Ikeda T, Nakagawa K, Yamada M, Ogawa T. Bone integration capability of alkali- and heat-treated nanobimorphic Ti-15Mo-5Zr-3Al. Acta Biomaterialia. 7(12): 4267-4277, 2011. *Co-first author because of equal contribution.
13. Ishizaki K, Sugita Y, Iwasa F, Minamikawa H, Ueno T, Yamada M, Suzuki T, Ogawa T. Nanometer-thin TiO(2) enhances skeletal muscle cell phenotype and behavior. Int J Nanomedicine. 6: 2191-2203, 2011.
14. Ueno T, Yamada M, Igarashi Y, Ogawa T. N-acetyl cysteine protects osteoblastic function from oxidative stress. Journal of Biomedical Materials Research part A, 99(4): 523-531, 2011.
15. Fueki K, Yoshida E, Igarashi Y. A structural equation model relating objective and subjective masticatory function and oral health-related quality of life in patients with removable partial dentures. J Oral Rehabil. 38:86-94, 2011.
16. Yoshida E, Fueki K, Igarashi Y. A follow-up study on removable partial dentures in undergraduate program: Part I. Participants and denture use by telephone survey. Journal of Medical and Dental Sciences. 58: 61-67, 2011.
17. Fueki K, Igarashi Y, Maeda Y, Baba K, Koyano K, Akagawa Y, Sasaki K, Kuboki T, Kasugai S, Neal R Garrett. Factors related to prosthetic restoration in patients with shortened dental arches: a multicentre study. J Oral Rehabil. 38: 525-532, 2011.
18. Fueki K, Yoshida E, Igarashi Y. A structural equation model to investigate the impact of missing occlusal units on objective masticatory function in patients with shortened dental arches. J Oral Rehabil. 38: 810-817, 2011.
19. Wada J, Hideshima M, Inukai S, Ando T, Igarashi Y, Matsuura H. Influence of major connector in a maxillary denture on phonetic function. J Prosthodont Res 2011; 4: 234-242.
20. Sakai Y, Takahashi H, Iwasaki N, Igarashi Y. Effects of surface roughness and tapered angle of cone crown telescopic system on retentive force. Dent Mater J 2011; 30 : 635-641.

Oral Implantology and Regenerative Dental Medicine

1. Staffs and Students (April 2011)

Professor	Shohei KASUGAI	
Associate Professor	Makoto SHIOTA	
Junior Associate Professor	Noriko TACHIKAWA	
Assistant Professor	Shinji KURODA,	Motohiro MUNAKATA
Dentists in Dental Implant Clinic	Yoko YAMAGUCHI,	Hidemi NAKATA,
	Aoi SAKUYAMA,	Hiroshi KOBAYASHI,
	Takahiro NAKAMURA,	Daisuke SATO
	Kazuhiro KON,	Kanako NORITAKE
Graduate Students	Reena RODORIGUEZ,	Srilatha BHARGAVA,
	Norio AKINO,	Tomoko NAGAYAMA,
	Masaki FUJII,	Akiko FURUICHI,
	Osama ZAKARIA,	Shang GAO,
	Masahiro SHIMOGISHI,	Kang CHEN,
	Yasunobu HADA,	Ken YUKAWA,
	Marwa MADI,	Maiko YAMAMOTO,
	Kaori TAKAYA.	Zayar LIN,
	Miao YU,	Pluemsakunthai WARUNEE,
	Yu YAMASHITA,	Yuki KUSUMOTO,
	Minoru SANDA,	Taiji HAMADA,
	Hiroki MAEDA,	Munemitsu MIYASAKA,
	Kuppusamy MAHESWARI,	Kui ZHANG,
	You-kyoung KIM	

2. Purpose of Education

Currently, oral rehabilitation with dental implant is very effective and predictable. It is absolutely important for the dental student to understand dental implant treatment compared to other modalities. Nine hours lectures for the 5th year dental students are the introduction part. Each of these students has a chance to see patient examination process and several steps of treatment planning for half a day in the dental implant clinic. Furthermore, each of the 6th year students have a chance to see surgical procedures, prosthodontic treatments and maintenance procedures. In the residential program, we accepted 9 dentists and teach them more advanced contents of dental implant treatment.

In the doctoral course of Implantology, biomaterial sciences, structural engineering, anatomical structures, diagnosis and technical innovations are overviewed. In the doctoral course of Regenerative Dental Medicine, tissue engineering concept, regeneration of soft tissue and bone and recent technological advancements in these field are overviewed.

3. Research Subjects

Materials and structures of dental implant prostheses
Implant design and surface modification of dental implant
Dental implant and its surrounding tissues
Regeneration of soft tissues
Regeneration of bone

4. Clinical Services

In Dental Implant Clinic in the dental hospital, we treat partially or fully edentulous patients with dental implants. If soft tissue management and/or bone augmentation procedures are required, we also do these surgeries. Number of patients in Dental Implant Clinic is increasing every year and approximately 120 patients per day are treated, which is extremely over our capacities. Approximately 2,000 implants were installed in 2011. Patients with some clinical problems, who are treated in other clinics, are increasing and this is a great concern.

5. Publications

Original Articles

1. Munakata M, Tachikawa N, Honda E, Shiota M, Kasugai S. Influence of menopose on mandibular bone quantity and quality in Japanese women receiving dental implants. Archives of Osteoporosis 6(1-2):51-57,2011
2. Nyan M, Tsutsumi Y, Oya K, Doi H, Momura N, Kasugai S, Hanawa T. Synthesis of novel oxide layers on titanium by combination of sputter deposition and micro-arc oxidation techniques. Dental Material Journal 30(5):754-61,2011
3. Oshima M, Mizuno M, Imamura A, Ogawa M, Yasukawa M, Yamazaki H, Morita R, Ikeda E, Nakao K, Takano-Yamamoto T, Kasugai S, Saito M, Tsuji T. Functional tooth regeneration using a bioengineered tooth unit as a mature organ replacement regenerative therapy. PLoS One 6(7):e21531, 2011
4. Bakry AS, Tamura Y, Otsuki M, Kasugai S, Ohya K, Tagami J. Cytotoxicity of 45S5 bioglass paste used for dentine hypersensitivity treatment. Journal of Dentistry 39(9):599-603,2011
5. Rojbani H, Nyan M, Ohya K, Kasugai S. Evaluation of the osteoconductivity of α- tricalcium phosphate, β-tricalcium phosphate, and hydroxyapatite combined with or without simvastatin in rat calvarial defect. Journal of Biomedical and Material Research Part B - Applied Biomaterials 98B(4):488-98,2011
6. Ozeki M, Kuroda S, Kon K, Kasugai S. Differentiation of bone marrow stromal cells into osteoblasts in a selfassembling peptide hydrogel: in vitro and in vivo studies. Journal of Biomaterials Applications 25(7):663-84,2011
7. Rodriguez R, Kondo H, Nyan M, Hao J, Miyahara T, Ohya K, Kasugai S. Implantation of green tea catechin α-tricalcium phosphate combination enhances bone repair in rat skull defects. Journal of Biomedical and Material Research Part B - Applied Biomaterials 98B(2):263-71,2011
8. Miyahara T, Nyan M, Shimoda A, Yamamoto Y, Kuroda S, Shiota M, Akiyoshi K, Kasugai S. Exploitation of a novel polysaccharide nanogel cross-linking membrane for guided bone regeneration (GBR). Journal of Tissue Engineering and Regenerative Medicine. in press
9. Hao J, Kuroda S, Ohya K, Bartakova S, Aoki H, Kasugai S. Enhanced osteoblast and osteoclast responses to a thin film sputtered hydroxyapatite coating. Journal of Materials Science: Materials in Medicine 22:1489-99,2011
10. Noritake K, Kuroda S, Nyan M, Ohya K, Tabata Y, Kasugai S. Development of a new barrier membrane for guided bone regeneration: an in vitro and in vivo study. Journal of Oral Tissue Engineering 9(2):53-63,2011
11. Zakaria O, Kon K, Kasugai S. Evaluation of a biodegradable novel periosteal distractor. Journal of Biomedical and Material Research Part B - Applied Biomaterials 100B:882-89,2012
12. Zakaria O, Madi M, Kasugai S. Induced osteogenesis using a new periosteal distractior. Journal of Maxillofacial Surgery 70(3):e225-34, 2012

Complete Denture Prosthodontics

1. Staffs and Students (April, 2011)

Professor	Shunsuke MINAKUCHI	
Assistant Professor	Tatsuro UCHIDA,	Norihisa AKIBA,
	Yoshinori KAIBA,	Manabu KANAZAWA,
	Yusuke SATO	
Hospital Staff	Maiko IWAKI,	Mai OKUBO,
	Syuhei HANEDA,	Yuriko KOMAGAMINE,
	Saeko ANZAI	
Graduate Student	Hiroshi KATASE,	
	Megumi OCHI,	Yohei HAMA,
	Marie MURATA,	Eijiro YAMAGA,
	Tomonori KAGAWA,	Minoru INOUE,
	Yoshihito HOSHINO,	Takeshi HORIE,
	Keisuke KIKUCHI,	Shinta YAMAMOTO,
	Mariko TANOUE,	Yuri OMURA,
	Ayami JO,	Daisuke HIRAYAMA

2. Purpose of Education

Complete denture prosthodontics is a discipline which contributes to better quality of life for edentulous patients by full mouth reconstruction treatments with complete denture prosthesis. The purpose of education is to get the knowledge about the dynamic state of soft tissues around dentures during oral functions, occlusion, and technical skills required to fabricating complete dentures.

3. Research Subjects

1) Relationship between denture treatment and body function
2) Palatal coverage disturbance in masticatory function
3) Stress analyses of implant overdenture
4) Factorial analysis of complete denture prosthesis
5) Resilient denture lining material
6) CAD/CAM system for fabricating complete dentures
7) Evaluations of masticatory performance using color-changeable chewing gum

4. Clinical Services

Complete denture prosthodontics clinic provides edentulous patients with planned prosthodontic treatments, and maintains the restored function for long periods. In addition, we set original criteria and objectively evaluate effect of our prosthetic treatments.

5. Publications

Original Article

1. Takeshita S, Kanazawa M, Minakuchi S. Stress analysis of mandibular two-implant overdenture with different attachment systems. Dent Mater J. 2011 Nov 25. [Epub ahead of print]
2. Komagamine Y, Kanazawa M, Minakuchi S, Uchida T, Sasaki Y. Association betweenmasticatory performance using a colour-changeable chewing gum and jaw movement. J Oral Rehabil. 2011; 38(8):555-63.
3. Kanazawa M, Inokoshi M, Minakuchi S, and Ohbayashi N. Trial of a CAD/CAM system for fabricating complete dentures. Dent Mater J. 2011 Feb 4;30(1):93-6.
4. Sato Y, Kaiba Y, Yamaga E, Minakuchi S. Reliability and validity of a Japanese version of the Oral Health Impact Profile for edentulous subjects. Gerodontology. 2011 Dec 20.
5. Kato Y, Sato T, Katagiri A, Umezaki Y, Takenoshita M, Yoshikawa T, Sato Y, Toyofuku A. Milnacipran dose-effect study in patients with burning mouth syndrome. Clin Neuropharmacol. 2011 Jul-Aug; 34(4):166-9.
6. Kasuga Y, Takahashi H, Akiba N, Minakuchi S, Matsushita N, Hishimoto M. Basic evaluation on physical properties of experimental fluorinated soft lining materials. Dent Mater J. 2011; 30(1):45-51.

7. Sumi Y, Ozawa N, Nagaosa S, Minakuchi S, Umemura O. Application of optical coherence tomography (OCT) to nondestructive inspection of dentures. Arch Gerontol Geriatr. 2011; 53(2):237-41.

Maxillofacial Anatomy

1. Staffs and Students (April, 2011)

Professor	Shunichi SHIBATA	
Associate Professor	Tatsuo TERASHIMA	
Assistant Professor	Shun-ichi SHIKANO,	Tatsuhiko ABE
Technical Official	Toshimitsu YAMAMOTO,	

2. Purpose of Education

Main educational purpose of maxillofacial anatomy in graduate course is to provide students opportunity to understand the function of various oral organs in a morphological viewpoint and ability to evaluate various vital phenomenon encountered in medical practice.

3. Research Subjects

1) Structural features of mandibular condylar cartilage.
2) Mechanism of epithelial attachment of junctional epithelium in human gingiva.
3) Comparative histology and embryology of teeth.
4) Observation on the structural features of oral mucous
5) Anatomical names of the structures of human skeletal system.
6) Biological analysis of root formation of mouse molars by long-term organ culture method.
7) Mechanisms of enamel formation in amelogenesis imperfecta rat (ami).
8) Role of the dental sac in the formation and the development of the dental and periodontal tissues.
9) Morphological researches on *Sinus maxillaris*.
10) Studies on regeneration of jaw bone.

4. Publications

Original Article

1. Shikano S, Abe T, Terashima T: Analysis and classification of Latin anatomical names of skeletal fossa in terminologia anatomica, and comparison with corresponding Japanese anatomical names. Kokubyo Gakkai Zasshi, 78(3): 94-98, 2011.

Review Article

Book

Cognitive Neurobiology

1. Staffs (April, 2011)

Professor	Masato Taira
Junior Associate Professor	Hisayuki Ojima
Assistant Professor	Narumi Katsuyama
Graduate Students	Eriko Tachi

2. Purpose of Education

1. Lectures of unit "Nerve and Sense"

A series of lectures on the conduction and transmission of neuronal excitation, somatic sensation, vision, gustation, olfaction, audition, and equilibrium sense will be taught. Basic mechanisms of the nervous system and the mechanisms of sensation and perception will be leaned.

2. Lectures of unit "Motor System"

A series of lectures on the mechanisms of muscle contraction, and its regulation and related reflexes will be taught. Basic structure of the skeletal muscle and the physiological mechanism of its contraction, and deep sensation and skeletal muscular reflexes will be leaned.

3. Lectures of unit "Central Nervous System"

A series of lectures on the behavior, emotion, sleep and higher brain functions will be taught. Functions of the central nervous system will be leaned.

4. Lectures of unit "Biology of Mastication and Deglutition"

A series of lectures on the neural mechanisms of mastication and deglutition will be taught. Regulatory mechanisms of the mastication system will be learned.

5. Lecture on unit "Eating, Digestion, and Absorption"

A series of lectures on the mechanisms of salivation and the motility, digestion and absorption of digestive organs will be taught. Functions of a set of digestive ogranes starting with the oral cavity will be learned.

6. Unit of "Practice in Physiological Functions"

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 the capturing and analyzing data in order to draw conclusions.

3. Research Subjects

1. Neural Mechanisms of control of motor behavior.

Research is aimed at understanding the brain mechanisms of execution and control of the motion and behavior of animals and human.

2. Neuronal mechanisms for perception and cognition.

Research is aimed at understanding the brain mechanisms of perception and cognition of objects through vision and tactile sense of animals and human.

3. Processing of natural sounds in auditory cortex

Research is aimed at understanding the brain mechanisms of hearing and vocalization of animals.

4. Publications

Original Article

1. Katsuyama N, Usui N, Nose I, Taira M: Perception of object motion in three-dimensional space induced by cast shadows. NeuroImage 54: 485-494, 2011
2. Yamaoka A, Koie H, Iwaki S, Sato T, Kanayama K, Taira M, Sakai T.: Gastric hypomotility in chronic upper gastrointestinal disease of Japanese macaques (Macaca fuscata). Exp Anim. 60:177-180, 2011
3. Hashimoto T, Usui N, Taira M, Kojima S.: Neural enhancement and attenuation induced by repetitive recall. Neurobiol Learn Mem. 96:143-149, 2011.
4. Ojima H and Murakami K.: Triadic synaptic interactions of large corticothalamic terminals Hearing Res 247:40-47. 2011

Review articles

1. Ojima H.: Interplay of excitation and inhibition elicited by tonal stimulation in the auditory cortex. Neurosci

Biobehav Rev, 35:2084-2093.2011.

Molecular Craniofacial Embryology

1. Staffs and Students (April 2011)

Professor	Sachiko Iseki	
Associate Professor	Masa-Aki Ikeda	
Junior Associate Professor	Masato Ota (from May)	
Assistant Professor	Masato Ota (until May)	
Part-time lecturers	Hirofumi Doi,	Shumpei Yamada
	Shigeru Okuhara	
Visiting Reaecher	Yoichiro Ninomiya	
Graduate Students	Ryousuke Nagaoka (until March),	
	Yuki Date (until March),	Teng Ma,
	Widya Lestari,	Khandakar Abu Shameem MD. Saadat,
	Tomoko Nagayama,	Akihiko Machida,
	Masako Fujioka,	Shihoko Shimizu (until March),
	Endrawan Pratama,	Prasitsak Thanit,
	Zhang Kui (from April)	
Research student	Kyo Ka (until March),	Yuki Date (from April),
	Ryousuke Nagaoka (from April)	

2. Research subjects

1) Molecular mechanisms of mammalian craniofacial development
2) Application of developmental mechanisms to regenerative medicine
3) Identification of tissue stem cells in craniofacial region and molecular mechanism of the mechanism of their stemness
4) Regulation of gene expression in cell growth and stress response
5) Nuclear architecture and function in regulating gene expression
6) Dysregulation of tumor suppressors in oral cancer

3. Publications

Review

1. Iseki S. (2011) Disintegration of the medial epithelial seam: Is cell death important in palatogenesis? Dev. Growth Diff. 53, (2): 259-68.

Original articles

1. Ebe N, Hara-Yokoyama M, Iwasaki K, Iseki S, Okuhara S, Podyma-Inoue KA, Terasawa K, Watanabe A, Akizuki T, Watanabe H, Yanagishita M, Izumi Y. Pocket epithelium in the pathological setting for HMGB1 release. J. Dent. Res. 90 (2): 235-240.(2011)
2. Liu J, Uematsu H, Tsuchida N, Ikeda MA: Essential Role of Caspase-8 in p53/p73-Dependent Apoptosis Induced by Etoposide in Head and Neck Carcinoma Cells. Molecular Cancer 10: 95 (2011)
3. Ikeda Y, Matsunaga Y, Takiguchi M, Ikeda MA: Expression of cyclin E in postmitotic neurons during development and in the adult mouse brain. Gene Expr Patterns. 11, 64-71 (2011)

Cellular Physiological Chemistry

1. Staffs and Students (April, 2011)

Professor	Ikuo Morita	
Associate Professor	Ken-ichi Nakahama	
Junior Associate Professor	Hiroshi Fujita,	Takako Nagatani,
	Mayumi Abe,	Chieko Yokoyama
Assistant Professor	Kotaro Kato	
Tokuninn Assistant Professor (GCOE)	Olga Safronava	
Tokuninn Assistant Professor	Masako Akiyama	
Graduate Student	Yoko Aoi,	Praween Wayakanon,
	Takeshi Watanabe	
Research Student	Jizhong Yuan,	Atsuko Taki,
	Noriko Sudo,	Taro Koshiishi,
	Li Xiang Lan,	Yukihiko Hashida,
	Kaori Shimizu,	Yu Hatano,
	Izumi Honda,	Bowen Xu
Associate Professor (Nano Medicine DNP)	Motohiro Komaki	
Assistant Professor (Nano Medicine DNP)	Kengo Iwasaki	
Research Student (Nano Medicine DNP)	Yasuyuki Kimura	

2. Purpose of Education

For undergraduate students. We have some classes in biological chemistry for the third grader. In these classes, the students should understand basic biochemistry and physiology under healthy/diseased conditions.

For graduate students. These students can choose the one of themes in our lab. These students are expected to solve the problems by themselves. However, appropriate suggestions will be given by at least three supervisors whenever you want.

3. Research Subjects

1, Regulatory mechanism of angiogenesis and application to regenerative medicine
2, Bone remodeling and cell communication
3, Inflammation under hypoxic conditions (epigenetic control of gene expression)
4, Life of gap junction

4. Publications

Original Article

1. Aoi Y, Nakahama K, Morita I, Safronova O. The involvement of DNA and histon methylation in the repression of IL-1β-induced MCP-1 production by hypoxia. Biochem. Biophys. Res. Commun.,414:252-258, 2011
2. Taki A, Abe M, Oku K, Iseki S, Mizutani S, and Morita I. Expression of angiogenesis-related factors and inflammatory cytokines in placenta and umbilical vessels in pregnancies with preeclampsia and chorioamnionitis / funisitis. Congenital anomalies. in press.
3. Fujita H, Sakuma R, Tomiyama J, Hamaki T, Ohwada A, Kurosawa S and Nishimura S. Increased phosphatidylserine exposure on the erythrocyte membrane in patients with polycythaemia vera. Br J Haematol. 152：238-240. 2011.
4. Fujita H, Sakuma R, Tomiyama J, Hamaki T, Ohwada A and Nishimura S. Relationship between clotting activity and phosphatidylserine expression on erythrocyte membranes in polycythemia vera patients with the JAK2 V617F mutation. Arch Physiol Biochem. 117：231-235. 2011
5. Fujita H, Hamaki T, Ohwada A Tomiyama J and Nishimura S. Serum levels of granulocyte colony-stimulating factor are lower in *JAK2 V617F* positive versus negative erythrocytosis. Int J Lab Hematol. 33:e20-21. 2011
6. Tsugawa J, Komaki M, Yoshida T, Nakahama K, Amagasa T, Morita I.Cell-printing and transfer technology applications for bone defects in mice. J Tissue Eng Regen Med. 5 (9):695-703, 2011
7. Tanaka K, Iwasaki K, Feghali KE, Komaki M, Ishikawa I, Izumi Y. 3. Comparison of characteristics of periodontal ligament cells obtained from outgrowth and enzyme-digested culture methods. Arch Oral Biol. 56(4):380-8, 2011

8. Somogyi-Ganss E, Nakayama Y, Iwasaki K, Nakano Y, Stolf D, McKee MD, Ganss B. Comparative Temporospatial Expression Profiling of Murine Amelotin Protein during Amelogenesis. Cells Tissues Organs. 2011 Sep 9
9. Ebe N, Hara-Yokoyama M, Iwasaki K, Iseki S, Okuhara S, Podyma-Inoue KA, Terasawa K, Watanabe A, Akizuki T, Watanabe H, Yanagishita M, Izumi Y. Pocket epithelium in the pathological setting for HMGB1 release. J Dent Res. 90(2):235-4, 2011

Oral and Maxillofacial Surgery

1. Staffs and Students (2011)

Professor	Teruo AMAGASA(until March)	
Emeritus Professor	Teruo AMAGASA(from April)	
Clinical Professor	Hiroshi IWAKI	
Junior Associate Professor	Masashi YAMASHIRO,	Narikazu UZAWA
Assistant Professor	Satoshi YAMAGUCHI,	Yutaka SATO,
	Hiroyuki YOSHITAKE,	Yasuyuki MICHI,
	Kazuto KUROHARA,	Kouichi NAKAKUKI
Hospital Staff	Itaru SONODA,	Miho SUZUKI,
	Shigehiro ABE,	Misa MISHINA(HOSOKI),
	Chikako HAYASHI,	Mayuko MURASHIMA,
	Aya KAWAMATA,	Yuko KATSUKI(until March),
	Erina NAKAMURA(until March),	
	Kenichiro TAKAHASHI(from April),	
	Junichi TSUGAWA,	Nobuyoshi TOMOMATSU(from April)
Graduate Student	Tasuku KIHARA(until March),	
	Yasuhiro KURASAWA(until March),	
	Ryosuke NAGAOKA(until March),	
	Tomomi SAKUMA(until March),	
	Chieko MICHIKAWA(until March),	
	Hiroyuki NAKACHI(until March),	
	Paksinee Kamolrtanakul(until March),	
	Junya KUMAGAI(AOYAGI) (until March),	
	Hironori ENDO,	Daisuke MIYAJIMA,
	Yoshimi NAKATA,	Erika OUE,
	Jun SUMINO,	Takashi WATANABE,
	José-María SHINDOI,	Yuki MATSUSHITA,
	Yosuke HARAZONO,	Akihiko MACHIDA,
	Asumi UEZONO(HONDA),	Yuri TAKAHASHI(NONAKA)(until March),
	Akira GOUDA,	Norihiko HASHIDA,
	Yujiro MORIYA,	Eri TSUCHIDA(from April),
	Ryosuke NAKAMURA(from April),	
	Takayuki YAMADA(from April),	
	Li KEI(from April)	
Student	Junya KUMAGAI(AOYAGI) (from April),	
	Chie AKATSU(until March),	Tadanobu ARAGAKI(until March)
	Ryosuke NAGAOKA (from April),	
	Nami OGAWA,	Yoshinori INABA(until March)
	Chika MIURA,	Yumi KOUNO
	Wakako MURAKAMI(until March),	
	Machiko KOSUGI(from October)	
Post graduate trainee	Ming-Chin Mark CHANG(from September)	

2. Purpose of Education

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. 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.

4. 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.

5. Publication

Original Article

1. Abe S., Hamada K., Yamaguchi S., Amagasa T., Miura M.: Characterization of the radioresponse of human apical papilla-derived cells. Stew Cell Res, Therap 2(1): 2, 2011.
2. Michikawa C., Uzawa N., Sato H., Ohyama Y., Okada N., Amagasa T.: Epidermal growth factor receptor gene copy number aberration at the primary tumour is significantly associated with extracapsular spread in oral cancer. Britsh Journal of Cancer, 104(5):850-855, 2011.
3. Amagasa T., Yamashiro M., Uzawa N.: Oral premalignant lesions: from a clinical perspective. Int Clin Oncol, 16(2):5-14, 2011.
4. Kamolratanakul P., Hayata T., Ezura Y., Kawamata A., Hayashi C., Yamamoto Y., Hemmi H., Nagao M., Hanyu R., Notomi T., Nakamoto T., Amagasa T., Akiyoshi T., Noda M.:Nanogel-based scaffold delivery of prostaglandin E (2) receptor (EP4) specific agonist in combination with a low dose of growth factor heals critical-size bone defects in mice. Arthritis Rheum. 63(4):1021-1033, 2011.
5. Kihara T., Ichikawa S., Yonezawa T., Ji-Won Lee, Akihisa T., Je Tae Wood, Michi Y., Amagasa T., Yamaguchi A. Acerogenin A, a natural compound isolated from Acer nikoense Maxim,stimulates osteoblast differentiation through bone morphogenetic protein action. Biochem Biophys Res Commun. 406(2):211-217, 2011.
6. Tsugawa J., Komaki M., Yoshida T., Nakahama K., Amagasa T., Morita I.:Cell-printing and transfer technology applications for bone defects in mice. J Tissue Eng Regen. 5(9):695-703, 2011.
7. Nakata Y., Uzawa N., Takahashi K., Sumino J., Michikawa C., Sato H., Sonoda I., Ohyama Y., Okada N., Amagasa T.: EGFR gene copy number alteration is a better prognostic indicator than protein overexpression in oral tongue squamous cell carcinomas. Eur J Cancer. 47:2364-2372, 2011.
8. Tamaki K., Wake H., Kobayashi G., Miyachi H., Miyaoka H.: Study on Characteristics and Treatment Orientation of the Dental Patient with mental disorders based on the Results of DSM-IV-TR by Psychiatric Medical Interview. J Stomato Occ Med. 4(1):38-43, 2011.
9. Kurasawa Y., Kozaki K., Pimkhaokham A, Muramatsu T., Ono H., Ishihara T., Uzawa N., Imoto I., Amagasa T., Inazawa J.: Stabilization of phenotypic plasticity through mesenchymal-specific DNA hypermethylation in cancer cells. Oncogene, 2011 (in press).
10. Michikawa C., Uzawa N., Kayamori K., Sonoda I., Ohyama Y., Okada N., Yamaguchi A., Amagasa T.: Clinical significance of lymphatic and blood vessel invasion in oral tongue squamous cell carcinomas. Oral Oncol, 2011 (in press).

Maxillofacial Orthognathics

1. Staffs and Students (April, 2011)

Professor	Keiji MORIYAMA	
Associate Professor	Shoichi SUZUKI	
Junior Associate Professor	Tatsuo KAWAMOTO	
Assistant Professor	Michiko TSUJI,	Takuya OGAWA,
	Norihisa HIGASHIHORI,	Jun MIYAMOTO,
	Hiroki FUKUOKA	
GCOE Research Associate Professor		
	Naoto HARUYAMA	
Hard Tissue Genome Research Center, Research Assistant Professor		
	Yukiho KOBAYASHI	
Graduate Student	Nana OKAMOTO,	Kaori TSUJI,
	Rina HIKITA,	Tsutomu MATSUMOTO,
	Yousuke ITO,	Naomi KAWAKUBO,
	Jympei MORITA,	Yuko KOMAZAKI,
	Chiho WATANABE,	Masayoshi, UEZONO,
	Ryo MARUOKA,	Masako YOSHIZAKI,
	Carolina DUARTE,	Paveenarat AUKKARASONGSUP,
	Takayuki UMEZAWA,	Kenji OGURA,
	Keiko MURAMOTO,	Naomi YAMAMOTO,
	Thunyaporn SURAPORNSAWASD,	
	Seiei RYU	

2. Purpose of Education

The goal of the Education program in Maxillofacial Orthognathics is to provide an education related to craniofacial growth and development, and stomatognathic function in order to develop proficiency in improvement of a wide variety of malocclusions and malformations.

Fourth and fifth dental students will attend lectures and clinical laboratories, and fifth and sixth students will participate in the patient care clinic to acquire a broad range of general knowledge of a wide variety of malocclusions and malformations, and involvement of treatment.

The Graduate Program provides the biological science education related to the control mechanism of patterning and morphogenesis in the craniofacial region using molecular genetics and morphological analysis through patients born with cleft lip and/or palate and other congenital craniofacial conditions. It also provides the clinical education of orthodontics necessary support to gain an appreciation of their role in the team approach to comprehensive patient care.

3. Research Subjects

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

4. Clinical Services

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.

5. Publications

Original Article

1. Suzuki H, Suda N, Shiga M, Kobayashi Y, Nakamura M, Iseki S, Moriyama K. Apert syndrome mutant FGFR2 and its soluble form reciprocally alter osteogenesis of primary calvarial osteoblasts. J Cell Physiol. (in press)
2. Okamoto N, Hayashi S, Masui R, Kosaki R, Oguri I, Hasegawa T, Imoto I, Makita Y, Hata A, Moriyama K, Inazawa J. Deletion at chromosome 10p11.23-p12.1 defines characteristic phenotypes with marked midface retrusion. J Hum Genet. (in press)
3. Ng IW, Ono T, Inoue-Arai MS, Honda EI, Kurabayashi T, Moriyama K. Differential articulatory movements during Japanese /s/ and /t/ as revealed by MR image sequences with tooth visualization. Arch Oral Biol. (in press)
4. Qiu L, Haruyama N, Suzuki S, Yamada D, Obayashi N, Kurabayashi T, Moriyama K. Accuracy of orthodontic miniscrew implantation guided by stereolithographic surgical stent based on cone-beam CT-derived 3D images. Angle Orthod. (in press)
5. Okamura E, Suda N, Baba Y, Fukuoka H, Ogawa T, Ohkuma M, Ahiko N, Shiga M, Tsuji M, Moriyama K. Dental and maxillofacial characteristics in six Japanese individuals with ectrodactyly-ectodermal dysplasia-clefting (EEC) syndrome. Cleft Palate Craniofac J. (in press)
6. Suda N, Tominaga N, Niinaka Y, Amagasa T, Moriyama K. Orthognathic treatment for a patient with facial asymmetry associated with unilateral scissors-bite and a collapsed mandibular arch. Am J Orthod Dentofacial Orthop. (in press)
7. Kuroda S, Watanabe K, Ishimoto K, Nakanishi H, Moriyama K, Tanaka E. Long-term stability of LeFort III distraction osteogenesis with a rigid external distraction device in a patient with Crouzon syndrome. Am J Orthod Dentofacial Orthop. 140(4):550-61, 2011.
8. Kawafuji A, Suda N, Ichikawa N, Kakara S, Suzuki T, Baba Y, Ogawa T, Tsuji M, Moriyama K. Systemic and maxillofacial characteristics of patients with Beckwith-Wiedemann syndrome not treated with glossectomy. Am J Orthod Dentofacial Orthop. 139(4):517-25, 2011.
9. Ng IW, Ono T, Inoue-Arai MS, Honda E, Kurabayashi T, Moriyama K. Application of MRI movie for observation of articulatory movement during a fricative /s/ and a plosive /t/. Angle Orthod. 81(2):237-44, 2011.
10. Suda N, Ogawa T, Kojima T, Saito C, Moriyama K. Non-syndromic oligodontia with a novel mutation of PAX9. J Dent Res. 90(3):382-6, 2011.
11. Takada J, Ono T, Miyamato JJ, Yokota T, Moriyama K. Association between intraoral pressure and molar position and inclination in subjects with facial asymmetry. Eur J Orthod. 33(3):243-9, 2011.
12. Terao F, Takahashi I, Mitani H, Haruyama N, Sasano Y, Suzuki O, Takano-Yamamoto T. Fibroblast growth factor 10 regulates Meckel's cartilage formation during early mandibular morphogenesis in rats. Dev Biol. 15;350(2):337-47, 2011.
13. Ma D, Zhang R, Rios HF, Haruyama N, Sun Y, Xie Y, Kulkarni AB, Qin C, Feng JQ. A novel role of Periostin in postnatal tooth formation and mineralization. J Biol Chem. 11;286(6):4302-09, 2011.
14. Kamata H, Suzuki S, Tanaka Y, Tsutsumi Y, Doi H, Nomura N, Hanawa T, Moriyama K. Effects of pH, potential, and deposition time on the durability of collagen electrodeposited to titanium, Materials Transactions. 52(1):81-89, 2011.

Review Articles

1. Haruyama N, Hatakeyama J, Moriyama K. Amelogenins: Multi-functional enamel matrix proteins and their binding partners. J Oral Biosci. 53(3):257-66, 2011.

Maxillofacial Prosthetics

1. Staffs and Students (April, 2011)

Professor	Hisashi TANIGUCHI	
Junior Associate Professor	Yuka SUMITA	
Assistant Professor	Toshiaki IIDA,	Mariko HATTORI,
Hospital Staff	Taiji HOSHIAI,	Takafumi OTOMARU
Secretary	Ikuko ICHINOHE	
Graduate Student	Naoko MINAMISAWA,	Jien MORIMATA,
	Moe KOSAKA,	Yiliyaer AIMAIJIANG
Special Student	Mihoko HARAGUCHI,	Masayoshi HOJO,
	Hana NAGAI	

2. Purpose of Education

Department of Maxillofacial Prosthetic is the special unit of the prosthodontic and/or prosthetic treatment for patients with defects in oral and/or maxillofacial regions. The main objective of this course is to provide students with opportunity to gain sound understanding of the restoration of functional and esthetic disorders of oral and/or maxillofacial areas that are caused by congenital developmental or acquired diseases by means of the high-advanced dental and medical cares.

3. Research Subjects

1. Diagnosis and treatment for patients with maxillofacial defects
2. In vivo application of modal analysis for maxillofacial prosthodontics
3. Acoustic analysis of speech
4. Medical and dental art

4. Clinical Services

Maxillofacial Prosthetic clinic provides the restoration of functional and esthetic disorders of maxillofacial areas that are caused by congenital developmental or acquired diseases by means of the high-advanced dental and medical cares.

5. Publications

Original Article

1. Chowdhury NU, Otomaru T, Murase M, Inohara K, Hattori M, Sumita YI, Taniguchi H: A new simple evaluation method of the monosyllable /sa/ using a psychoacoustic system in maxillectomy patients.J Prosthodont Res 55: 7-11, 2011.
2. Taiji Hoshiai, Toshiaki Iida, and Hisashi Taniguchi: Vibratory properties of maxillary dentition in maxillectomy patients wearing metal framework obturator prostheses with three different metal materials J Prosthodont Res 55: 252-261, 2011.

Dentistry for Persons with Disabilities

1. Staffs and Students(April, 2011)

Associate Professor	Osamu SHINOZUKA	
Junior Associate Professor(Part-time)	Sadamu HAGA,	Minoru INADA,
	Goro SEKIGUCHI,	Hiroyuki ISHIKAWA
	Yohei TAKEUCHI,	Syohei TAMURA,
	Moriyuki NAKAMURA	
Assistant Professor	Yasuka KUSUMOTO	
Hospital Staff	Mariko WATANABE,	Tomo SUZUKI,
	Anna KUMAKURA,	Naoki HAYASHI
Graduate Student	Norihiko KANAKUCHI,	Yousuke KINOSHITA
Visiting Clinical Junior Associate Professor	Seiji SAKURAI	

2. Purpose of Education

Our department was started as a graduate course of the special dentistry section on April, 1999. The sections are the dentistry for persons with disabilities and medical problems.

The main objective of this course is to provide the opportunity for students to understand the outline of the reconstruction of functional and esthetic disorders of oral and/or maxillofacial areas by means of the high-advanced dental cares for patients with special needs.

3. Research Subjects

1) General research about the dentistry for persons with disabilities
2) Oral bacteria and systemic illness
3) Oral biofilm formation and elimination (Drug Delivery system)
4) Gingival overgrowth of the pharmacogenic
5) Dental phobia

4. Clinical Services

The clinical purpose of our section is to treat oral problems of special patients who are unable to receive normal dental care by reason of a disability which may be physical, mental, medical, or emotional, or combination of any of these under using behavior management and systemic support.

For example,

1) The patients requiring behavior management are physically disabled, mental retardation, autism, etc.
2) The patients requiring systemic support are internal impediment, dental phobia, etc..

5. Publications

Abstracts

1. Norihiko Kanaguchi, T Ito, X Zhang, Y Kinoshita, N Narisawa, N Hayashi, O Shinozuka, H Senpuku: Evaluation of *Candida Albicans* colonization in oral cavity of NOD/SCID. *e2f1* $^{-/-}$ mice. EUROBIOFILMS 2011. p 92 (EUROBIOFILMS 2011 Second European Congress on Microbial Biofilms - Basic and Clinical Aspects.Copenhagen, Denmark, July 5-8, 2011)

Metallic Biomaterials (Metals)

1. Staffs and Students (April, 2011)

Professor	Takao HANAWA	
Associate Professor	Naoyuki NOMURA	
Assistant Professor	Hisashi DOI,	Yusuke TSUTSUMI
Research Assistant	Osamu FUKUSHIMA	
Project Assistant Professo	SUYALATU,	Satoshi MIGITA
Secretary	Toshie NAKANISHI,	Yasuko SEKI
Graduate Student	Ryota KONDO,	Takahiro SAKAI

2. Purpose of Education

Metallic biomaterials play an important roll as medical devices. Our laboratory mainly deals with effects of crystal structure, process, and thermal treatment on mechanical properties (e.g. strength or toughness). We also focus on structure and property of nanometer-scaled surface phenomena: Formation of living tissue on metals, especially, reactions between biomolecules or cells and metals, changes in surface oxide layers in living tissues, and electrochemical property of metallic biomaterials. The aim of the education is perfect understanding of metallic biomaterials, enabling students to select a proper material for medical treatments or researches.

3. Research Subjects

A) Bio-functionilization of metals with surface modification

Bio-functionalization on metals is investigated with surface treatment techniques, such as bio-functional molecule immobilization and electrochemical treatments.

B) Development of novel alloys for biomedical applications

Novel alloy systems for biomedical applications are explored from the viewpoint of mechanical properties and biocompatibility.

C) Development of porous metals composites with mechanical compatibility

Porous metal based composites having low Young' s modulus with sustained release of inorganic ion are fabricated.

D) Development of Zr-based alloys for minimizing MRI artifacts

Zr-based alloys with high strength are investigated for the suppression of MRI artifact.

4. Publications

Original Articles

1. 1. Kamata H, Suzuki S, Tanaka Y, Tsutsumi Y, Doi H, Nomura N, Hanawa T, Moriyama K. Effects of pH, potential, and deposition time on the durability of collagen electrodeposited to titanium. Materials Transactions 52: 81-89, 2011.
2. Kondo R, Suyalatu, Tsutsumi Y, Doi H, Nomura N, Hanawa T. Microstructure and mechanical properties of Pt-added and Pd-added Zr-20Nb alloys and their metal release in 1 mass% lactic acid solution. Materials Science and Engineering C 31: 900-905, 2011.
3. Hiruma H, Toida H, Hanawa T, Sakuragi H, Suzuki Y. Ion beam modification of ePTFE for improving the blood compatibility. Surface and Coatings Technology 206: 905-910, 2011.
4. Hiruma H, Toida H, Hanawa T, Sakuragi H, Suzuki Y. Biocompatibility control of recombinant collagen by ion beam modification. Surface and Coatings Technology 206: 911-915, 2011.
5. Suyalatu, Kondo R, Tsutsumi Y, Doi H, Nomura N, Hanawa T. Effects of phase constitution on magnetic susceptibility and mechanical properties of Zr-rich Zr–Mo alloys. Acta Biomaterialia 7: 4259-4266, 2011.
6. Park JW, Tsutsumi Y, Lee CS, Park CH, Kim YJ, Jang JH, Khang D, Im YM, Doi H, Nomura N, Hanawa T. Surface structures and osteoblast response of hydrothermally produced CaTiO3 thin film on Ti–13Nb–13Zr alloy. Applied Surface Science 257: 7856-7863. 2011.
7. Kondo R, Nomura N, Suyalatu, Tsutsumi Y, Doi H, Hanawa T. Microstructure and mechanical properties of as-cast Zr-Nb alloys. Acta Biomaterialia 7: 4278-4284. 2011.
8. Ha JY, Tsutsumi Y, Doi H, Nomura N, Kim KH, Hanawa T. Enhancement of calcium phosphate formation on zirconium by micro-arc oxidation and chemical treatments. Surface and Coatings Technology 205: 4948-4955, 2011.
9. Nyan M, Tsutsumi Y, Oya K, Doi H, Nomura N, Kasugai S, Hanawa T. Synthesis of novel oxide layers on titanium by combination of sputter deposition and micro-arc oxidation techniques. Dental Materials Journal 30: 754-761, 2011.

10. Park JW, Kurashima K, Tsutsumi Y, An CH, Suh JY, Doi H, Nomura N, Noda K, Hanawa T. Bone healing of commercial oral implants with RGD immobilization through electrodeposited poly(ethylene glycol) in rabbit cancellous bone. Acta Biomaterialia 7: 3222-3229, 2011.
11. Hou XM, Yahata Y, Hayashi Y, Ebihara A, Hanawa T, Suda H. Phase transformation behaviour and bending property of twisted nickel–titanium endodontic instruments. International Endodontic Journal 44: 253-258, 2011.

Book

1. Hanawa T. Electrochemical techniques to obtain biofunctional materials, In: Applications of Electrochemistry and Nanotechnology in Biology and Medicine I, Ed. Eliaz N, Modern Aspects of Electrochemistry No. 52, Chap. 5, 377-423, Springer, New York, 2011.

Biomechanics (Biodesign)

1. Staffs and Students

Professor	Kazuo TAKAKUDA	
Assistant Professor	Wei WANG	
Research Assistants	Syukan OKANO	
Graduate Students	Takao IRIBE,	Yuki SAITO,
	Hazuki KOSHITOMAE,	Ryo KOKUBUN,
	Yutaka FUKUDA,	Masahiro WATANABE,
	Atsushi MITA,	Tetsuro WATANABE,
	Kimihiro OKANO,	Ryoichi SUZUKI,
	Katsunari MURAKAMI,	Hiroki IKEDA,
	Tarou KIMURA,	Hiroyuki KUSABA,
	Hisaya NOMATA,	Eiko MARUKAWA
Research Student	Atsushi YAGIHARA,	Yuhta KASHIAWASE

2. Purpose of Education

Biomechanics

The class is for the understanding of fundamental concepts of mechanics, and introduction to the advanced studies including the biomechanics of living bodies, tissues, and cells. Some applications to the basics of medical devices with mechanical functions are also discussed.

3. Research Subjects

1. Remodeling of structural and supporting tissues under mechanical stimuli

Biomechanical studies on structural/supporting tissues such as bones, ligaments and tendons are carried out. In particular, to elucidate the adaptation mechanism of these tissues, the effects of controlled mechanical stimuli applied to living cells and tissues are investigated.

2. Development of Bone Regeneration Device with Bioabsorbable Organic/Inorganic Composite Materials

Devices for bone regeneration with the use of bioabsorbable Organic/Inorganic Composite materials are developing. In vitro and animal experiments are carrying out for pre-clinical experiments. Furthermore, bone regeneration mechanism when implanting Organic/Inorganic composite materials is examined by in vitro and in vivo tests.

3. Development of Regeneration Devices for Soft Tissues with the use of bioabsorbable materials

Regeneration technology for structural/supporting tissues such as ligaments, tendons, dura mater, peripheral nerves and small blood vessels are investigated utilizing bioabsorbable polymers. Our strategy is based on the regeneration by the self-healing mechanism achieved through the optimum milieu provided by biomaterials. We already have promising results in the animal experiments for the cases of dura mater and peripheral nerves.

4. Development of Soft and Flexible Resin Base Dentures for Elderly Persons

We are developing innovative soft and flexible resin base dentures those are able to moderate the stimulation to mucous membranes and give the patients to get the moderate masticatory force for elderly persons. As the soft and flexible materials for the denture base, we have developed copolymer of 2-ethylhexyl methacrylate and methyl methacrylate that shows relatively hard properties or very soft properties depending on the amount of the contents. By utilizing these new materials, we are now designing new soft and flexible resin base dentures with gradient functions.

4. Publications

Original Articles

1. Sakai D, Kii I, Nakagawa K, Matsumoto HN, Takahashi M, Yoshida S, Hosoya T, Takakuda K, Kudo A. Remodeling of Actin Cytoskeleton in Mouse Periosteal Cells under Mechanical Loading Induces Periosteal Cell Proliferation during Bone Formation. PLoS ONE. 2011;6(9):e24847.
2. Yanagida H, Okada M, Masuda M, Narama I, Nakano S, Kitao S, Takakuda K, Furuzono T. Preparation and in vitro/in vivo evaluations of dimpled poly(L-lactic acid) fibers mixed/coated with hydroxyapatite nanocrystals. Journal of artificial organs : the official journal of the Japanese Society for Artificial Organs. 2011;14(4):331-341.
3. Ishihata K, Wakabayashi N, Wadachi J, Akizuki T, Izumi Y, Takakuda K, Igarashi Y. Reproducibility of Pocket Depth Measurement by Experimental Periodontal Probe Incorporating Optical Fiber Sensor. Journal of

periodontology. 2011 May 16.
4. Wada N, Nakamura M, Wang W, Hiyama T, Nagai A, Yamashita K. Controlled Deposition of Calcite Crystals on Yttria-Stabilized Zirconia Ceramic Electrets. Cryst Growth Des. 2011;11(1):166-174.

Presentations

1. Takakuda K. Biomechanical and Microbiological Aspects in the Realization of Clinically Biocompatible Surfaces. The 5th International Conference on the Science and Technology for Advanced Ceramics. Jun 2011, Yokohama, Japan.
2. Uezono M. Takakuda K, Suzuki S, Moriyama K. Bone Forming Capability Around Novel Subperiosteal Anchorage Device for Orthodontic Treatment. The 5th International Conference on the Science and Technology for Advanced Ceramics. Jun 2011, Yokohama, Japan.

Clinical Anatomy

1. Staffs and Students (April, 2011)

Professor	Keiichi AKITA	
Junior Associate Professor	Kumiko YAMAGUCHI (Center for Interprofessional Education)	
Assistant Professor	Akimoto NIMURA,	Masayo HARADA (June ~)
Graduate Student	Atsuo KATO(~ March),	Yasuo NAKAJIMA,
	Hisayo NASU,	Kazuhiro SAKAMOTO,
	Atsushi TASAKI,	Kazuhito Sekizawa

2. Purpose of 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 collabolate 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.

3. Research Subjects

1) Anatomical study of the shoulder joint and rotator cuff.
2) Embryological study of the differentiation of cloaca and surrounding muscles.
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

4. Publications

Original Article

1. Yamaguchi K, Kobayashi M, Kato T, Akita K. Origins and distribution of nerves to the female urinary bladder: new anatomical findings in the sex differences. Clin Anat. 2011 Oct;24(7):880-5.
2. Nimura A, Kato A, Yamaguchi K, Mochizuki T, Okawa A, Sugaya H, Akita K. The superior capsule of the shoulder joint complements the insertion of the rotator cuff. J Shoulder Elbow Surg. 2011 Aug 3. [Epub ahead of print]
3. Kato A, Nimura A, Yamaguchi K, Mochizuki T, Sugaya H, Akita K. An anatomical study of the transverse part of the infraspinatus muscle that is closely related with the supraspinatus muscle. Surg Radiol Anat. 2011 Sep 21. [Epub ahead of print]
4. Nakazawa M, Koizumi M, Nimura A, Sato T, Akita K. Functional aspects of the coracoclavicular space. Surg Radiol Anat. 2011 Dec;33(10):913-8.
5. Omori A, Harada M, Ohta S, Villacorte M, Sugimura Y, Shiraishi T, Suzuki K, Nakagata N, Ito T, Yamada G. Epithelial Bmp (Bone morphogenetic protein) signaling for bulbourethral gland development: a mouse model for congenital cystic dilation. Congenit Anom (Kyoto). 2011 Sep;51(3):102-9.

Plastic & Reconstructive surgery

1. Staffs and Students (April, 2011)

Professor	Mutsumi Okazaki	
Junior Associate Professor	Hiroki Mori	
Assistant Professor (Hospital Staff)	Satoshi Kodaira	
Graduate Student	Aini Hailati,	Tomoyuki Yano,
	Noriko Uemura,	Kentaro Tanaka,
	Yuhki Wakimura,	Aki Takada

2. Purpose of 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.

3. Research Subjects

Basic research

1. A mechanism and prophylaxis of the post-inflammatory pigmentation
2. A scarless wound healing
3. The blood circulation study of the flap using indocyanine green
4. Donor specificity on various flaps or full thickness skin

Clinical research

1. Sensory recovery and contour prediction in the breast reconstruction
2. The algorithmic development and the evaluation of various reconstructions in the skull base reconstruction
3. The development of reconstructive method after an oral cavity / pharyngeal cancer resection - Aiming at the functional preservation
4. The classification of the symptom and static and dynamic reconstruction of the facial paralysis
5. A classification and the algorithmic development in blepharoptosis surgery
6. The objective evaluation for the ischemic limb and therapeutic strategy utilizing wound healing mechanism
7. The prospective studies about the color reproducibility of the medical tattoo in the nipple areola reconstruction

4. Clinical Services

We cover the whole field of plastic surgery. In particular, we deal with the following field; congenital anormaly (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 article】

1. Mori H, Yano T, Tanaka K, Okazaki M. Two Pedicled perforator flaps combined with a fascia graft for a rage lateral lumbar defect. Journal of Plastic, Reconstructive & Aesthetic Surgery 64: 274-276, 2011
2. Yano T, Tanaka K, Kisimoto S, Iida H, Okazaki M. The Reliability of and Indications for Pericranial Flaps in Anterior Skull Base Reconstruction. The Journal of Craniofacial Surgery 22: 1-5, 2011
3. Yano T, Tanaka K, Kisimoto S, Iida H, Okazaki M. Review of Skull Base Reconstruction Using Locoregional Flaps and Free Flaps in Children and Adolescents. Skull Base 21: 359-365, 2011
4. Mori H, Okazaki M. Is the sensitivity of skin-sparing mastectomy or nipple-sparing mastectomy superior to conventional mastectomy with innervated flap? Microsurgery 31: 428-433, 2011
5. Okazaki M, Miyamoto S. Low skin paddle pedicled latissimus dorsi flap with vascular supercharging: Possibility of complete survival of larger and/or more distal flap. Plast Reconstr Surg 128: 568-569, 2011
6. Tanaka K, Sakuraba M, Miyamoto S, Hayashi R, Ebihara M, Miyazaki M, Shinozaki T, Daiko H, Yano T. Analysis of Operative Mortality and Post-operative Lethal Complications after Head and Neck Reconstruction with Free Tissue Transfer. Japanese Journal of Clinical Oncology 41: 758-763, 2011
7. Kaminishi-Tanikawa A, Kurita M, Okazaki M, Kawaguchi R, Ihara A, Niikura M, Takushima A, Harii K. Features of

wound healing shown by fibroblasts obtained from the superficial and deep dermis. J Plast Surg Hand Surg 45: 219-225, 2011

8. Kurita M, Okazaki M, Fujino T, Takushima A, Harii K. Cyclic stretch induces upregulation of endothelin-1 with keratinocytes in vitro: Possible role in mechanical stress-induced hyperpigmentation. Biochem Biophys Res Commun 409: 103-107, 2011
9. Kurita M, Ozaki M, Okazaki M, et al. Secondary Reconstruction of Vaginal Stenosis with Bilateral Pudendal Thigh Flaps: Report of Two Cases. Scand J Plast Reconstr Surg Hand Surg 45: 168-72, 2011

Head and Neck Surgery

1. Staff s and Students

Professor	Seiji Kishimoto	
Assistant Professor	Yosuke Ariizumi	
Hospital Staff	Fuminori Nomura	
Secretary	Mariko Tosa	
Graduate Student	Masakazu Miyazaki,	Zenda Sadamoto,
	Toru Sasaki,	Fuminori Nomura,
	Tatsuo Masubuchi,	Yosifumi Fukushima

2. Purpose of Education

In the Department of Head and Neck Surgery, our goal is to deliver the highest possible clinical care for patients with benign and malignant tumors of the head and neck.

Postgraduate residents participate in a variety of head and neck surgeries. Weekly clinical rounds help to extend the experience beyond the operating room. Tumor conference is held weekly with a lively interdisciplinary discussion including otolaryngology, plastic surgery. They are also offered opportunity to participate in various clinical research projects.

3. Research subjects

1) Anatomy of the skull base.
2) Development of new surgical techniques in cancer treatment.
3) Clinical application of new device of endoscopic examination.
4) Surgical treatment of pediatric head and neck tumors.
5) Human papilloma virus infection and head and neck cancer.

4. Clinical Services

Our team treats patients with tumors of the thyroid gland, salivary glands, oral cavity, larynx, pharynx, paranasal sinus, and skull base, and sarcomas of the soft tissue and bone.

5. Publication

Original Article

1. K Ohno, A Tsunoda, S Shirakura, N Takahashi, S Kishimoto: The approachesand outcomes of skull base surgery for the pediatric sarcoma after the initial therapy Auris Nasus Larynx 38(2):208-214,2011.
2. M Ebihara, R Hyashi, M Miyazaki, T Shinozaki , H Daiko, M Saikawa：Window resection of the trachea and secondary reconstruction for invasion bydifferentiated thyroid carcinoma. Auris Nasus Larynx 38(2):271-275, 2011.
3. T Yano, K Tanaka, S Kishimoto, H Iida, M Okazaki：Reliability of and Indications for Pericranial Flaps in anterior Skull Base Reconstruction. J Craniofacial Surgery 22(2):482-485, 2011.
4. K Hagino, A Tsunoda, R Tsunoda, S Kishimoto：Measurement of the Facial Nerve Caliber in Facial Palsy: Implications for Facial Nerve Decompression. Otology & Neurology 32:686-689, 2011.
5. M Yamada, A Tsunoda, K Hagino, M Aoyagi, Y Kawano, T Yano, K Tanaka, S Kishimoto: Surgical management of large juvenile nasopharyngeal angiofibroma invading the infratemporal fossa with intracrancial extradural parasellar involvement in an 8-year-old boy。 Auris Nasus Larynx 1582, 2011.
6. S Ariyasasthiman, A Tsunoda, T Tokumaru, K Kayamori,S Hirooka, S Kishimoto：Ultrastructual morphology of juvenile psammomatoid ossifying Fibroma.：Auris Nasus Larynx 1582, 2011.
7. N Kishine,A Tsunoda, S Kishimot, T Shouko：Acute abdomen in a patient with cancer pain on oxycodone. Emergency Medicine International Volume 2011, Article ID 858672, 3 pages, 2011.
8. T Yano, K Tanaka, S Kishimoto, H Iida, M Okazaki: Review of skull base reconstruction using locoregional flaps and free flaps in children and adolescents. Skull Base 21:359-364, 2011.
9. M Kawashima, R Kohno, S Zenda: Dose-Volume Histogram Analysis of the Safety of Proton Beam Therapy for Unresectable Hepatocellular Carcinoma. Int J Radiat Oncol Biol Phys. 1;79(5):1479-86, 2011.
10. S Zenda, R Kohno, M Kawashima et al: Proton Beam Therapy for unresectable malignancies of the nasal cavity and paranasal sinuses. Int J Radiat Oncol Biol Phys. 2010 Oct 18. [Epub ahead of print]

11. S Zenda, M Kawashima, T Nishio, et al: Proton Beam Therapy as a Non-surgical Approach to Mucosal Melanoma of the Head and Neck: A Pilot Study.Int J Radiat Oncol Biol Phys. 1;81(1):135-9, 2011.

International Congress

1. T Yano, M Okazaki, K Tanaka, S Kishimoto: A new classification concept for the anterior skull base defect. 21st Annual North American Skull Base Society Meeting ,Scottsdale, February、2011.
2. S Kishimoto, T Sugimoto, A Tsunoda: Morning Lecture: Skull Base Tumors-Surgical Approaches and Reconstructive Options. 12th Asia-Oceania Otolaryngology Congress, Auckland, March, 2011.
3. S Kishimoto, A Tsunoda, K Ohno: Surgical treatment of pediatric sarcomas in the skull base and other head and neck regions. 12th Asia-Oceania Otolaryngology Congress, Auckland, March, 2011.
4. S Kishimoto：Chairperson :Head and Neck: Congenital and Inflammatory.12th Asia-Oceania Otolaryngology Congress、Auckland , March 2011.
5. T Sugimoto, S Kishimoto: Transoral microscopic and endoscopic surgery for hypopharyngeal cancer. 12th Asia-Oceania Otolaryngology Congress, Auckland, March, 2011.
6. T Sugimoto, S Kishimoto, Y Ariizumi, T Tokumaru, K Kawada, T Kawano: Detection and Endoscopic Treatment of Early Hypopharyngeal Carcinoma. 12th Asia-Oceania Otolaryngology Congress, Auckland, March, 2011.
7. T Sugimoto, S Kishimoto, Y Ariizumi, T Tokumaru, F Nomura, Y Kiyokawa: Partial Hypopharyngectomy Using Curved Distending Laryngoscope. 1st Congress of the Confederation of European Otolaryngology and Head and Neck Surgery, Barcelona, July, 2011.
8. S Kishimoto: Lecture: Craniofacial approach to the skull base. Conference at ENT Department, Siriraj Hospital, Bangkok, July 2011.
9. S Kishimoto: Lecture: Surgery for pediatric sarcoma in the skull base and head & neck regions. Conference at ENT Department, Siriraj Hospital, Bangkok, July 2011.
10. S Kishimoto: Lecture: Lateral skull base surgery for ear tumor. Conference at ENT Department, Siriraj Hospital, Bangkok, July 2011.
11. S Kishimoto：Moderator: Japan Society for Head and Neck Oncology (JAHNO) sponsored Symposium. Multimodal approaches for tongue cancer -Japanese proposal-.3rd World Congress of the International Academy of Oral Oncology (IAOO)、Singapore、July 2011
12. S Kishimoto：Moderator: Oral abstract 7. 3rd World Congress of the International Academy of Oral Oncology (IAOO),Singapore, July, 2011.
13. S Kishimoto: Symposium: Endoscopic surgery for skull base diseases "Craniofacial surgery with an assist of endonasal endoscope. 14th International Rhinologic Society & 30th International Symposium on Infection and Allergy of the Nose, Tokyo, September, 2011.
14. T. Sugimoto, S. Kishimoto: Skull Base Surgery for Malignant Tumors Arising from the Nasal Cavity and Paranasal Sinuses: Treatment Outcome in Tokyo Medical and Dental University Hospital, 14th International Rhinologic Society & 30th International Symposium on Infection and Allergy of the Nose, Tokyo, September 2011.
15. S Kishimoto: Panel discussion: Management of Early Larynx Cancer. 2nd Asian Society of Head and Neck Oncology, Goa, India, October, 2011.
16. S Kishimoto: Panel discussion: Preventing Complications following Head and Neck Surgery. 2nd Asian Society of Head and Neck Oncology, Goa, India, October, 2011.
17. S Kishimoto：Chairperson: Japanese Symposia “Function Preservation in Pharyngeal Cancer”. 2nd Asian Society of Head and Neck Oncology, Goa, India, October, 2011.
18. T Sugimoto, S Kishimoto: Symposium “Function Preservation in Pharyngeal Cancers” Microscopic and Endoscopic Surgery for Early Stage Hypopharyngeal Cancer. 2nd Asian Society of Head and Neck Oncology, Goa, India, October, 2011.
19. T Sasaki, K Kawabata, H Mitani, H Yonekawa, H Fukushima, W Shimbashi: Symposium “Function Preserving Surgery” . Our method of Function preserving surgery for pharyngeal cancer.2nd Asian Society of Head and Neck Oncology meeting. Goa, India, October, 2011.
20. S. Zenda, H. Hojo, M. Kawashima, R. Kohno, S. Arahira, T. Nishio, M. Tahara, R. Hayashi, S. Kishimoto, T. Ogino: Proton Beam Therapy for Patients with Malignancies of The Nasal Cavity, Para-nasal Sinuses, and/or Involving The Skull base: The Analysis of Late Toxicity. Annual Meeting of the American Society for Radiation Oncology (Miami), October 2011.
21. T.Yano, M.Okazaki, K.Tanaka, R.Kawaguchi, S. Kishimoto: Tongue reconstruction using deep inferior epigastric

perforator (DIEP) free flap in 6 year-old girl. International course on perforator flaps 2011, Seoul, October 2011.

22. S Kishimoto: Lecture. Craniofacial Surgery for the Tumor of the Skull Base. 2011 Shanghai International Forum of Otorhinolaryngology and Head & Neck Surgery. Shanghai, November 2011.

Diagnostic Radiology and Oncology

1. Staff and Students (2011)

Professor	Hitoshi Shibuya	
Associate Professors	Isamu Ohashi and Ichiro Yamada	
Lecturers	Kaoru Hanafusa and Mitsuhiro Kishino,	
Research Associates	Ryoichi Yoshimura,	Kazunori Kubota,
	Rin Chaou,	Yoshio Kitazume,
	Tomoko Makino,	Keiji Hayashi,
	Akira Toriihara	
Hospital Staff members	Takashi Katayama,	Kaori Okazawa,
	Keiko Nakagawa,	Naoki Harata,
	Rina Fujisawa	
Resudent	Rikiya Sato,	Mayuko Sato
Graduate Students	Youichi Machida,	Satoko Hayashi,
	Mais M Abd-Alamear	
Research Students	Kiyomi Amemiya	

2. Purpose of Education

The Diagnostic Radiology and Oncology section covers the fields of diagnostic radiology, nuclear medicine, radiation oncology and biology, and radiation physics. The objectives of our institution of the graduate course are to study radiological medicine from the area of human anatomy and pathology, physiology, and clinical medicine. Our section is composed of over 70 members; about 45 of them are serving as heads or rotating staff members of general hospitals in the metropolitan area and approximately another 20 of them are studying and working as members of the university and/or university hospital staff. Postgraduate courses are made to study basic/clinical radiation medicine in order to obtain license as a specialist from the Japan Radiological Society (JRS). JRS specialist licenses are granted in two fields: diagnostic radiology and radiation oncology. Doctors of our section are also expected to obtain PH.D. and 34 students had obtained a degree of PH.D. under the guidance of Prof. Shibuya and stuff.

3. Clinical Services and Research Subjects

A. Diagnostic Radiology

CT section:

After the introduction of two sets of multi-slice CT machines (MDCT: 64 arrays), number of patients examined has been markedly increased, and MDCT has enabled CT angiography of coronary artery as well as the cerebral artery. MDCT has offered a chance of on the day examination and early image diagnosis of disease. The clinical CT studies for liver diseases have offered the chance to get doctor degree for three doctors.

MRI section:

Three sets high speed MRI (1.5T and 3T) are enable to detect early findings of cerebral infarction by DWI (diffusion weighted image). Calculation of apparent diffusion coefficients (ADCs) of the kidney and liver has provided data for studying the physiology and pathology of these parenchymatous organs.

Interventional Radiology:

TAE (trans-catheter arterial embolization) for liver cell carcinoma and PTA (percutaneous trans-catheter angioplasty) for peripheral arterial occlusive disease have been routinely done to-date. Emergency angiography can be carried out at any time at any time as occasion calls.

Ultrasonography:

Breast disease and soft tissue ultrasonography is performed in the radiological center. Combined ultrasonography and MRI examinations have provided precise information for the diagnosis and treatment of breast cancer.

B. Nuclear Medicine

On Nov. 2006, two sets of PET/CT examination have been introduced and started operation. About 15 patients a day are examined using ^{16}F-FDG/CT. SPECT examinations have been performed in about 10 cases of disease every day. Clinical data obtained in the diagnosis of head and neck and breast cancer have offered the chance to study pathology of head/neck cancer and breast cancer.

C. Radiation Oncology

Low-dose rate brachytherapy for head/neck as well as prostate cancer is a unique character of the radiation oncology section. The 720 new patients referred for radiotherapy in 2010 included 250 cases of head and neck cancer patients, 120 prostate cancer patients and 110 breast cancer patients. Over 160 oral/oropharynx cancer patients were treated by brachytherapy in 2009. The results of brachytherapy were compatible to the results obtained by surgery, and post-treatment quality of life was better than after surgery.

We have rememed Linear accelerating machines this year, and we had three Linear accelerating machines equipped IMRT intersiting-modulated radiation therapy and IGRT(image-guided radiation therapy).

4. Manuscript

1. Khalilur R, Hayashi K, Shibuya H. Brachytherapy for tongue cancer in the very elderly is an alternative to external beam radiation. Br J. Radiol. 84: 747-9: 2011
2. Tayier A, Hayashi K, Yoshimura R. Low-dose-rate interstitial brachytherapy preserves good quality of life in buccal mucosa cancer patients. J Radiat Res. 52; 655-659: 2011
3. Yoshimura R, Shibuya H, Hayashi K, Toda K, Watanabe H, Miura M. Disease control using low-dose-rate brachytherapy is unaffected by comorbid severity in oral cancer patients. Br J Radiol. 2011, 84; 930-938.
4. Toriihara A, Yoshida K, Umehara I, Shibuya H. Normal variants of bowel FDG uptake in dual-time-point PET/CT imaging. Ann Nucl Med 2011;25:173-178
5. Toba M, Miyasaka N, Sakurai U, Yamada I, Eishi Y, Kubota T. Diagnostic possibility of diffusion tensor imaging for the evaluation of myometrial invasion in endometrial cancer: an ex vivo study. J Magn Reson Imaging. 34(3): 616-622, 2011.
6. Toita T, Ohno T, Kaneyasu Y, Kato T, Uno T, Norihisa Y, Kasamatsu T, Kodaira T, Yoshimura R, Ishikura S, Hiraoka M; JCOG Radiation Therapy Study Group. A consensus-based guideline defining clinical target volume for primary disease in external beam radiotherapy for intact uterine cervical caner. Jpn J Clin Oncol. 2011, 41 (9); 1119-1126.
7. Kawashima M, Katada Y, Shukuya T, Kojima M, Nozaki M. MR perfusion imaging using the arterial spin labeling technique for breast cancer. J Magn Reson Imaging 2011; Nov 16. Epub ahead of print
8. Uezato A, Yamamoto N, Kurumaji A, Toriihara A, Umezaki Y, Toyofuku A, Nishikawa T. Improvement of asymmetrical temporal blood flow in refractory oral somatic delusion after successful electroconvulsive therapy. J ECT 2011, Oct 6. Epub ahead of print.
9. Ibukuro K, Takeguchi T, Fukuda H, Abe S, Tobe K, Tanaka R, Tagawa K. Spatial relationship between intrahepatic artery and portal vein based on the fusion image of CT-arterial portography (CTAP) and CT-angiography (CTA): New classification for hepatic artery at hepatic hilum and the segmentation of right anterior section of the liver. Eur J Radiol. 2011 Feb 9. [Epub ahead of print]
10. Takeguchi T, Ibukuro K, Fukuda H, Tobe K, Abe S. Anatomy of right superior septal artery demonstrated on the coronary CT scan. Acta Radiol. 2011 Dec 7. [Epub ahead of print]

5. Congress

1. Hitoshi Shibuya. Brachytherapy for tongue cancer. The world congress of the international academy of oral oncology. 14 July 2011, Singapore
2. Yoshimura R, Notake R, Sasamori K, Kyuma Y, Ohtani S, Hayashi K, Nakagawa K, Shibuya H, Kobayashi T, Itami J. Value of CT-MRI fusion on target volume delineation for hypopharyngeal cancer. 53rd ASTRO, October 2010, Miami, USA.
3. Machida Y, Fujioka T, Kubota K, Ohashi I, Shibuya H. The Spectrum of Hearing Impairment: A Review according to the Pathway of Sound RSNA 2011 annual meeting Chicago, Nov-Dec 2011
4. K. Ibukuro, T. Takeguchi, H. Fukuda, S. Abe , K. Tobe. Spatial relationship between intrahepatic artery and portal vein in the liver. 11th Congress of European Association of Clinical Anatomy. Padva, Italy June 29- July 2, 2011
5. Nakadate M, Yoshida K, Ishii A, Koizumi M, Ryu Y, Nakagawa T, Suzuki Y, Umehara I, Shibuya H. Can FDG-PET/CT distinguish primary thyroid lymphoma from chronic thyroiditis? Annual Congress of the European Association of Nuclear Medicine (EANM), October 15-19, 2011, Birmingham, UK.

Biostructural Science

1. Staffs and Students (as of April, 2011)

Professor	Yoshiro TAKANO
Associate Professor	Makoto J. TABATA
Assistant Professor	Otto BABA
Technician	Hachiro ISEKI
Graduate Student	Ravindra Kumar RATNAYAKE,
	Dawud ABDUWELI
Visiting Researcher	Seong-Suk Jue

2. Purpose of Education

[Undergraduate Education]

Provide dental students with the essential knowledge and methods of studies necessary to understand fundamentals of structure and function of the human body, based primarily on macroscopic- and microscopic anatomy (Histology), including dissection lab works which lasts nearly 3 months. Emphasis is placed on the structure and function of oral and maxillofacial regions including teeth, periodontal tissues, salivary glands and temporomandibular joints, as well as muscles and nerves related to these structures. These comprise major part of the largest teaching module of the 3rd-year dental education curriculum and are expected to build solid basis for future studies of advanced dental science and clinical medicine.

[Graduate School]

Provide graduate students with updated information of mechanisms of biological mineralization, structural features, as well as ontogenic and evolutional aspects of the development of biological hard tissues, and give a lab course of essential methods for structural analyses of hard tissues, particularly of teeth and periodontal tissues.

3. Research Subjects

The mechanisms of dental and periodontal tissue formation and their regeneration is the central focus of our research. Followings are rough description of current research subjects in our laboratory.

1) Biological mineralization.
2) Induction and/or regeneration of dental and periodontal tissues.
3) Reaction-diffusion phenomenon in biological systems
4) Origin and evolution of tooth
5) Molecular mechanisms of tooth development
6) Role of dentin matrix proteins in the development of root and periodontal tissues
7) Sensory apparatus in masticatory systems.

4. Publications

Original Article

1. Ahmad M, Iseki H, Abduweli D, Baba O, Tabata MJ, Takano Y: Ultrastructural and histochemical evaluation of appositional mineralization of circumpulpal dentin at the crown- and root-analog portions of rat incisors. J Electron Microsc 60: 79-87, 2011.
2. Sogabe N, Maruyama R, Baba O, Hosoi T, Goseki-Sone M: Effects of long-term vitamin K(1) (phylloquinone) or vitamin K(2) (menaquinone-4) supplementation on body composition and serum parameters in rats. Bone 48: 1036-1042, 2011.
3. Chatani M, Takano Y, Kudo A: Osteoclasts in bone modeling, as revealed by in vivo imaging, are essential for organogenesis in fish. Developmental Biology 360: 96-109, 2011.

Awards

1. Dawud Abduweli : Finalist-- the IADR Hatton Awards Competition in Japanese Division "3D approaches for stem cell niches in medaka pharyngeal dentition".

Abstracts

1. Takano Y: Regulatory Mechanisms of Enamel Maturation, The 89th General Session and Exhibition of the IIADR,

San Diego, USA, Mar 16-19, 2011.

2. Nishii N, Iseki H, Takano Y, Tabata MJ: Is outer enamel epithelium necessary for the development of mouse tooth germs? The Joint Meeting of the 88th Annual Meeting of the Physiological Society of Japan & the 116th Annual Meeting of the Japanese Association of Anatomists. Pacifico Yokohama, March 28-30, 2011.
3. Nakano T, Iseki H, Baba O, Takano Y, Tabata MJ: Cell identification study of dental epithelium of rat incisor. The Joint Meeting of the 88th Annual Meeting of the Physiological Society of Japan & the 116th Annual Meeting of the Japanese Association of Anatomists. Pacifico Yokohama, March 28-30, 2011.
4. Baba Y, Iseki H, Nara M, Ishiyama M, Okada N, Takano Y, Tabata MJ: Morphological study of the denticles on the fish scales of Coelacanth Latimeria culumnae. The Joint Meeting of the 88th Annual Meeting of the Physiological Society of Japan & the 116th Annual Meeting of the Japanese Association of Anatomists. Pacifico Yokohama, March 28-30, 2011.
5. Yanagi A, Iseki H, Takano Y, Hattori A, Tabata MJ: In vitro study of regeneration mechanism of fish scales of goldfish. The Joint Meeting of the 88th Annual Meeting of the Physiological Society of Japan & the 116th Annual Meeting of the Japanese Association of Anatomists. Pacifico Yokohama, March 28-30, 2011.
6. Yoshida K, Fukawa K, Tsuruta J, Fukui Y., Ikeda M, Takano Y, Miura H: Effect of introduction of the MEXT-supported Sophisticated Education Program "Plastic Arts for Medicine" in dental education. 30th Annual Meeting of the Japanese Dental Education Association, Tokyo, July, 2011.
7. Atukorala ADS, Inohaya K, Baba O, Tabata MJ, Ratnayake RARK, Abduweli D, Kasugai S, Mitani H, Takano Y: Scale- and tooth phenotypes in medaka with mutated ectodysplasin-A receptor: implication in evolutionary origin of oral- and pharyngeal teeth. 17th Japanese Medaka and Zebrafish Meeting, Mishima, September 8-9, 2011.
8. Chatani M, Takano Y, Kudo A: Osteoclasts in bone modeling, as revealed by in vivo imaging, are essential for organogenesis in fish (Travel Award, Plenary Paper). ASBMR, San Diego, USA, Sept 16-20, 2011.
9. Ikegame M, Hattori A, Kitamura K, Tabata MJ, Yano Y, Yamamoto T, Suzuki NN: Osteoclasts in goldfish scales are activated under microgravity. 29th JSBMR Annual Meeting, Osaka, July, 2011.
10. Suzuki N, Ikegame M, Tabata MJ, Kitamura K, Yano Y, Yamamoto T, Hattori A: Changes in structure and function of scale-associated osteoclasts during space flight. Middle Japan Sectional Meeting of the Zoological Society of Japan, July, 2011.
11. Tabata MJ, Iseki H, Baba O, Takano Y: Development of tooth germ in which outer enamel epithelium extracted. 53rd Annual Meeting of the Japanese Association for Oral Biology, Gifu, Sept 30-Oct 2, 2011.
12. Takano Y, Baba O, Tabata MJ: Structural heterogeneity of maturing enamel crystals at the ameloblast-enamel interface in relation to modulation of enamel pH and ameloblast function. 53rd Annual Meeting of the Japanese Association for Oral Biology, Gifu, Sept 30-Oct 2, 2011.
13. Jue S-S, Abduweli D, Takano Y: Junctional epithelial cells attaching to enamel surface maintain proliferation potential. 59th Annual Meeting of JADR, Hiroshima, October 8-9, 2011.
14. Abduweli D, Takano Y: 3D approaches for stem cell niches in medaka pharyngeal dentition. 59th Annual Meeting of JADR, Hiroshima, October 8-9, 2011.

[Invited Lectures]

1. Takano Y. Influence of microgvity on bone-associated cells in Medaka: Morphological and histochemical evaluation of their distribution, structure and bone resorbing function. 1st Space Medicine and Biomedical Research Workshop "Aerospace Biomedical Studies utilizing Fish: Strategies for Space Flight Experiments", Tokyo January, 2011.
2. Takano Y: Osteoblastic Mineral Regulation in Appositional Mineralization of Bone: A Morphological Aspect (Symposium: Physiology and morphology on the regulation in bone mineral) The Joint Meeting of the 88th Annual Meeting of the Physiological Society of Japan & the 116th Annual Meeting of the Japanese Association of Anatomists. Pacifico Yokohama, March 28-30, 2011.
3. Takano Y: Regulatory Mechanisms of Enamel Maturation, Mineralized Tissue Symposium at the 89th General Session and Exhibition of the IADR, San Diego, USA, Mar 16-19, 2011.
4. Baba O: Periodontium has the odontogenic property? Satellite Sympoium of the 53rd Annual Meeting of the Japanese Association for Oral Biology, "The Periodontium (Origin, Development, Function)", Gifu, Sept 30, 2011.
5. Tabata MJ: Diversity and commonality in hard tissues: hisological analysis of scales of coelacanth and goldfish. Satellite Sympoium of the 53rd Annual Meeting of the Japanese Association for Oral Biology, "Exploring the Phylogenic Evolution of Vertebrate Hard Tissues from Teeth and Scales", Gifu, Sept 30, 2011.
6. Ikegame M, Hattori A, Maruyama Y, Kitamuara K, Tabata MJ, Isake H, Yana Y, Tabata Y, Yamamoto T, Suzuki N:

Responses of osteoclasts in fish scales to microgravity at International Space Station. Satellite Sympoium of the 53rd Annual Meeting of the Japanese Association for Oral Biology, "Exploring the Phylogenic Evolution of Vertebrate Hard Tissues from Teeth and Scales ", Gifu, Sept 30, 2011.

Pharmacology

1. Staffs and Students(April, 2011)

Professor	Keiichi OHYA
Associate Professor	Kazuhiro AOKI
Assistant Professor	Yukihiko TAMURA
Technologist	Mariko TAKAHASHI
Foreign Researcher(JSPS)	Chrisman Neil Roshan Alexander ALLES
Researcher(JSPS)	Noriko KOMATSU(Cell Signaling)
Researcher	Mari HARAMOTO, Kenichi NAGANO, Hiroyuki NAKACHI(Maxillofacial Surgery), Naoki HAYASHI(Dentistry for Persons with Disabilities)
Graduate Student	Toshimi SATO, Kengo FUJIKI(Removable Prosthodontics), Md. Abdulla Al Masud KHAN(GCOE Advanced Super Student), Md. Abdullah Al MAMUN, Genki KATO, Atsushi KIMURA(Oral and Maxillofacial Surgery), Makiri KAWASAKI

2. Purpose of Education

Pharmacology is situated between the basic and clinical sciences and is important for dental students. There is a growing demand on the dental clinicians to know huge knowledge of drugs and how to use them for patients. For these purpose, the first lecture is aimed to teach the scientific aspects of pharmacology and how drugs act on the various body system. The second lecture deals with drugs of medical and dental fields and the last with drugs of special importance of dentistry. Dental students learn the principle of pharmacology through laboratory practice. Following these learning, they must acquire an adequate background for drug use in general practice.

3. Research Subjects

1) Pharmacological analysis of the formation and resorption mechanisms of teeth and bone
2) Drug effects on the differentiation of the cells that participate formation and resorption process of the hard tissues
3) Identification of the new drug targets for hard tissue diseases
4) Translational research for the hard tissue regeneration
5) Analysis of side effects of the drug that appear in oral tissues

4. Publications

Original Article

1. N. S. Soysa, N. Alles, M. Takahashi, K. Aoki, K. Ohya. Defective nuclear factor-κB-inducing kinase in aly/aly mice prevents bone resorption induced by local injection of lipopolysaccharide. J Periodont Res, Vol.46, pp280-284, 2011
2. K. Nagano, N. Alles, A. H. Mian, A. Shimoda, N. Morimoto, Y. Tamura, H. Shimokawa, K. Akiyoshi, K. Ohya, K. Aoki. The tumor necrosis factor type 2 receptor plays a protective role in tumor necrosis factor-α-induced bone resorption lacunae on mouse calvatiae. J Bone Miner, Metab, Vol.29, pp671-681, 2011
3. K. Miyagawa, Y. Kozai, Y. Ito, T. Furuhama, K. Naruse, K. Nonaka, Y. Nagai, H. Yamato, I. Kashima, K. Ohya, K. Aoki, Y. Mikuni-Takagaki. A novel underuse model shows that inactivity but not ovariectomy determines the deteriorated material properties and geometry of cortical bone in the tibia of adult rats. J Bone Miner Metab, Vol.29, pp422-436, 2011
4. Bakry AS, Tamura Y, Otsuki M, Kasugai S, Ohya K, Tagami J. Cytotoxicity of 45S5 bioglass paste used for dentine hypersensitivity treatment. J Dent, Vol.39(9), pp599-603, 2011
5. Rojbani H, Nyan M, Ohya K, Kasugai S. Evaluation of the osteoconductivity of α-tricalcium phosphate, β-tricalcium phosphate, and hydroxyapatite combined with or without simvastatin in rat calvarial defect. J Biomed Mater Res A, Vol.98(4), pp488-98, 2011
6. Rodriguez R, Kondo H, Nyan M, Hao J, Miyahara T, Ohya K, Kasugai S. Implantation of green tea catechin α-tricalcium phosphate combination enhances bone repair in rat skull defects. J Biomed Mater Res B Appl Biomater, Vol.98B(2), pp263-71, 2011
7. Hao J, Kuroda S, Ohya K, Bartakova S, Aoki H, Kasugai S. Enhanced osteoblast and osteoclast responses to a thin

film sputtered hydroxyapatite coating. J Mater Sci Mater Med, Vol.22(6), pp1489-99, 2011
8. Date Y, Yokoyama Y, Kondo H, Kuroda S, Ohya K, Ota MS, Iseki S, Kasugai S. Restricted expression of chromatin remodeling associated factor Chd3 during tooth root development. J Periodontal Res. doi: 10.1111/j.1600-0765.2011.01419.x, 2011

International Meeting

1. KHAN M, ALLES N, NAGANO K, FURUYA Y, YASUDA H, OHYA K, AOKI K. Both TNF-α and RANKL Antagonist Peptide Stimulates Bone Formation in TNF-α Deficient Mice to the Same Extent as in Wild Type Mice. ASBMR2011, September 16-20, 2011, San Diego, CA, USA
2. M.KHAN, N.ALLES, A.MAMUN, Y.FURUYA, H.YASUDA, J.PENNINGER, A.ARAI, M.NAKAMURA, T. MIZOGUCHI, N.TAKAHASHI, N.UDAGAWA, K.OHYA, K.AOKI. A Bone Resorption Inhibitor Promotes Bone Formation. The 59th JADR Annual Meeting, October 8-9, Hiroshima

Tissue Regeneration

1. Staff (April, 2011)

Associate Professor　　Tamayuki SHINOMURA

2. Purpose of Education

Our laboratory is interested in the molecular mechanisms underlying the formation and maintenance of connective tissues including cartilage and periodontal tissues. Our goal is to control the restoration and regeneration of the tissues. To achieve this goal, we are focusing on extracellular matrix molecules specifically expressed in the tissues and transcription factors regulating their expressions. Therefore, in our graduate course, we provide students opportunity to study molecular biology and extracellular matrix biology.

3. Research Subjects

1) Study on transcription factors necessary for the maintenance of chondrogenic phenotype.
2) Study on novel genes actively expressed in periodontal tissues.
3) Study on the molecular dynamics of extracellular matrix in connective tissue..

4. Publications

Data not available

Biochemistry

1. Staffs and student (April, 2011)

Professor	Masaki Yanagishita
Associate Professor	Miki Yokoyama
Junior Associate Professor	Yasuhiro Kumei
Assistant Professor	Katarzyna Anna Podyma-Inoue
Research Assistant Professor, Global Center of Excellence Program	Hiroyuki Nakamura
Technical staff	Kazue Terasawa
Part-time instructure	Akira Asari
Graduate student	Hiroko Yamanokuchi, Rajapakshe Mudiyanselage Anupama Rasadari Rajapakshe

2. Purpose of education

Extracellular matrix is a critical constituent of multicellular organisms by functioning as scaffold for body structures and providing internal environment for cell activities. Our section focuses on the research and education on molecular composition, biological functions and pathological processes involving extracellular matrices.

3. Research subjects

a. Studies on the biological functions of heparan sulfate proteoglycans
b. Roles of sphingolipid metabolism on cell death progression
c. Cell-surface assembly of transmembrane proteins on the plasma membrane
d. Sensing and response mechanisms of cells toward gravity

4. Publications

1. N. Ebe, M. Hara-Yokoyama, K. Iwasaki, S. Iseki, S. Okuhara, K. A. Podyma-Inoue, K. Terasawa, A. Watanabe, T. Akizuki, H. Watanabe, M. Yanagishita and Y. Izumi, Pocket Epithelium in the pathogical setting for HMGB1 release. J. Dent. Res. (2011) 90:235-240
2. George Bou-Gharios, Farhana Amin, Peter Hill, Hiroyuki Nakamura, Patrick Maxwell, Nicholas M Fisk, Microchimeric Fetal Cells Are Recruited to Maternal Kidney following Injury and Activate Collagen Type I Transcription. Cells Tissues Organs (2011) 193:379-392

Cell Signaling

1. Staffs and Students (April, 2011)

Professor	Hiroshi TAKAYANAGI	
Associate Professor	Toshio HONGO	
Assistant Professor	Masahiro SHINOHARA,	Tomoki NAKASHIMA,
	Satoru HARUMIYA,	Kazuo OKAMOTO
Research Associate Professor	Masatsugu OHORA	
Visiting Assistant Professor	Takako KOGA	
Adjunct Assistant Professor	Mikihiro HAYASHI,	Yusuke NAGAI,
	Eriko SUMIYA	
Postdoctoral Fellow	Noriko KOMATSU,	Ayako SUEMATSU,
	Asuka TERASHIMA,	Matteo GUERRINI,
	Lynett DANKS	
Graduate Student	Erik IDRUS,	Abdul Alim AL-BARI,
	Kaori TAKECHI,	Takehito ONO

2. Purpose of Education

Organized signal networks in the body are crucial for the higher physiological functions and the tissue organization. To understand the regulation of signal events, we take on cell signaling course including the molecular mechanism of both the "intra" cellular and the "inter" cellular signal transduction. Especially, the course will be focused on the molecular networks of signal transduction in osteoclasts and osteoblasts, but also on the osteoimmunology, which is a new integrated field of bone homeostasis and immunology. Besides, to promote the practical and clinical understanding, the course will deal with the molecular mechanism of osteoporosis and inflammatory bone destructed diseases, such as periodontal disease and rheumatoid arthritis, in parallel with the basic molecular biology.

3. Research Subjects

1) Function and transcriptional regulation of NFATc1, a master regulator of osteoclast differentiation
2) Transcriptome and Proteome of cytokine-induced genes
3) Regulation of bone homeostasis by immunoglobulin receptors
4) Identification of bone-derived systemic regulatory factors (osteokines)
5) Mechanism of sensing and adapting to mechanical stress
6) Functional analysis of genes by gene manipulations, RNAi and gene-disrupted mice
7) Development of clinical application by experimental animal disease models

4. Publications

【Original Article】

1. Negishi-Koga T, Shinohara M, Komatsu N, Bito H, Kodama T, Friedel RH, Takayanagi H. Suppression of bone formation by osteoclastic expression of semaphorin 4D. **Nat Med**., 17 (11):1473, 2011
2. Nakashima T, Hayashi M, Fukunaga T, Kurata K, Oh-hora M, Feng JQ, Bonewald LF, Kodama T, Wutz A, Wagner EF, Josef M. Penninger JM, Takayanagi H. Evidence for osteocyte regulation of bone homeostasis through RANKL expression. **Nat Med**., 17(10):1231, 2011
3. Kuroda S, Yamazaki M, Abe M, Sakimura K, Takayanagi H, Iwai Y. Basic leucine zipper transcription factor, ATF-like (BATF) regulates epigenetically and energetically effector CD8 T-cell differentiation via Sirt1 expression. **Proc Natl Acad Sci USA**., 108(36):14885, 2011
4. Barrow AD, Raynal N, Andersen TL, Slatter DA, Bihan D, Pugh N, Cella M, Kim T, Rho J, Negishi-Koga T, Delaisse JM, Takayanagi H, Lorenzo J, Colonna M, Farndale RW, Choi Y, Trowsdale J. OSCAR is a collagen receptor that costimulates osteoclastogenesis in DAP12-deficient humans and mice. **J Clin Invest**., 121(9):3505, 2011
5. Kamitani-Kawamoto A, Hamada M, Moriguchi T, Miyai M, Saji F, Hatamura I, Nishikawa K, Takayanagi H, Hotoshi S, Ikehara K, Hosoya T, Hotta Y, Takahashi S, Kataoka K. MafB interacts with Gcm2 and regulates parathyroid hormone expression and parathyroid development. **J Bone Miner Res**., 26(10):2463, 2011
6. Idrus E, Nakashima T, Wang L, Hayashi M, Okamoto K, Kodama T, Tanaka N, Taniguchi T, Takayanagi H. The Role of the BH3-only Protein Noxa in Bone Homeostasis. **Biochem Biophys Res Commun**., 410(3):620, 2011

【Review Article】

1. Takayanagi H. Introduction to the special issue "The interaction among bone, immunology and vascular biology". **Inflammation and Regeneration**, 399-403, 2011
2. Nakashima T, Takayanagi H. Osteoimmunology: the effect of Inflammation on bone. **Inflammation and Regeneration**, 404-412, 2011
3. Kazuo Okamoto and Hiroshi Takayanagi Osteoclasts and interleukin-17-producing helper T cells in rheumatoid arthritis **Arthritis: Pathophysiology, Prevention and Therapeutics**, 75-89, 2011
4. Kazuo Okamoto and Hiroshi Takayanagi Osteoclasts in arthritis and Th17 development **International Immunopharmacology**, 543-548, 2011
5. Kazuo Okamoto and Hiroshi Takayanagi Regulation of bone by the adaptive immune system in arthritis **Arthritis Research & Therapy**, 219, 2011
6. Kazuo Okamoto and Hiroshi Takayanagi Potential molecular targets for suppressing Th17 development **Inflammation and Regeneration**, 354-360, 2011

【Presentation】

1. Hiroshi Takayanagi ACR Basic Research Conference: Bone Pathophysiology in Inflammatory and Rheumatic, the 2011 ACR/ARHR Annual Scientific Meeting 2011.11.4, Chicago, IL USA
2. Hiroshi Takayanagi IOF Regionals – 2nd Asia-Pacific Osteoporosis and Bone Meeting being held in Conjunction with the ANZBMS Annual Scientific Meeting and JSBMR 2011.9.5, Gold Coast, Australia
3. Hiroshi Takayanagi Bone inflammation and regeneration; sponsored symposium by the Japanese Society of Inflammation and Regeneration, 10th World Congress on Inflammation 2011.6.26, Paris, France
4. Hiroshi Takayanagi Meet the Professor Session, 3rd Joint Meeting of the ECTS and IBMS, 2011.5.10 Athens, Greece
5. Hiroshi Takayanagi Lecture in Symposium 4, 3rd Joint Meeting of the ECTS and IBMS 2011.5.9, Athens, Greece
6. Hiroshi Takayanagi 4th New York Skeletal Biology and Medicine Meeting 2011.4. 28, New York, USA
7. Hiroshi Takayanagi International PhD Program in Immunology, Cell Biology and Biochemistry 2010-2011 Lecture course, Institute for Research in Biomedicine 2011.3.21, Bellinzona, Switzerland
8. Hiroshi Takayanagi Swiss Society for Allergology and Immunology Annual Congress 2011.3.18, Lugano, Switzerland
9. Takako Negishi-Koga. Bone remodeling regulated by osteoclast-derived Semaphorin 4D. 32nd The Japanese Society of Inflammation and Regeneration (JCIR) and The Asia-Pacific Federation of Inflammation and Regeneration (APFIR) Kyoto Japan, 2011 June 3
10. Tomoki Nakashima. Regulation of bone remodeling by osteoclastogenesis. 7th Meeting of Bone Biology Forum Shizuoka, 2011 August 21
11. Masahiro Shinohara, Hiroshi Takayanagi. Class IA Phosphatidylinositol 3-kinases regulates osteoclastic bone resorption. 33th Annual Meeting of the American Society for Bone and Mineral Research San Diego USA, 2011 September 18
12. Takako Negishi-Koga, Masahiro Shinohara, Hiroshi Takayanagi. Protection of bone loss by targeting semaphorin 4D expressed by osteoclasts. 33th Annual Meeting of the American Society for Bone and Mineral Research San Diego USA, 2011 September 16, 17
13. K. Tsuji, T. Koga, K. Moriyama and H. Takayanagi. The Transcriptional Repressor LRF Regulates Osteoclastogenesis. The 59th Annual meeting of Japanese Association for Dental Research Hiroshima, 2011 October 7-9
14. Tomoki Nakashima, Hiroshi Takayanagi. The crucial role of osteocyte-derived RANKL in bone homeostasis. 2nd Tokyo-Shanghai Workshop on Rheumatology 1st Bio-Rheumatology International Congress (BRIC2011), 8th GARN Meeting Chiba, 2011 November 13

【Award】

1. Hiroshi Takayanagi. The 3rd Joint Conference of the International Bone & Mineral Society and the European Calcified Tissue Society, IBMS-BONE Herbert A. Fleisch Award 2011 May 9

Periodontology

1. Staffs and Students (April, 2011)

Professor	Yuichi IZUMI	
Associate Professor	Hisashi WATANABE	
Lecturer	Shigeru ODA (～April),	Satsuki HAGIWARA,
	Akira AOKI (Nov.～),	Makoto UMEDA (～Sep.)
Research Associate	Shinichi ARAKAWA,	Akira AOKI(～Oct.),
	Hiroaki KOBAYASHI,	Yasuo TAKEUCHI,
	Tatsuya AKIZUKI (June～)	Sayaka KATAGIRI (Nov.～)
GCOE AI Super Students	Amodini G RAJAKARUNA,	Takafumi SUZUKI,
	Hiromi NANBARA,	Aslam AL MEHDI (Oct.～),
	Bharti PARIKSHA,	Azusa YAMADA,
	Yuka TSUMANUMA,	Chui CHANTHOEUN,
	Mayumi OGITA(～Sep.),	Norihiko ASHIGAKI (Oct.～),
	Ye CHANGCHANG (Oct.～),	Supreda SUPHANANTACHAT (Oct.～)
Graduate Students	Tatsuro KOYANAGI,	Yoichi TANIGUCHI,
	Akiko ANDO,	Sae HAYAKUMO,
	Marika TAKAHASHI,	Masanori SAWABE,
	Naho KOBAYASHI,	Kaori FUJIWARA,
	Tomoya HANATANI,	Yasuo ITO,
	Kenichiro EJIRI,	Asuka SEKINISHI,
	Yuichi IKEDA,	Yasuyuki KIMURA,
	Akiko ENDO,	Noriko MARUYAMA,
	Akiko TSUNO,	Takahiko SHIBA,
	Kuniha KONUMA (April～),	Shogo MAEKAWA (April～),
	Takanori MATSUURA(April～),	
	Shu HOSHI(April～)	

Hospital Staff: 6, Research Student: 20, Registered dentist: 29

2. Purpose of Education

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.

3. Research Subjects

1) Periodontopathic bacteria and their pathogenicity
2) Inflammatory and immunological factors in periodontal disease
3) Analyses of growth factors and bio materials in periodontal regeneration
4) Clinical applications of laser in periodontics
5) Influence of periodontal disease on general health

4. Clinical Services

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

5. Publications

Original Article

1. Akiyama F, Aoki A, Miura-Uchiyama M, Sasaki KM, Ichinose S, Umeda M, Ishikawa I, Izumi Y. In vitro studies of the ablation mechanism of periodontopathic bacteria and decontamination effect on periodontally diseased root surfaces by erbium:yttrium-aluminum-garnet laser. *Lasers Med Sci* 26(2):193-204, 2011.
2. Aoyama N, Suzuki J, Wang D, Ogawa M, Kobayashi N, Hanatani T, Takeuchi Y, Izumi Y,Isobe M. *Porphyromonas gingivalis* promotes murine abdominal aortic aneurysms via matrix metalloproteinase-2 induction. *J Periodont Res*

46:176-183, 2011.
3. Chokechanachaisakul U, Kaneko T, Yamanaka Y, Kaneko R, Katsube K, Kobayashi H, Nör JE, Okiji T, Suda H. Gene expression analysis of resident macrophages in lipopolysaccharide-stimulated rat molar pulps. *J Endodont* 37(9):1258-1263, 2011.
4. Ebe N, Hara-Yokoyama M, Iwasaki K, Iseki S, Okuhara S, Podyma-Inoue KA Terasawa K, Watanabe A, Akizuki T, Watanabe H, Yanagishita M, Izumi Y. Pocket epithelium in the pathological setting for HMGB1 release. *J Dent Res* 90(2):235-240. 2011.
5. Katagiri S, Nitta H, Nagasawa T, Izumi Y, Kanazawa M, Matsuo A, Chiba H, Miyazaki S, Miyauchi T, Nakamura N, Oseko F, Kanamura N, Ando Y, Hanada N, Inoue S. Reduced masticatory function in non-elderly obese Japanese adults. *Obesity Research and Clinical Practice* 5(4):e279-286, 2011.
6. Kobayashi C, Yaegaki K, Calenic B, Ishkitiev N, Imai T, Ii H, Aoyama I, Kobayashi H, Izumi Y, Haapasalo M. Hydrogen sulfide causes apoptosis in human pulp stem cells. *J Endod* 37(4):479-484, 2011.
7. Tanaka K, Iwasaki K, Fegali K, Komaki M, Ishikawa I, Izumi Y. Comparison of characteristics of periodontal ligament cells obtained from outgrowth and enzyme-digested culture methods. *Archs Oral Biol* 56:380-388, 2011.
8. Toyofuku T, Inoue Y, Kurihara N, Kudo T, Jibiki M, Sugano N, Umeda M, Izumi Y. Differential detection rate of periodontopathic bacteria in atherosclerosis. *Surg Today* 41:1395-1400, 2011.
9. Tsumanuma Y, Iwata T, Washio K, Yoshida T, Yamada A, Takagi R, Ohno T, Lin K, Yamato M, Ishikawa I, Okano T, Izumi Y. Comparison of different tissue-derived stem cell sheets for periodontal regeneration in a canine 1-wall defect model. *Biomaterials* 32(25):5819-5825, 2011.
10. Umeda M, Tsuno A, Okagami Y, Tsuchiya F, Izumi Y, Ishikawa I. Bactericidal effects of a high-power, red light-emitting diode on two periodontopathic bacteria in antimicrobial photodynamic therapy in vitro. *J Invest Cli Dent* 24(4):268-274, 2011
11. Wang H, Watanabe H, Ogita M, Ichinose S, Izumi Y. Effect of human beta-defensin-3 on the proliferation of fibroblasts on periodontally involved root surfaces. *Peptides* 32(5):888-894, 2011

Review Article

1. Izumi Y, Aoki A, Yamada Y, Kobayashi H, Iwata T, Akizuki T, Suda T, Nakamura S, Wara-Aswapati N, Ueda M, Ishikawa I. Current and future periodontal tissue engineering. *Periodontol 2000* 56(1):166-87, 2011.
2. Pang P, Andreana S, Aoki A, Coluzzi D, Obeidi A, Olivi G, Parker S, Rechmann P, Sulewski J, Sweeney C, Swick M, Yung F. Laser energy in oral soft tissue applications. *J Laser Dent.* 18(3):123-131, 2011

Book

1. Ishikawa I, Aoki A. Chapter 70(b): Recent Advances in Surgical Technology, Lasers in periodontics. In: Newman MG, Takei HH, Klokkevold PR, Carranza FA (eds), Carranza's Clinical Periodontology, 11th Edition and its electric version on website, Elsevier, pp.605-607, 2011.

Department of Bioceramics

1. Staffs and Students (April, 2011)

Professor	Kimihiro YAMASHITA	
Associate Professor	Akiko NAGAI	
Assistant Professor	Miho NAKAMURA, Kosuke NOZAKI	Naohiro HORIUCHI
Graduate Student	Yuki IWAHARA,	Seiko OBA

2. Education

Biomaterial engineering

3. Research Subjects

(1) Development of Electrovector Ceramics

Some ceramics, such as a hydroxyapatite, are able to be ionically polarized by thermoelectrical treatments. Consequently, the polarized ceramics have large and time-durable induced electrostatic charges on their surfaces. The effects of the induced charges profoundly dominate the proximate few millimeter regions. We named the effects "Electrovector effects" and develop "Electrovector ceramics" defined as ceramics emiting the Electrovector Effects.

(2) Control of electrical space on Electrovector ceramic

To translate the Electrovector ceramics into practical applications for medical devises, electrical space on Electrovector ceramics should be suitably controlled under the poling process. We are evaluating the poling mechanisms of some bio-ceramics, based on the various disciplines. In particular, we are putting emphasis on the relationship between the origin of electrical space and the crystal structure on the surface of the polarized bio-ceramics. The crystal defect, crystal distortion and fine change of ion composition of Electrovector ceramics polarized under various conditions are systematically investigated.

(3) Manipulation of biological responses by Electrovector ceramics

The electrostatic energies of the Electrovector effects aforementioned dominate the limited proximate areas and can control reactions locally. Therefore, the Electrovector ceramics can manipulate biological responses in a target space by both of the surface character and the electrostatic energies of the Electrovector ceramics at ion and tissue levels. We have demonstrated that the Electrovector ceramics enhanced protein adsorption, proliferation, adhesion, and differentiation of cultured cells on the ceramics as well as osteoconductivities in vivo by molecular biological and immunological detections.

(4) Development of applicatable devices by ceramic technologies

We apply the Electrovector ceramics aforementioned to implant systems, such as artificial bones, bone joints, tooth roots, and are developing implantable devices with autograft-like osteoconductivities. We are undergoing improvements of sol-gel method for hydroxyapatite thin film coating and materials for vascular regeneration. We are extending our researches based on ceramic technologies farther, such as a control of oral environment, an improvement of oral esthetics, more effective and precise diagnosis systems for clinical laboratory medicine..

4. Publications

Original Article

1. Nagai A, Tanaka K, Tanaka Y, Nakamura M, Hashimoto K, Yamashita K. Electrical polarization and mechanism of B-type carbonated apatite ceramics. J Biomed Mater Res 99A 116-124. 2011.
2. Chufan Ma, Akiko Nagai, Yuko Yamazaki, Takeshi Toyama, Yusuke Tsutsumi, Takao Hanawa, Wei Wang, Kimihiro Yamashita. Electrically polarized micro-arc oxidized TiO_2 coatings with enhanced surface hydrophilicity. Acta Biomater. 2011, in press
3. Wada N, Nakamura M, Wang W, Hiyama T, Nagai A, Yamashita K. Controlled Deposition of Calcite Crystals on Yttria-Stabilized Zirconia Ceramic Electrets. Cryst. Growth Des. 11: 166-174, (2011).
4. Nakamura M, Inuzuka M, Hashimoto K, Nagai A, Yamashita K. Improving Bioactivity and Durability of Polarized Yttria-Sabilized Zirconia, J Mater Sci 46 (22): 7335-7343, 2011.
5. Nakamura M, Nagai A, Yamashita K. Improved Wettability Increases Osteoblastic Adhesion on Hydroxyapatite.

Phosphorus Res Bull 25: 28-32, 2011.

6. Nakamura M, Horiuchi N, Nagai A, Yamashita K. Electrical Polarization Depresses Low Temperature Degradation and Promotes Bioactivity of Chemically Treated Yttria-Stabilized Zirconia. Key Eng Mater 11-15: 493-494, 2012.
7. Hiratai R, Nakamura M, Nagai A, Yamashita K. The Storing Properties of Electric Energy in Bone. 170-174: 493-494, 2012.
8. A.S. Bakry, H. Takahashi, M. Otsuki, A. Sadr, K. Yamashita, J. Tagami, CO_2 Laser Improves 45S5 Bioglass Interaction with Dentin, J. Dent. Res., 90 (2), 246-250 (2011).
9. D. Chaysuwan, K. Sirinukunwattana, K. Kanchanatawewat, G. Heness, K. Yamashita, Machinable Glass-Ceramics Forming as a Restorative Dental Material, Dent. Mater. J., 30 (3), 358-367 (2011).

Books

1. Horiuchi N, Nakamura M, Nagai A, Yamashita K. Manupulation of Interfaces on Vector Materials. Capter 17, Biological Interactions with surface charge Biomaterials, RSC Nanoscience & Nanotechnology No.21, Edited by Tofail Syed, Royal Sociiety of Chemistry 2012.

Conferences

■ Invited

1. Yamashita K. Physical and Chemical Properties of Apatite Electrets for Biomedical and Energy Applications. 7th International Symposium on Inorganic Phosphate Materials. Chicago, USA. November, 2011.
2. Yamashita K. The Concept and properties of Ceramic Electrets as Vector Materials for Biointerface Engineering. 24th European Conference on Biomaterials, Dublin, Ireland, September 2011.
3. Nakamura M. Polarization Promotes Osteogenic Behaviors through Improved Wettability. The 5th International Conference on the Science and Technology for Advanced Ceramics. Yokohama, June, 2011.

■ General

1. Akiko Nagai, Yuko Yamazaki, Ma Chuhan, Yusuke Tsutsumi, Takao Hanawa, Takeshi Toyama, Kimihiro Yamashita. Response of osteoblast-like cells to poling titania coating. Society for Biomaterials. Orland, 2011.4.14
2. Akiko Nagai, Yuko Yamazaki, Ma Chuhan, Yusuke Tsutsumi, Takao Hanawa, Takeshi Toyama, Kimihiro Yamashita. Osteoblast cell response of the polarized titania coatings. European Ceramics Society 12. Stockholm, 2011.6.20.
3. Akiko Nagai1, Yuko Yamazaki[1, 2], Ma Chuhan[1], Yusuke Tsutsumi[1], Takao Hanawa[1], Takeshi Toyama[2], Kimihiro Yamashita. Surface modification of titanium by micro-arc oxidation and electric polarization promotes apatite-forming ability in SBF. The 5th International Conference on the Science and Technology for Advanced Ceramics. Yokohama, 2011.6.23
4. Akiko Nagai, Shigeki Kishi, Masahiro Inuzuka1, Miho Nakamura, Naohiro Horiuchi, Keishi Nishio, Kimihiro Yamashita. Surface properties of electrically polarized Al_2O_3-YSZ ceramic composites. 3rd International Symposium on Surface and Interface of Biomaterials. Sapporo, 2011.7.13
5. Nemoto R., Miura H., Nozaki K.. Surface Strain on Resin-Bonded Fixed Partial Dentures Using Y-TZP Or Metal Framework. The 14th International College of Prosthodontics, Hawaii, Sep, 2011.
6. Kataoka I., Nishijima E., Kitazaki H., Baba S., Nokiba K., Hani H., Nozaki K., Ikeda M., Matsumura M., Miura H. Tendency of Relationship between Palmoplantar Pustulosis and Dental Metal Allergy. The 14th International College of Prosthodontics, Hawaii, Sep, 2011.
7. Horiuchi N, Iwasaki T, Nakamura M, Nagai A, Katayama K, Yamashita K. Dielectric Properties and Polarization Relaxations in Hydroxyapatite. Joint Conference of 5th International Conference On Science And Technology For Advanced Ceramics (STAC5) and 2nd International Conference on Advanced Materials Development And Integration of Novel Structured Metallic And Inorganic Materials (AMDI2), Yokohama, Japan, June, 2011.
8. Horiuchi N, Tsuchiya Y, Wada N, Nozaki K, Nakamura M, Nagai A, Hashimoto K, Yamashita K. Hydrophilic Zirconia Surface formed by electric polarization. The 3rd Asian Biomaterials Congress, Busan, Korea, September, 2011.
9. Horiuchi N, Wada N, Nakamura M, Nagai A, Yamashita K. Inhibition of Low-Temperature Degradation on Surface of Yttria-Stabilized Zirconia by Electric Polarization. Materials Science & Technology, 2011 Conference & Exhibition, Columbus, Ohio USA, October, 2011.
10. Horiuchi N, Iwasaki T, Nakamura M, Nagai A, Katayama K, Yamashita K. Thermally Stimulated Current Spectra in Polarized Hydroxyapatite. 15th US-Japan Seminar on Dielectric and Piezoelectric Ceramics, Kagoshima, Japan, Nov,

2011.

11. Mukogawa K, Wada N, Horiuchi N, Hiyama T, Nakamura M, Nagai A, Okura T, Yamashita K. Properties of Surface Electric Fields due to Hydroxyapatite Bioceramic Electrets. The 11th Asian BioCeramics Symposium, Tsukuba, Japan, Dec, 2011.
12. Toshinori Okura, Koji Kawada, Hideki Monma, Kimihiro Yamashita. Synthesis and Na^+ conduction properties of NASICON-type glass-ceramics in the system Na_2O-Y_2O_3-X_2O_3-SiO_2 (X=B, Al, Ga) and effect of Si substitution. 18th International Conference on Solid State Ionics, Warszawa, Poland, 5th July, 2011.
13. Yumi Tanaka, Hiroyuki Hara, Akiko Nagai, Miki Inada, Naoya Enomoto, Kimihiro Yamashita, Junichi Hojo. Electrically Induced Charge Storage on Zirconia Ceramic Electrets. 18th International Conference on Solid State Ionics. Warszawa, Poland, 5th July, 2011.
14. Yamashita K, Horiuchi N, Wada N, Nakamura M, Nagai A. Fundamentals and Applications of Bioceramic Electrets. 14th International Symposium of Electrets. France, September 2011.
15. Andoh H, Nakamura M, Horiuchi N, Nagai A, Toyama T, Yamashita K. Effects on adhesion and interaction of osteocytes by surface charges induced on polarized hydroxyapatite. The 5th International Conference on the Science and Technology for Advanced Ceramics. Yokohama, June, 2011.
16. Watarai T, Nakamura M, Horiuchi N, Hashimoto K, Nagai A, Yamashita K. Effects of polarized carbonate apatite on osteoblast behaviors. The 5th International Conference on the Science and Technology for Advanced Ceramics. Yokohama, June, 2011.
17. Nakamura M, Nagai A, Yamashita K. Surface Electric Fields of Apatite Electret Promote Biological Responses. 14th International Symposium of Electrets. France, September 2011.
18. Nakamura M, Nagai A, Okura T, Sekijima Y, Yamashita K. Electrical Polarization Increases Osteoblastic Adhesion Through Improved Wettability on Hydroxyapatite. 3rd International Symposium on Surface and Interface of Biomaterials. Sapporo, July 2011.
19. Nakamura M, Hentunen T, Horiuchi N, Nagai A, Yamashita K. Polarized Hydroxyapatite Scaffolds for Long Durable Stimulation on Osteoblast Behaviors. 24th European Conference on Biomaterials, Dublin, Ireland, September, 2011.
20. Andoh H, Nakamura M, Horiuchi N, Nagai A, Toyama T, Yamashita K. Effects on Surface Characteristic and Cell Behaviors by Polarized Hydroxyapatite. The 11th Asian BioCeramics Symposium, Tukuba, December, 2011.
21. Imamura Y, Nakamura M, Nagai A, Takagi Y, Yamashita K. Characterization and Sealing ability of OCP-mediated cement as a Root canal filling material. The 11th Asian BioCeramics Symposium, Tukuba, December, 2011.

Cell biology

1. Staffs and students (April 2011)

Professor	Takao NAKATA
Associate Professor	Akihiro INOUE
Assistant Professor	Tomohiro ISHII
Research Technician	Satoko NAKAMURA
Graduate Student	Toshiyuki KAKUMOTO

2. Purpose of Education

We teach cell structure II to 2nd year medical students, and histology to 3rd year medical students. In cell structure II and histology, we deal with histology of human body. The courses are composed of sets of lecture and laboratory study of tissues and organs. Our goal in undergraduate course is to provide students with fundamental knowledge and skill to analyze microscopic samples of normal human body.

3. Research Subject

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.

4. Publications

Original Articles

1. Takao Nakata, Shinsuke Niwa, Yasushi Okada, Franck Perez, and Nobutaka Hirokawa. Preferential binding of a kinesin-1 motor to GTP-tubulin-rich microtubules underlies polarized vesicle transport. The Journal of Cell Biology 194:245-255. 2011.
2. Ishii T, Mombaerts P. Coordinated coexpression of two vomeronasal receptor V2R genes per neuron in the mouse. Mol Cell Neurosci. 2011 Feb;46(2):397-408.

5. Presentation

1. Takao Nakata, Shinsuke Niwa, Yasushi Okada, Franck Perez, Nobutaka Hirokawa. The kinesin-1 motor protein KIF5 recognizes microtubule lattice structure emanated from GTP-tubulin in axons as directional cue. Neuroscience 2011, Yokohama, Japan. September 15, 2011.
2. T.Nakata, S.Niwa, Y,Okada, F,Perez, N.Hirokawa. Preferential binding of a kinesin-1 motor to GTP-tubulin-rich microtubules underlies polarized vesicle transport. The American Society For Cell Biology 2011 Annual Meeting, Denver, Colorado, USA. December 6, 2011.

Medical Biochemistry

1. Staffs and Students (April, 2011)

Professor	Yutaka Hata
Assistant Professor	Kentaro Nakagawa
Assistant Professor	Mitsunobu Ikeda
Assistant Professor	Hiroaki Iwasa

Other two staffs and five students

2. Purpose of Education

1) Undergraduate

We organize two courses: "Molecular Biology and Human Genetics" and "Medical Biochemistry" . The students are requested through these courses to obtain a comprehensive integrated knowledge of human molecular genetics and biochemistry, which is important to understand how health is maintained and which molecular and biochemical events cause human diseases and underlie the rational treatments.

2) Graduate and others

We are studying the cell adhesion-related signaling pathway which is involved in the regulation of cell proliferation, cell polarity, and apoptosis. This pathway is well conserved from fly to human. The mutations of the components lead to oncogenesis and organ malformation. Several recent studies suggest that this pathway is implicated in inflammation and cell differentiation such as adipogenesis, osteogenesis, myogenesis, and keratinocyte differentiation. The pathway plays an important role in various human diseases and could be a new therapeutic target. We give lectures about our current studies to graduate students and others, and provide graduate students with the opportunity to participate in them. For more information, please visit our Web site (http://www.tmd.ac.jp/english/mbc/index.html).

3. Research Subjects

1) Study of the mammalian Hippo pathway
2) Study of cancer stem cells
3) Study of RASSF proteins

4. Clinical Services

N/A

5. Publications

1. Bao Y, Nakagawa K, Yang Z, Ikeda M, Withanage K, Ishigami-Yuasa M, Okuno Y, Hata S, Nishina H, Hata Y. A cell-based assay to screen stimulators of the Hippo pathway reveals the inhibitory effect of dobutamine on the YAP-dependent gene transcription. J. Biochem. 150:199-208 (2011)
2. Bao Y, Hata Y, Ikeda M, Withanage K. Mammalian Hippo pathway: from development to cancer and beyond. J. Biochem. 149:361-379 (2011)
3. Fukaya M, Kamata A, Hara Y, Tamaki H, Katsumata O, Ito N, Takeda S, Hata Y, Suzuki T, Watanabe M. Harvey RJ, Sakagami H. SynArfGEF is a guanine nucleotide exchange factor for Arf6 and localizes preferentially at post-synaptic specializations of inhibitory synapse. J. Neurochem. 116:1122-1137 (2011)

Section of Orthopedic Surgery

1. Staffs and Students (April 2011)

Professor	Takeshi MUNETA
Professor	Ichiro SEKIYA (Section of Cartilage Regeneration)
Associate Professor	Tomoyuki MOCHIZUKI (Section of Joint Reconstruction)
Junior Associate Professor	Kunikazu Tsuji (GCOE)
Assistant Professor	Young-Jin JU
Assistant Professor	Hideyuki KOGA (Section of Cartilage Regeneration)
Graduate Student	Mika YAMAGA, Siro SUZUKI, Kazumasa MIYATAKE, Daisuke HATSUSHIKA, Hiroki KATAGIRI, Koji OTABE, Jun YAMADA, Arata YUKI, Yusuke NAKAGAWA, Yu MATSUKURA

2. Purpose of Education

We are operating at the "department of orthopaedic surgery in the medical university" in corporation with Department of Orthopaedic and Spinal Surgery in the graduate school. After postgraduate training, students are given opportunity for basic education and acquire the comprehensive knowledge of the orthopaedic surgery and traumatology in the associated hospitals. In concretely terms, students mainly take traumatology training as a basis for clinical medicine for 2 years. Training also includes anesthesiology, emergency medicine, rehabilitation, and neurology. Subsequently, students will take training of joint surgery and neurosurgery in the specialized hospitals for at least 2 years. After basic training of 6 years, students are required to be an orthopaedic specialist which was certificated by Japan Orthopaedic Association. As for an admission to a graduate school, students will be allowed depending on the personal desire and individual achievements after 4 years' education.

We also accept extramural and international students, doctors, and veterinarians who are interested in the research at our graduate school.

3. Research Subjects

Following studies have been extensively carried out in out laboratory with various biological and molecular biological techniques:

- Establishment of separation and proliferation of mesenchymal stem cells
- Elucidation of biological properties of mesenchymal stem cells
- Development of treatment of joint cartilage injury using mesenchymal stem cells
- Mechanism and treatment of joint pain
- Development of knee and hip arthroplasty which accommodates Japanese
- Promotion of anatomical knee anterior cruciate ligament reconstruction

4. Clinical Services

- Promotion of treatment about diseases of lower extremity from children to elderly people
- Development of program for early social recovery after total hip and knee arthroplasty patients
- Development and education of treatment which accommodates sports fields
- Regenerative medicine for cartilage disease

5. Publications

Original articles

1. Bere T, Florenes TW, Krosshaug T, Koga H, Nordsletten L, Irving C, Muller E, Reid RC, Senner V, Bahr R. Mechanisms of anterior cruciate ligament injury in world cup alpine skiing: a systematic video analysis of 20 cases. Am J Sports Med 39(7):1421-9, 2011.
2. Gamer, L.W., Tsuji, K., Cox, K., Capelo, L.P., Lowery, J., Beppu, H., and Rosen, V. BMPR-II is dispensable for formation of the limb skeleton. Genesis 49: 719, 2011
3. Kato A, Nimura A, Yamaguchi K, Mochizuki T, Sugaya H, Akita K. An anatomical study of the transverse part of the infraspinatus muscle that is closely related with the supraspinatus muscle. Surgical and Radiologic Anatomy (in

press).
4. Kokabu, S., Gamer, L., Cox, K., Lowery, J., Tsuji, K., Raz, R., Economides, A., Katagiri, T., and Rosen, V. BMP3 Suppresses Osteoblast Differentiation of Bone Marrow Stromal Cells via Interaction with Acvr2b. Mol Endocrinol 26: 87, 2012.
5. Koga H, Bahr R, Myklebust G, Engebretsen L, Grund T, Krosshaug T. Estimating anterior tibial translation from model-based image-matching of a noncontact anterior cruciate ligament injury in professional football: a case report. Clin J Sport Med 21(3):271-4, 2011.
6. Koga H, Muneta T, Yagishita K, Ju YJ, Sekiya I. Surgical management of grade 3 medial knee injuries combined with cruciate ligament injuries. Knee Surg Sports Traumatol Arthrosc 20(1):88-94, 2012.
7. Koga H, Muneta T, Yagishita K, Ju YJ, Sekiya I. The Effect of Graft Fixation Angles on Anteroposterior and Rotational Knee Laxity in Double-Bundle Anterior Cruciate Ligament Reconstruction: Evaluation Using Computerized Navigation. Am J Sports Med (in press).
8. Muneta T, Koga H, Ju YJ, Yagishita K, Sekiya I. Effects of different initial bundle tensioning strategies on the outcome of double-bundle ACL reconstruction: a cohort study. Sports Med Arthrosc Rehabil Ther Technol. 2011 Jul 28;3:15.
9. Nakamura T, Sekiya I, Muneta T, Hatsushika D, Horie M, Tsuji K, Kawarasaki T, Watanabe A, Hishikawa S, Fujimoto Y, Tanaka H, Kobayashi E. Arthroscopic, histological, and MRI analyses of cartilage repair after a minimally invasive method of transplantation of allogeneic synovial mesenchymal stem cells into cartilage defects in pigs. Cytotherapy (in press).
10. Nimura A, Kato A, Yamaguchi K, Mochizuki T, Okawa A, Sugaya H, Akita K. The superior capsule of the shoulder joint complements the insertion of the rotator cuff. Journal of Shoulder and Elbow Surgery (in press).
11. Sekiya I, Ojima M, Suzuki S, Yamaga M, Horie M, Koga H, Tsuji K, Miyaguchi K, Ogishima S, Tanaka H, Muneta T. Human mesenchymal stem cells in synovial fluid increase in the knee with degenerated cartilage and osteoarthritis. J Orthop Res (in press).
12. Takahashi, T., Muneta, T., Tsuji, K., and Sekiya, I. BMP-7 inhibits cartilage degeneration through suppression of inflammation in rat zymosan-induced arthritis. Cell Tissue Res 344: 321, 2011.
13. Yagishita K, Muneta T, Ju YJ, Morito T, Yamazaki J, Sekiya I. High-flex Posterior Cruciate-Retaining vs Posterior Cruciate-Substituting Designs in Simultaneous Bilateral Total Knee Arthroplasty A Prospective, Randomized Study. J Arthroplasty (in press).
14. Yamazaki J, Muneta T, Koga H, Sekiya I, Ju YJ, Morito T, Yagishita K. Radiographic description of femoral tunnel placement expressed as intercondylar clock time in double-bundle anterior cruciate ligament reconstruction. Knee Surg Sports Traumatol Arthrosc. 2011 Mar;19(3):418-23.
15. Yamazaki J, Muneta T, Ju YJ, Morito T, Okuwaki T, Sekiya I. Hip acetabular dysplasia and joint laxity of female anterior cruciate ligament-injured patients. Am J Sports Med. 2011 Feb;39(2):410-4.

Health Promotion

1. Staffs and Students

Professor	Takehito Takano	
Assistant Professor	Masashi Kizuki,	Masafumi Watanabe
Graduate Student	Satoshi Suyama,	Keoprasith Bounserth Serth (till September),
	Pham Luu Hong,	Stephen Kibusi Mathew,
	Chau Darapheak,	Mari Uchimura,
	Aya Anzai,	Musafer Ajmal Pardis,
	Miho Ito (from April),	Azusa Okada (from April)
Research Student	1 student	

2. Purpose of Education

Graduate School Programs

The objective of postgraduate education in the field of public health is to pursue professional qualifications of high caliber who exhibit leadership in the advancement of public health and promotion of health on an international scale. The department helps students attain knowledge, skills, attitude, and experiences that are necessary to become a competent public health specialist. With the expansion of the new graduate programs in the university, greater attention is now given to making commitments and contributions in the international arena. Presently, the phrase "think globally and act locally" has become a global movement. The advancement of public health demands an increase in professionals who possess a global perspective yet appreciate the importance of local activities.

[Master Programs]: Masters degree students receive a systematic intensive training that leads to the acquisitions of broad expertise in the fields of public health, immunology, and medicine of health promotion. This program now consists of students with backgrounds in various majors.

[Doctor 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. A rich variety of educational activities are arranged in the course of the program. These include, among others, individual discussion sessions with professors and other faculty members, field investigations, seminars on various topics such as community health care, social determinants of health, 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 research and confirmation on each of their progress.

[Public Health Leaders (PHL) Program]: Students in the PHL program achieve in attaining the skills required for public health professionals with an international perspective, particularly 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.

Public Health Education Program for Medical School Student

The Graduate School of Medicine aims to prepare its medical students for future careers as physicians who will recognize the societal importance of their medical services and have the ability to fulfill both the scientific and social roles of their possessions.

[Social Medicine]: The Medical Education at Tokyo Medical and Dental University can be broken down into three fields. They are 1) experimental, 2) clinical, and 3) social medicine. Social medicine emphasizes on the social aspects of medicine, which primarily has to do with the mechanisms of health, the occurrences of diseases, prevention methods, and the role of healthcare. It strives to identify the causes and mechanisms underlying the health problems confronting society, as well as to engineer solutions backed by a systematic and organized approach. Changes in the modern social atmosphere of medicine and healthcare are closely linked to several changes within the international society. Furthermore, there is a rapid increase in the globalization for medicine and healthcare, which in turn, reinforces the needs for international perspectives, especially within the realm of social medicine.

The program follows the Medical Education Core Curriculum as its base, and also uses it as a benchmark study for the national examination for medical practitioners. Studies covered in this curriculum include critical issues that are relevant to the field of social medicine.

[Public Health]: The Public Health education program is comprised of courses in public health, researches on public health related topics, off-campus internships pertaining to public health, and small group seminars. The topics in the Public Health education are the following:

I. Healthcare doctrine; 1. The history of public health 2. Health concepts and awareness 3. Synergies of health and the environment 4. Health determinants 5. Human living environments 6. International healthcare 7. Regional healthcare and medical practice 8. Urban healthcare 9. The coordination of healthcare, medical practice, and welfare 10. Administrative frameworks and resources for healthcare, medical practice, and welfare 11. Social insurance frameworks and medical economics 12. Laws relation to healthcare, medical practice, and welfare.
II. Preventive medicine and health promotion; 1. Public health statistics and multivariate analysis 2. Epidemiology 3. Health promotion 4. Health education 5. Health management 6. Lifestyles and health 7. Maternal healthcare 8. Adult and elderly healthcare 9. School healthcare 10. Mental healthcare 11. Industrial medicine and healthcare 12. Environmental toxicology 13. Environmental pollution and its impact on health 14. Environmental health and global environmental problems 15. Food health and the impact of diet on health 16. Measures against infectious disease
In addition to these and counting, there is close to one hundred different topics that can be considered as topics for student's research papers. In this paper, each student will be expected to develop and analyze an in-depth understanding about the subject they choose from the list. As part of the research, students will gather requisite materials and documentation, conduct surveys, analyze data, and prepare reports based on their topic. Internships and participation in small group seminars involve students working in small teams to investigate common subject matters. These programs are designed to help students reinforce their ability to engage in multifaceted investigations concerning with specific problems in the field of public health. Furthermore, students are to actively pursue in independent study, apply scientific reasoning, and be able to present their reasoning and conclusions to a broader audience in a structure that is comprehensive and explicit.

3. Research Subjects

1) Urban environments, lifestyles, and health
2) Urbanization and its impact on health in developing countries
3) Socioeconomic conditions, social inequalities, and health
4) Standards and determinants of health
5) Monitoring and evaluation of healthy cities development
6) Information technology applications in Public Health
7) The utilization of geographic information systems for Public Healthy policies
8) The measurement of disease infection risks in urban societies
9) The lifestyles and growth of children in urban areas
10) Globalization of health care service and migration of medical professionals
11) End of Life in the community healthcare system
12) Working conditions of medical doctors

4. Publications

Original Article

1. Mekrungrongwong S, Nakamura K, Kizuki M, Morita A, Somkotra T, Seino K, Takano T. Great inclination to smoke among younger adults coming from low-socioeconomic class in Thailand. International Archives of Medicine 2011 ; 4 : 29.

Environmental Parasitology

1. Staffs and Students (April, 2011)

Professor	Nobuo Ohta	
Associate Professor	Nobuaki Akao	
Assistant Professor	Takashi Kumagai,	Rieko Shimogawara,
	Mitsuko Suzuki	
Project Associate Professor	Takashi Suzuki	
Senior Technical staff	Misato Tomoda	
Graduate Student (PhD)	Takenori Seki,	Toshie Taniguchi,
	Bethel Kwansa-Bentum,	Keisuke Nakayama,
	Kei Kitamura,	Toshihiro Tokiwa,
	Yuki Miyazawa,	Katarina Macuhova,
	Katsumi Maezawa,	Toshio Arai,
	Nobuhide Hata,	Francis Ekow Dennis
Graduate Student (Master)	Ichibon Fukuda,	Kumiko Sekiguchi

2. Purpose of Education

Because of the recent development and the global changes in social system and life style, parasitic infections are becoming more heterogeneous. When we consider about factors promoting spreading parasitic diseases, multidisciplinary approaches are needed: medical, zoological and sociological.

Our laboratory mainly deals with pathophysiology and epidemiology of parasitic infections. Immunology, molecular biology and clinico-pathology are approaches employed. Main subjects in our laboratory are schistosomiasis, zoonotic helminthiases, malaria and trypanosomiasis, all of which include laboratory and field investigations. In the schistosomiasis research, we focus on developing new diagnostic method by DNA detection in the sample, and uncovering immunopathogenesis of the typical hepatic inflammation. For zoonotic helminthiases, developments of diagnostic tools are urgent matters to be studied. Our laboratory is one of the reference stations for the diagnosis in Japan.

Since 2008, TMDU started collaboration project on research on infectious diseases at Noguchi Memorial Institute for Medical Research. At the collaboration center at NMIMR, molecular approaches to discover new drug targets for African trypanosomiasis are underway.

3. Research Subjects

(1) Pathological Research on zoonotic parasitoses: Toxocariasis, Dilofilariasis
(2) Epidemiological survey of parasitic diseases: Toxocariasis, Angiostrongyloidiasis, Spirurine larva, Schistosomiasis
(3) Molecular epidemiology of tropical diseases: Drug resistance of malaria parasites, Drug resistance of anopheline mosquitoes, Molecular detection of Trypanosomes in Tsetse fly.
(4) Immunopathology of schistosomiasis: Regulation of egg-granuloma formation in schistosomiasis japonica.
(5) Drug development against parasitic infection: New drug candidates for schistosomiasis
(6) Regulation of gene expression in parasitic helminthes: RNAi and parasitism in schistosome parasites.
(7) Molecular and epidemiological research on parasitic infections in West African sub-region: Special

4. Clinical Services

Clinical services for the diagnosis of parasitic infections are our routine activities.

5. Publications

Original articles

1. Taniguchi T, Kumagai T, Shimogawara R, Ichinose S, Hiramoto A, Sato A, Morita M, Nojima M, Kim HS, Wataya Y & Ohta N. Schistosomicidal and anti-fecundity effects of oral treatment of synthetic endoperoxide compound N-89. Parasitol Int, 60: 231-236, 2011.
2. Tokiwa T, Harunari T, Tanikawa T, Akao N, Ohta N. *Dictophyme renale* (Nematoda: Dioctophymatoidea) in the abdominal cavity of *Rattus norvegicus* in Japan. Parasitol Int, 60: 324-325, 2011.
3. Kwansa-Bentum B, Ayi I, Suzuki T, Otchere J, Kumagai T, Anyan WK, Asahi H, Akao N, Wilson MD, Boakye DA, Ohta N. Administrative practices of health professionals and use of artesunate/amodiaquine by community

members for treating uncomplicated malaria in sourthern Ghana: Implications for artenisinin-based combination therapy deployment. Trop Med Int Health, 16: 1215-1224, 2011.
4. Kwansa-Bentum B, Ayi I, Suzuki T, Otchere J, Kumagai T, Anyan WK, Osei JHN, Asahi H, Ofori MF, Akao N, Wilson MD, Boakye DA, Ohta N. *Plasmodium falciparum* from southern Ghana exhibit polymorphism in the SERCA-type PfATPase6 though sensitive to artesunate in vitro. Malaria J, July 11: 187, 2011.
5. Ohashi-Suzuki M, Yabu Y, Ohshima S, Nakamura K, Kido Y, Sakamoto K, Kita K, Ohta N, Suzuki T. Differential kinetic activities of glycerol kinase among African trypanosome species: Phylogenetic and therapeutic implications. J Vet Med Sci, 73: 615-622. 2011
6. Imai K, Koibuchi T, Kumagai T, Maeda T, Osada Y, Ohta N, Koga M, Nakamura H, Miura T, Iwamoto A, Fujita T .Imai K, Koibuchi T, Kumagai T, Maeda T, Osada Y, Ohta N, Koga M, Nakamura H, Miura T, Iwamoto A, Fujita T. Cerebral schistosomiasis due to *Schistosoma haematobium* confirmed by PCR analysis of brain specimen. J Clin Microbiol, 49: 3703-3706, 2011.
7. Kong QM, Lu SH, Tong QB, Lou D, Chen R, Zheng B, Kumagai T, Wen LY, Ohta N, Zhou XN. Loop-medicated isothermal amplification (LAMP): Early detection of *Toxoplasma gondii* infection in mice. Parasites and Vectors, 5: 2-6, 2011.
8. Nakayama K, Akao N, Ohta N. Parasitic infection foreigners living in Japan: Estimation of parasitic infection history by serum antibody screening. J Med Dent Sci, 58: 97-102, 2011.

Review Article

1. Akao, N. Human dirofilariasis in Japan. Tropical Medicine and Health, 39: 65-71, 2011.

Book

(None)

Forensic Medicine

1. Staff and Students

Professor	Koichi UEMURA	
Junior Associate Professor	Toshihiko AKI	
Assistant Professor	Takeshi FUNAKOSHI	
Assistant Professor	Kana UNUMA	
Graduate Student	Kyoko UCHIDA	Akina NARA
	Mayumi WATANABE	Tsukasa SHIRATORI
	Kanako NORITAKE	Yumi WATANUKI
	Marie BESSYO	Yusuke FUJII

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

3. Research Subjects

1) Toxicology
2) Alcohol medicine
3) Forensic pathology

4. 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.

5. Publications

Original Article

1. Noritake K, Unuma K, Nara A, Uchida K, Shiratori T, Watanuki Y, Funakoshi T, Uemura K. Autopsy findings of a patient with rapidly progressive massive ascites caused by alcoholic cirrhosis. Leg Med (Tokyo). 2011 May;13(3):148-50.
2. Funakoshi T, Aki T, Nakayama H, Watanuki Y, Imori S, Uemura K. Reactive oxygen species-independent rapid initiation of mitochondrial apoptotic pathway by chelerythrine. Toxicol In Vitro. 2011 Dec;25(8):1581-7.
3. Unuma K, Harada K, Furutani M, Furutani Y, Nakajima M, Nakanishi T, Matsuoka R, Yoshida KI. Multiple stenotic arteriopathy in a 72-year-old female with Williams syndrome. J Clin Pathol 2011; 64(4): 368-370.
4. Unuma K, Harada K, Funakoshi T, Uemura K. Sudden death of an alcoholic elderly man with acute esophageal necrosis (black esophagus). Forensic Sci Int. 2011 Oct 10;212(1-3):e15-7.
5. Kuroda R, Harada K, Kobayashi T, Nagai H, Unuma K, Saka K, Shintani-Ishida K, Yoshida K. Sudden cardiac death caused by the administration of a β(2)-agonist for asthma attack. Int J Cardiol. 2011 Dec 15;153(3):e56-8. Epub 2011 Mar 10. No abstract available..

International Health and Medicine

1. Staffs and Students

Associate Professor	Keiko Nakamura, MD, PhD
Junior Associate Professor	Kaoruko Seino, MMs, PhD
RONPAKU (Dissertation PhD) Program Fellow	
	Tayphasavanh Fengthong, MD, MPH
Graduate Student	Sayuri Kodama
	[Public Health Leaders Course] Moala Anaseini Radinakelo; Suresh Babu Munuswamy, MD, MPH; Molina Honeyfaith Alteza, MPH; Al Rifai Rami Hani, DVM; Adam Izzeldin Fadl, MSc; Ghada Alkhulaidi, MA; Mosiur Rahman MPH, Rasheed Abdul, MD

2. Purpose of Education

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.

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

- Access 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 academic, public health research
- Facilitate learning of staff, students, and colleagues, and
- Practice and respect professional ethics in a socio-culturally diverse environment..

Master Programs

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

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. A rich variety of educational activities are 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.

Public Health Leaders (PHL) Program

Students in the PHL program 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.

3. Research

The department' s major research interest is to elucidate physical, social, economic and cultural factors determining inequity in health. Our research investigates local, national and international policies and programs to redress health inequalities. The department works closely with WHO and other international agencies to help develop guidelines of scientific evaluation and recommended practices.

Major Research Topics:

1) Measuring population health to identify inequity in health and determinants thereof
2) Use of geographic information systems for evaluation of public health
3) Transfiguration of the ecosystem and its interaction with human health
4) Socio-cultural factors determining health
5) Outcome and process evaluation of health-development programs
6) Use of information technology to improve public health

4. Publications

[Original Articles]

1. Mekrungrongwong S, Nakamura K, Kizuki M, Morita A, Somkotra T, Seino K, Takano T. Great inclination to smoke among younger adults coming from low-socioeconomic class in Thailand. Int Arch Med. 2011; 4(1): 29.
2. Munuswamy S, Nakamura K, Katta A. Comparing the cost of electricity sourced from a fuel cell-based renewable energy system and the national grid to electrify a rural health centre in India: A case study. Renewable Energy 2011; 36:2978-2983.
3. Rahman M, Haque SE, Mostofa MG, Tarivonda L, Shuaib M. Wealth inequality and utilization of reproductive health services in the Republic of Vanuatu: insights from the multiple indicator cluster survey, 2007. Int J Equity Health. 2011; 10:58
4. Roussan D, Al Rifai R, Khawaldeh Y, Totanji. Ornithobacterium Rhinotracheale and Mycoplasma Synovaie in Broiler in Jordan, Scientific and Technical Review of the OIE. 2011; 30 (3), 931-937.
5. Rahman M, Poudel KC, Yasuoka J, Otsuka K, Yoshikawa K, Jimba M. Maternal exposure to intimate partner violence and the risk of under nutrition among children younger than 5 years in Bangladesh. Am J Public Health. 2011; 201 (3).
6. Pichenda K, Nakamura K, Morita A, Kizuki M, Seino K, Takano T. Non-hospital DOT and early diagnosis of tuberculosis reduce costs while achieving treatment success. The International Journal of Tuberculosis and Lung Disease 2011.

[Review Articles]

1. Nakamura K. Re-construction of public health systems Public Health Forum to respond to disaster. Public Health. 2011; 75(10) : 789-791.
2. Nakamura K. Healthy Cities re-development and expansion. Universal Design 2011; 32: 34-37.

[Original Articles]

1. Nakamura K. A network of Healthy Cities in Asia and the Pacific: the Alliance for Healthy Cities. In: Asian Perspectives and Evidence on Health Promotion. Springer 2011: 155-161.
2. Nakamura K. Healthy Cities model as a process of urban re-generation. Giho-do 2011.

[Conferences]

1. Magtubo J, Nakamura K. Cooperation of cities and social participation in addressing social determinants of health and health inequities: Experiences of the Alliance for Healthy Cities. WHO Regional Meeting on Social Determinants of Health and Health Equity, Manila, Philippines, June 2011.
2. Nakamura K. Setting approach to reduce substance abuse among adolescents in cities. International Healthy Cities Forum. Hong Kong, China, August 2011.
3. Nakamura K. Local programs developed through city-to-city information sharing. In: Global Health and Public Health.
4. Nakamura K. Long-term working hours of medical doctors working at hospitals: review of the current status and implications for decent work. The 70th Annual Meeting of the Japan Association of Public Health, Akita, October 2011.
5. Seino K. Working environment of medical doctors at hospitals: long working hours and practice burden. The 70th Annual Meeting of the Japan Association of Public Health, Akita, October 2011.

[International collaboration in research/education]

1. Magtubo J, Nakamura K. Cooperation of cities and social participation in addressing social determinants of health

and health inequities: Experiences of the Alliance for Healthy Cities. WHO Regional Meeting on Social Determinants of Health and Health Equity, Manila, Philippines, June, 2011.
2. Nakamura K. Noncommunicable Diseases Through Healthy Cities, WHO Regional Meeting on Noncommunicable Disease Prevention and Healthy Cities, Shanghai, China, September, 2011.
3. Nakamura K. Information sharing to promote smoke free cities. WHO Workshop on Smoke Free Cities, Manila, Philippines, November, 2011.

[Collaboration with international organizations]

1. Nakamura K. 12th Steering Committee Meeting of the Alliance for Healthy Cities. Hong Kong, China, August 2011.
2. Nakamura K. Regional Meeting on Promoting Healthy Living and Preventing Noncommunicable Diseases Through Healthy Cities, Shanghai, September 2011. (Temporary Advisor)
3. Nakamura K. WHO Training Workshop on Smoke Free Cities, Manila, Philippines, November 2011. (Temporary Advisor)
4. Nakamura K. WHO-UNCRD, Sixth Regional EST Forum in Asia, New Delhi, India, December 2011. (Temporary Advisor)
5. Nakamura K. Secretariat of the Alliance for Healthy Cities. January – December 2011.

[Collaboration with local and national public health programs]

1. Nakamura K. Statistics Committee, Expert Member, Cabinet Office, Japanese Government
2. Nakamura K. Commission on optimal application of Healthy Cities in Owariasahi City, Owariasahi City
3. Nakamura K. Commission on effective implementation of Healthy Cities in Ichikawa in the context of WHO Healthy Cities network, Ichikawa City
4. Nakamura K. Japan Chapter of the Alliance for Healthy Cities, Nagoya City, August 2011.
5. Nakamura K. Health security and healthy cities. Ichikawa WHO Wayo Group, January 2011.
6. Nakamura K. Evaluation Committee of Specific Program of Health Guidance, Ichikawa City

[JSPS program]

1. Fengthong T. Spatial environmental health monitoring model by using interactive associations among various health determinants and health status in Lao PDR.

Oral Health Promotion

1. Staffs and Students (April,2011)

Professor	Yoko Kawaguchi	
Associate Professor	Masayuki Ueno	
Assistant Professor	Takashi Zaitsu (April～)	
Project Assistant Professor	Sachiko Takehara (June～)	
Hospital Staff	Yuriko Yasukawa (～March),	Mari Ohnuki (April～)
Graduate Student	Takashi Zaitsu (～March),	Mari Ohnuki (～March),
	Pham Anh Vu Thuy (～September),	
	Patcharaphol Samnieng (～September),	
	Akiko Ohshiro,	Susumu Takeuchi,
	Melissa Adiatman,	Toshihiro Tamaki (～July),
	Yuya Mizuno,	Ayumi Takayama,
	Haslina Binti Rani (October～),	
	Mustafa Ali Mahmoud Abdel Latif Nimer (～March)	
Research Student	Motoko Ariake,	EiEi Aung(October～)

2. Purpose of Education

1) Graduate School, Oral Health Promotion

The educational purpose is to foster professionals in dental public health and preventive dentistry who can think oral health problems as related issues with living environment, life style, health policy and social condition, and can conduct innovative, academic and international research on oral health for maintaining and improving oral health.

2) Graduate School, International Oral Health Cooperation

The educational purpose is to foster dental professionals who can conduct innovative, academic and international research that can contribute to health promotion in an international society, and can work as a leader of the international health cooperation.

3) Undergraduate Education

The department is in charge of module units of “Introduction to dentistry” , “Environment and society II” and “Comprehensive problem exercise” for the third year dental students, and module units of “Basis for dentistry” , “Prevention and health management I” , “Prevention and health management II” and “Dentistry and nutrition" for the fourth year dental students. The department is also in charge of “Experiential research exercise” for the fourth year dental students, and “Comprehensive clinical practice phase I & II” for the fourth and fifth year dental students, in cooperation with other departments.

3. Research Subjects

Research topics are innovative, academic and international research in the field of dental public health and preventive dentistry to proceed with oral health promotion that contributes to human health. The current main research themes are:

1. Epidemiology and prevention of dental disease
2. Oral health care system
3. Relationship between oral health and general health
4. Oral health promotion
5. Diagnosis and treatment system construction of oral malodor
6. International oral health

4. 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.

5. Publications

Original article

1. Zaitsu T, Ueno M, Shinada K, Wright FAC, Kawaguchi Y: Relationship between Social Anxiety Disorder and Halitosis, International Journal of Clinical Preventive Dentistry, 7(1): 25-32, 2011
2. Zaitsu T, Ueno M, Shinada K, Ohara S, Wright FAC, Kawaguchi Y: Association of clinical oral health status and self-rated oral health and GOHAI in Japanese adults, Community Dental Health, 28; 297–300, 2011
3. Pham TAV, Ueno M, Shinada K, Yanagisawa T, FAC Wright, Kawaguchi Y: Periodontal Disease and Related Factors Among Vietnamese Dental Patients, Oral Health & Preventive Dentistry, 9: 185-194, 2011
4. Samnieng P, Ueno M, FAC Wright, Kawaguchi Y: Oral Health Status and Chewing Ability is Related to Mini-Nutritional Assessment Results in an Older Adult Population in Thailand, Journal of Nutrition in Gerontology and Geriatrics, 30: 291-304, 2011
5. Ohnuki M, Shinada K, Ueno M, Zaitsu T, FAC Wright, Kawaguchi Y: Exploring taste hyposensitivity in Japanese senior high school students, Journal of Investigative and Clinical Dentistry, 2; 1-7, 2011
6. Hashizume LN, Shinada K, Kawaguchi Y: Factors associated with prevalence of dental caries in Brazilian schoolchildren residing in Japan, Journal of Oral Science, 53(3); 307-312, 2011
7. Zaitsu T, Ueno M, Shinada K, Wright FAC, Kawaguchi Y: Social anxiety disorder in genuine halitosis patient, Health and Quality of Life Outcomes, 9(1):94, 2011

Sports Medicine/Dentistry

1. Staffs and Students (April. 2011)

Associate Professor	Toshiaki UENO	
Assistant Professor	Toshiyuki Takahashi,	Hiroshi Churei
Hospital Staff	Sachiko Fujino	
Graduate Student	Keisuke Abe,	Sharika Shahrin,
	Ruman Uddin Chowdhury,	Takayuki Ishigami,
	Kairi Hayashi,	Mai Tanabe
Research Student	Akihiro Mitsuyama	

2. Purpose of Education

Sport medicine/dentistry is a branch of medical and dental sciences which deals with the clinical management of oral health of athletes and sports-active people and the safety measures of sports-related traumatic injuries and disorders. Main objective of sports medicine/dentistry in graduate course is to provide the students to study the oral health conditions in athletes and sports-active people, the changes of oral environment associated with physical and sporting activities, the possible correlations between occlusion and general motor functions and body posture, the novel techniques of sports mouthguard and faceguard, the relations between mastication and occlusion and brain functions, and so on. Students are also taught to advanced knowledge on sports medicine/dentistry and up-to-date techniques to fabricate custom mouthguard and faceguard.

3. Research Subjects

1) Oral health promotion of athletes and sports-active people
   (1) Field survey of oral health conditions in athletes and sports-active people
   (2) Changes of oral environment associated with physical and sporting activities
   (3) Influences of sports drinks and supplements on oral health
2) Safety measures of sports-related dental and maxillofacial traumatic injuries
   (1) Diagnosis and treatment techniques for sports-related dental and maxillofacial injuries
   (2) Development and innovation of sports mouthguard
   (3) Development and innovation of sports faceguard
   (4) Development and innovation of scuba diving mouthpiece
3) Correlations between occlusion and general motor functions
   (1) Biomechanical assessment of motor performance associated with occlusion
   (2) Electrophysiological analysis of neuromuscular function associated with occlusion
4) Correlations between occlusion and body posture
5) Relations between mastication and occlusion and brain functions
6) Application of HBO therapy to sports-related dental diseases and traumatic injury

4. Clinical services

Sports dentistry clinic in Dental Hospital of Tokyo Medical and Dental University offers comprehensive care and clinical management for athletes and sports-active people suffered dental diseases and traumatic injuries. Custom-fitted protective gears such as mouthguard and faceguard against sports-related dental and maxillofacial trauma are also handled for participants in contact sports such as a boxing, American football, rugby football, hockey, lacrosse, and martial art.

5. Publications

Original Articles

1) Takahata T, Shouji I, Maruyama S, Sato Y, Nishida Y, Ueno T : Teeth clenching and positive acceleration-induced cerebral arterial hypotension in rats. Aviat Space Environ Med 82 : 442-447, 2011.
2) Yamanaka T, Willis J, St James S, Takahashi T, Kondo G, Ueno T : Implant therapy after dental trauma: a case report. Int J Sports Dent 4 : 21-27, 2011.
3) Churei H, Abe K, Fujino S, Sharika S, Chowdury RU, Saito S, Isoyama E, Shiraishi M, Tateishi T, Yui N, Morimoto Y, Ushijima F, Ueno T : Clinical effectiveness of a custom faceguard for a futsal player injured with a nasal bone fracture for early and safe return: a case report. Int J Sports Dent 4 : 35-40, 2011.

4) Fujii R, Takahashi T, Toyomura A, Miyamoto T, Ueno T, Yokoyama A：Comparison of cerebral activation involved in oral and manual stereognosis. J Clin Neurosci 18：1520-1523, 2011.

6. Presentations

1) Fujino S, Churei H, Abe K, Tateishi T, Yagishita K, Ueno T：Clinical assessment of custom faceguards provided for football players sustained nasal bone fractures. 7th World Congress on Science & Football and 9th Annual Conference of Japanese Society of Science & Football, Nagoya, Japan, May 26-30, 2011.
2) Churei H, Abe K, Fujino S, Chowdhury RU, Takahashi T, Ueno T：Clinical managements to return for a rugby football player suffered maxillofacial trauma. 7th World Congress on Science & Football and 9th Annual Conference of Japanese Society of Science & Football, Nagoya, Japan, May 26-30, 2011.
3) Abe K, Churei H, Kobayashi H, Takahashi H, Ueno T：Flexural properties of a new face guard core material measured by three-point bending test. International Dental Materials Congress 2011, Seoul, Korea, May 27-29, 2011.
4) Churei H, Abe K, Kobayashi H, Takahashi H, Ueno T：Physical-properties evaluation of face guard materials -Effect of cushioning materials on shock absorption-. International Dental Materials Congress 2011, Seoul, Korea, May 27-29, 2011.

7. Grants and Fellowships

1) JSPS Grant-in-Aid for Scientific Research (Japan Society for the Promotion of Science, 2009-11). Ueno T, Takahashi T.
2) Research Grant (Kozuki Foundation for Sports and Education, 2010-12). Ueno T, Abe K, Churei H, Takahashi H.
3) Research Grant (The Descente and Ishimoto Memorial Foundation for the Promotion of Sports Science, 2010-11). Ueno T, Fujino S, Abe K.
4) JSPS Grant-in-Aid for Scientific Research (Japan Society for the Promotion of Science, 2011-13). Takahashi T, Kato G, Ueno T.
5) Research Grant for Special Project (MEXT, 2011). Yagishita K, Enomoto M, Ueno T, Takahashi T, et al.

8. Awards and Honors

1) Daiei Dental Product Award (Japanese Academy of Sports Dentistry, 2011). Churei H, Abe K, Miura H, Shahrin S, Chowdhury RU, Takahashi H, Ueno T.

Stem cell Biology

1. Staffs and Students (April 2011)

Professor	Emi NISHIMURA	
Assistant Professor	Takahiro AOTO,	Hiroyuki MATSUMURA
Research Associate	Yasuaki MOHRI,	Jun SUNAYAMA
Graduate Student	Makiko UENO,	Ryoko TAGUCHI,
	Hikaru KOBAYASHI	
Research Student	Nguyen Thanh BINH	
Technical Staff	Koki ONISHI	
Secretary	Iku WATANABE	

2. Purpose of Education

Stem cell systems play fundamental roles in tissue turnover and homeostasis. Our goal is to understand the mechanisms of tissue homeostasis driven by stem cell systems and to apply the knowledge to better understand the mechanisms underlying the tissue decline, cancer development and other diseases associated with ageing. We further aim to apply those knowledges gained to regenerative medicine, treatment of cancer and other age-associated diseases.

3. Research Subjects

1) Identification of stem cells in the skin.
2) Mechanisms of stem cell maintenance
3) Mechanisms for MSC ageing and quality control of stem cell pools.
4) Mechanisms of tissu ageing
5) Mechanisms of cancer development in stem cell systems.

4. Publications

Original articles

1. Tanimura S, Tadokoro Y, Inomata K, Binh NT, Nishie W, Yamazaki S, Nakauchi H, Tanaka Y, McMillan JR, Sawamura D, Yancey K, Shimizu H, Nishimura EK. Hair follicle stem cells provide a functional niche for melanocyte stem cells. Cell Stem Cell, 8, 177-187, 2011

Review Articles

1. Nishimura EK. Melanocyte stem cells: A melanocyte reservoir in hair follicles for hair and skin pigmentation. Pigment Cell Melanoma Res. 24(3), 401-410, 2011

Molecular Epidemiology

1. Staffs and Students (April, 2011)

Professor	Masaaki MURAMATSU	
Associate Professor	Noriko SATO	
Assistant Professor	Shinobu IKEDA	
Adjunct Instructor	Katsuko SUDO,	Koichi MIYAKI
Graduate Student	Koichi Fujimoto,	Hiroshi Matsukura,
	Miki Yamada,	Kyi Chan Ko,
	Nay Chi Htun,	Cuneyd Palrayan,
	Atsuko Hiraishi,	Moe Masuda,
	Chen Xi,	Zhao Chen-xi,
	Zhang Xiaoliang,	Seki Jimin
Research Resident	Sariya Dechamethakun	

2. Education

Many common diseases such as diabetes, hypertension, obesity, metabolic syndrome, and atherosclerosis are caused by multiple genetic and environmental factors. We aim to decipher these factors as well as their interactions by applying the technology and information of human genome to epidemiology. Our goal is not only to identify disease genes and polymorphisms but also to elucidate gene-environment interactions that contribute to the onset and progression of the diseases. New projects to study the role of epigenetic changes in common diseases have also started.

3. Research Subjects

1. Gene-environment interaction that affects the onset of metabolic syndrome and its related phenotypes.
2. Genetic factors that affect the severity of pathological atherosclerosis.
3. Responder vs non-responder of prodrugs and polymorphisms of drug metabolizing enzymes.
4. Severe cutaneous adverse response (Stevens-Johnson's Syndrome) and HLA genotypes.
5. The role of epigenetic regulation and fetal programming in common diseases.

4. Publications

1. Sato N, Yamakawa N, Masuda M, Sudo K, Hatada I, Muramatsu M. Genome-wide DNA methylation analysis reveals phytoestrogen modification of promoter methylation patterns during embryonic stem cell differentiation. PLoS One.6(4):e19278,2011
2. Matsukura H, Aisaki K, Igarashi K, Matsushima Y, Kanno J, Muramatsu M, Sudo K, Sato N. Genistein promotes DNA demethylation of the steroidogenic factor 1 (SF-1) promoter in endometrial stromal cells. Biochem Biophys Res Commun. 412:366-372,2011
3. Htun NC, Miyaki K, Song Y, Ikeda S, Shimbo T, Muramatsu M. Association of the catechol-O-methyl transferase gene Val158Met polymorphism with blood pressure and prevalence of hypertension: interaction with dietary energy intake. Am J Hypertens. 24:1022-1026,2011
4. Miyaki K, Htun NC, Song Y, Ikeda S, Muramatsu M, Shimbo T. The combined impact of 12 common variants on hypertension in Japanese men, considering GWAS results. J Hum Hypertens. 2011 Jun 2. [Epub ahead of print].
5. Honma N, Arai T, Takubo K, Younes M, Tanaka N, Mieno MN, Tamura K, Ikeda S, Sawabe M, Muramatsu M. Oestrogen receptor-β CA repeat polymorphism is associated with incidence of colorectal cancer among females. Histopathology 59:216-224,2011
6. Otani T, Ikeda S, Lwin H, Arai T, Muramatsu M, Sawabe M. Polymorphisms of the formylpeptide receptor gene (FPR1) and susceptibility to stomach cancer in 1531 consecutive autopsy cases. Biochem Biophys Res Commun.405:356-361, 2011
7. Yamada M, Ishii T, Ikeda S, Naka-Mieno M, Tanaka N, Arai T, Kumasaka T, Gemma A, Kida K, Muramatsu M, Sawabe M. Association of fucosyltransferase 8 (FUT8) polymorphism Thr267Lys with pulmonary emphysema. J Hum Genet.56:857-860,2011
8. Ishii T, Hagiwara K, Kamio K, Ikeda S, Arai T, Mieno MN, Kumasaka T, Muramatsu M, Sawabe M, Gemma A, Kida K. Involvement of surfactant protein D in emphysema revealed by genetic association study. Eur J Hum Genet.[Epub ahead of print] 2011

9. Isagawa T, Nagae G, Shiraki N, Fujita T, Sato N, Ishikawa S, Kume S, Aburatani H. DNA methylation profiling of embryonic stem cell differentiation into the three germ layers. PLoS ONE. 6(10):e26052, 2011.
10. Zhang L, Dai Y, Bian L, Wang W, Wang W, Muramatsu M, Hua Q. Association of the cell death-inducing DNA fragmentation factor alpha-like effector A (CIDEA) gene V115F (G/T) polymorphism with phenotypes of metabolic syndrome in a Chinese population. Diabetes Res Clin Pract.91:233-238,2011
11. Daimon M, Oizumi T, Karasawa S, Kaino W, Takasse K, Tada K, Jimbu Y, Wada K, Kameda W, Susa S, Muramatsu M, Kubota I, Kawata S, Kato T: Association of the clusterin gene polymorphisms with type 2 diabetes mellitus. Metabolism Clinical and Exp. 60:815-822, 2011.
12. Tohkin M, Kaniwa N, Saito Y, Sugiyama E, Kurose K, Nishikawa J, Hasegawa R, Aihara M, Matsunaga K, Abe M, Furuya H, Takahashi Y, Ikeda H, Muramatsu M, Ueta M, Sotozono C, Kinoshita S, Ikezawa Z. A whole-genome association study of major determinants for allopurinol-related Stevens-Johnson syndrome and toxic epidermal necrolysis in Japanese patients.Pharmacogenomics J.59(2):216-224,2011

Bioethics Research Center

1. Staffs and Students (April, 2011)

Director & Professor	Masayuki YOSHIDA	
Jonior Associate Professor	Yuka OZASA, Masumi AI	
Assistant Prfessor	Mizuko OSAKA	
Visiting Associate Professor	Hideto ISHII,	Eiichiro KANDA
Tokinin researcher	Miwa SUZUKI	
Nurse	Naoko NII	
Research Associate	Michiyo DEUSHI	
Doctoral student	Sumihiko HAGITA,	Koutaro AIHARA,
	Katsuhiko HAMADA,	Shunsuke ITO,
	Keiko ABE	

2. Purpose of Education

Bioethics Research Center (BERC) offers classes and seminars regarding bioethics, research ethics, and clinical ethics in Graduate School of Medical and Dental Sciences, Graduate School of Health Care Sciences, and School of Medicine. We also have a course in Graduate School of Biomedical Science. Our lecture includes fundamental bioethics and research ethics so that students can absorb the current concept of the bioethics and research ethics. We try to include clinical materials such as cases of genetic counseling, where ethics-based approach is critically important.

Apart from class for juniors, we give bioethics seminars for hospital staff s and faculties based on the research ethics guideline , in which attendance of bioethics lecture is mandatory for any person who conducts medical research.
We dynamically participated in extra-campus activities; such as the ethical committee members of the National Institute of Health and the National Institute of Environment.

3. Research Subjects

BERC actively conduct biomedical basic research described below:

1) MCP-1/CCR2 signals in Metabolic Syndrome
2) A role of YY1 in atherosclerosis
3) Anti-atherosclerotic effect of lactotripeptide
4) A role of lipid absorption in intestine and subsequent metabolic pathways

4. Clinical Services

BERC is responsible for Department of Genetic Medicine at the TMDU University Hospital. Our clinical department provides counseling to individuals and families regarding actual and/or potential genetic concerns. We also offer laboratory services including cytogenic testing and molecular genetic testing. Our Genetic Medicine department is approved by the Japanese Medical Genetics Society for the Genetics Board.

5. Publications

Original Article

1. **Hagita S**, **Osaka M**, Shimokado K, **Yoshida M**. Adipose inflammation initiates recruitment of leukocytes to mouse femoral artery: role of adipo-vascular axis in chronic inflammation. PLoS One. 6(5):e19871. 2011.
2. **Hagita S**, **Osaka M**, Shimokado K, **Yoshida M**. Combination of amlodipine and atorvastatin synergistically reduces leukocyte recruitment to mechanically injured mouse femoral artery. Hypertens Res. 34(4):450-5. 2011.
3. **Ishii H**, Hulett MD, Li JM, Santiago FS, Parish CR, Khachigian LM. Yin Yang-1 inhibits tumor cell growth and inhibits p21WAF1/Cip1 complex formation with cdk4 and cyclin D1. Int J Oncol. In press
4. Tani M, Kawakami A, Mizuno Y, Imase R, Ito Y, Kondo K, **Ishii H**, **Yoshida M**. Small dense LDL enhances THP-1 macrophage foam cell formation. J Atheroscler Thromb. 2011;18(8):698-704.
5. **Ishii H**, **Yoshida M**. Platelets, coagulation, and fibrinolysis in atherosclerosis formation. Nihon Rinsho. 2011 Jan;69(1):50-4.
6. Thongtang N, **Ai M**, Otokozawa S, van Himbergen TM, Asztalos BF, Nakajima K, Stein E, Jones PH, Schaefer EJ. Effects of maximal atorvastatin and rosuvastatin treatment on markers of glucose homeostasis and inflammation. Am J Cardiol 2011;107:387-92.

7. Schaefer EJ, Otokozawa S, **Ai M**. Limitation of direct methods and the reference methods for measuring HDL and LDL cholesterol. Clin Chem 2011;57:1081-3.
8. **Ai M**, Otokozawa S, Asztalos BF, White CC, Cupples LA, Nakajima K, Lamon-Fava S, Wilson PW, Matsuzawa Y, Schaefer EJ. Adiponectin: An independent risk factor for coronary heart disease in men in the Framingham Offspring Study. Atherosclerosis 2011;217:543-8.
9. Furusyo N, Koga T, **Ai M**, Otokozawa S, Kohzuma T, Ikezaki H, Schaefer EJ, Hayashi J. Utility of Glycated Albumin for the Diagnosis of Diabetes Mellitus in a Japanese Population Study: Results from the Kyushu and Okinawa Population Study (KOPS). Diabetologia 2011; 54: 3028-36.
10. Nakajima K, Nakano T, Tokita Y, Nagamine T, Inazu A, Kobayashi J, Mabuchi H, Stanhope KL, Havel PJ, Okazaki M, **Ai M**, Tanaka A. Postprandial lipoprotein metabolism: VLDL vs chylomicrons. Clin Chim Acta. 2011;412: 1306-18.
11. **Kanda E**, Erickson K, Bond TC, Krisher J, McClellan WM. Hemodialysis treatment center early mortality rates for incident hemodialysis patients are associated with the quality of care prior to starting but not following onset of dialysis. Am J Nephrol. 2011; 33:390-7.

Oral Presentation

1. Mizuko Osaka, Sumihiko Hagita, Masayuki Yoshida. A Brief high-fat diet induces leukocyte recruitment to femoral artery in mice with normal arterial shear stress. American Heart Association Scientific Session 2011 (Orlando)
2. Shunsuke Ito, Mizuko Osaka, Yusuke Higuchi, Fuyuhiko Nishijima, Hideto Ishii, Masayuki Yoshida. Indoxyl sulfate induces leukocyte-endothelial interactions through upregulation of E-selectin. 7th International Congress on Uremia Research and Toxicity.
3. Shunsuke Ito, Yusuke Higuchi, Fuyuhiko Nishijima, Hideyuki Yamato, Hideto Ishii, Masayuki Yoshida. AST-120 attenuates Chronic Kidney Disease-related Monocyte Inflammation through Reduction of Indoxyl Sulfate. ERA-EDTA Congress 2011
4. Jiro Aoyama, Mizuko Osaka, Masayuki Yoshida. High Fat Diet-Induced Leukocyte Recruitment to Femoral Artery was Compromised in E-Selectin Knockout Mice. American Heart Association Scientific Session 2011 (Orlando)
5. Michiyo Deushi, Kaku Nakano, Toshie Kaizuki,Kensuke Egashira, Masayuki Yoshida. NPC1L1 inhibitor improves NAFLD aggravated by dietary cholesterol oxidation products in non-human primates. The 19th Annual Meeting of the Japanese Vascular Biology and Medicine Organization.
6. Masumi Ai, Masayuki Yoshida, Osamu Tomonaga, and the E-CAP Study Group. The effects of ezetimibe on cholesterol absorption and synthesis markers in hyperlipidemic patients with or without type 2 diabetes mellitus. The 71st Scientific Sessions of American Diabetes Association, San Diego, June, 2011.
7. Yuka Ozasa ,Naoko Nii ,Masumi Ai , Masayuki Yoshida : Choices to provide about choromosome aberration for couples , International Society Of Nurses in Genetics 24th annual conference, Montreal, October 2011.
8. Yuka OZASA ,Masumi Ai, Naoko Nii, Masayuki Yoshida :A Novel research protocol review system enhances streamlining oh\f the process with excellent educational outcomes, Public Responsibility in Medicine & Research, Washington D.C , 2011.12
9. Naoko NII, Yuka OZASA : Consideration about the new type of genetic variation–From various points of view-, International Society Of Nurses in Genetics 24th annual conference, Montreal, October 2011.
10. Eiichiro Kanda, Jenna O. Krisher, William M. McClellan. Limitations in Activities of Daily Living Independently Influences One-Year Survival of Hemodialysis Patients. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
11. Eiichiro Kanda, Jenna O. Krisher, William M. McClellan. Nutrition Status Prior to Starting Hemodialysis Is Strongly Associated with One-Year Mortality in Hemodialysis Patients. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
12. Eiichiro Kanda, Sei Sasaki. Fibroblast Growth Factor 23 Is a Risk Factor for Rapid Progression of Chronic Kidney Disease in Elderly Patients. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
13. Eiichiro Kanda, Sei Sasaki. Fibroblast Growth Factor 23 and Bone Metabolism in Elderly Chronic Kidney Disease Patients. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.

Health Care Management and Planning

1. Staffs and Students (April, 2011)

Professor	Kazuo KAWAHARA	
Graduate Student	Kohei AOSHIMA,	Hidehito TAKENAKA,
	Youichi SHIMA,	Daiske IKEDA,
	Eiko SHIMIZU,	Souichirou MOCHIZUKI,
	Takeo NIGA,	Mutsumi UESUGI,
	Kenjiro IDE,	Sawako OKAMOTO,
	Keiko YOSHIDA,	Takashi KAWAI,
	Taro TOMIZUKA,	Woonkwan Hyun,
	Md. Ismail Tareque,	Towfiqua Mahfuza Islam
	Masakazu KIKUCHI,	Yoko KOMURA

2. Purpose of Education

By analyzing the Japanese healthcare policies and system and by reviewing their interaction with society, the structural characteristics and issues can be clarified. To resolve or find better ways to handle these issues, we conduct research into public health and welfare, and its related disciplinary areas. With the cooperation of active policy makers and personnel from the healthcare departments, the research results can be applied to the present healthcare policies and system. Through this education on collecting data, clarifying issues, analyzing the situation, and evaluating options, students taking this course are expected to grow in their ability to make healthcare policies.

3. Research Subjects

In the academic areas mentioned above, we conduct research under the following topic areas:

1) The significance of public healthcare planning, its challenges, and influences on the healthcare system
   We conduct research on issues related to new healthcare policies including planning, analysis, issue resolution, and making positive changes to the healthcare plan. This research area includes the Japanese emergency medical service and the impartial evaluation of the travel distance of aid agents and the time required for them to reach their destination.
2) Structural analyses and policy choices concerning national blood services
   In Japan, we experienced HIV infection from tainted blood products. There were various causes for this event, and improvements are required in all processes: collecting blood, screening blood, manufacturing blood products, and following-up on the usage of these products. By analyzing background information related to the adverse events and their causes, we can propose the most appropriate policies related to blood services, thus ensuring safety, and securing a stable supply. To achieve a stable supply of blood products, we also conduct epidemiological studies to review guidelines on collecting blood.
3) The government role in preventing medical errors
   Issues related to medical errors and adverse events have recently attracted a great deal of attention in Japan. We study the role that the government should play regarding various medical errors and their prevention as well as review and address the financial loss caused by blood-related adverse events and policies on prevention.
4) Local healthcare system
   By reviewing and analyzing activities related to disease prevention and health promotion conducted by local healthcare centers, we research the role of the local healthcare system and its effectiveness and efficiency.
5) Systemizing and evaluating public health policies
   We review the processes of creating public health policies and systems, address the association with the creating processes and stakeholders such as political parties and lobby groups, evaluate their policies, and then suggest improvements to these policies and systems.
6) The role of healthcare communication to fill in gaps between medical providers and patients, and to share the uncertainties related to medicine and healthcare
7) The influence of healthcare communication on patient and medial safety
8) Reviewing communication tools and skills, and their systematic introduction into the healthcare system in order to

realize patient participation and proactive involvement in treatment processes

4. Clinical Services

None

5. Publications

Original Article

1. Kohei Aoshima, Hiroyuki Kawaguchi and Kazuo Kawahara. Neonatal mortality rate reduction by improving geographic accessibility to perinatal care centers in Japan. Journal of Medical and Dental Sciences, 58(2), 29-40, 2011.
2. Takashi Kawai, Kazuo Kawahara. A suggestion for changing the Act on Welfare of Physically Disabled Persons regarding total hip and knee arthroplasty for osteoarthritis （Japanese Journal of Joint Diseases）
3. S. Okamoto, K. Kawahara, A. Okawa, and Y. Tanaka. Second opinions in Japan: a tool to promote patient involvement in decision-making? Health Policy in submission.

International conference

1. Woonkwan Hyun, Miyuki Yokota. Our Approach, Prevention of Pain on Propofol Injection Australian Society of Anaesthetist's 70th National Scientific Congress (NSC). Sydney. 2011

Review Article

None

Book

None

Health Care Economics

1. Staffs and Students (April, 2011)

Professor	Koichi KAWABUCHI	
Assistant Professor	Isao IGARASHI	
Graduate Student	Xuanxiu LIU,	Shinichi SEKI,
	Hironori INOUE,	Mohammad Touhidul ISLAM,
	James Tumaini KENGIA,	Satomi OKA,
	Masae AOTA	
Research Student	Sadao WATANABE,	Asako YASUNO

2. Purpose of Education

The purpose is to provide students with education and training in theoretical as well as practical approaches necessary in conducting economical analysis of various phenomena and reality found in healthcare field.

3. Research Subjects

1) Economical analysis of the prevention program for metabolic syndrome and counter-programs against onset and progress of age-related conditions
2) Economical evaluation of heavy ion radiotherapy
3) Competition and efficiency in dental care
4) Development of management index and benchmarks using DPC data
5) Comparative research between hospitals on the outcome of Acute Myocardial Infarction

4. Publications

Original Articles

1. Takanori Thuchiya, Takashi Fukuda, Masashi Furuiye, Koichi Kawabuchi: Pharmacoeconomic analysis of consolidation therapy with pemetrexed after first-line chemotherapy for non-small cell lung cancer. Lung Cancer, 74(3): 521-528, 2011.

Review Article

1. Koichi Kawabuchi: Crisis of novel infectious diseases: why don't Japan have enough vaccines?. Japan Hospitals, 30: 53-59, 2011.

Dental Education Development

1. Staff and Students

Professor	Ikuko MORIO	
Junior Associate Professor	Jun TSURUTA	
Graduate Student	Rei MUROGA,	Akira TAKINAGA (since April 2011)

2. Purpose of Education

Main educational goal of this section as part of graduate school is to help students in health care sciences learn the basics of medical/dental curriculum: educational objectives, strategies and evaluation. This section is currently involved in the undergraduate dental education as the coordinators of multiple modules: the PBL-tutorial, the students' research project, and the electives including various English courses for dental students.

3. Research Subjects

1) Comparative study of medical/dental education in Japan and overseas.
2) Study of research projects for medical/dental students
3) Development of English education programs for medical/dental students
4) Development of multimedia teaching materials for medical/dental students
5) Development of Japanese language learning materials for international students

4. Clinical Services

Clinic of Oral Diagnosis and General Dentistry (Dr. Tsuruta)

5. Publications

Ryder M I and Morio I: Current challenges for dental education in Japan and the United States, Japanese Dental Science Review, 47 (1): 23-30, 2011.

Division of Research Development

1. Staffs and Students (April, 2011)

Professor	Kozo TAKASE	
Graduate Students		
Doctor course	Yuko OJIRO,	Hiromasa SAKAGUCHI,
	Yuji HIGASIDE,	Naoko MIAKE,
	Keisuke YOSIHARA,	Akemi HIRABAYASHI,
	Tomoko IZUGAMI,	Kiyoshi KOMIYA,
	Akira MIURA,	Hidehiro ANDO,
	Yasumasa OOSHIRO,	Hideki TERUYA
Master course (Master of Medical Administration)		
	Hideyo IZUMI,	Rinshu SHIMABUKURO,
	Youhei SUWA,	Masakazu HARAMO,
	Tohru YASUE	

2. Education

1) Hospital Information Management
2) Medical Informatics, statistics
3) TQM in medicine
4) Biological bias and data management
5) Medical Law and Ethics
6) Medical induction course for Judges and Prosecutors (collaborated with the Supreme Court and Department of Justice)
7) Medical Engineering special program with Tokyo Institute of Technology
8) Health Promotion Policy program (General Medicine, Risk Management in Medicine) with Hitotsubashi University

3. Research Subjects

1) Introduction of Clinical Pathway in hospital
2) Medical law suit and professional information
3) Quality management of medical law suit
4) Organizational logic for hospital
5) Health care policy and rational
6) Management of medical information and privacy
7) Hospitality in medicine
8) Clinical guideline and medical quality
9) Development of medical engineering apparatus

4. Publications etc.

1) Original Papers

Kozo Takase：

1. Osaki M, Takayama T, Omata T, Ohya T, Kojima K, Takase K, Tanaka N. Proposal of a single-trocar assemblable hand for laparoscopic surgery. Advanced Robotics 2011 25:1713-1728.
2. Iwamoto S, Deguchi T, Ohta H, Kiyokawa N, Tsurusawa M, Yamada T, Takase K, Fujimoto J, Hanada R, Hori H, Horibe K, Komada Y. Flow cytometric analysis of de novo acute lymphoblastic leukemia in childhood: report from the Japanese Pediatric Leukemia/Lymphoma Study Group. Int J Hematol. 2011 Aug;94(2):185-192.
3. Ohta H, Iwamoto S, Kiyokawa N, Tsurusawa M, Deguchi T, Takase K, Fujimoto J, Horibe K, Komada Y. Flow cytometric analysis of de novo acute myeloid leukemia in childhood: report from the Japanese Pediatric Leukemia/Lymphoma Study Group. Int J Hematol. 2011 Jan;93(1):135-137.

Health Care Informatics

1. Staffs and Students (April, 2011)

Associate Professor	Kiyohide FUSHIMI	
Graduate Student	Hidenori IMAI,	Shinobu IMAI, Daisuke SATO,
	Sayuri SHIMIZU,	Chihiro TAKAHASHI,
	Ayako ODA,	Takahiro INOUE
	Kenjiro MATSUFUJI,	Asako TUKASAKI,
	Tsuyoshi KANEKO,	Kyoko SHINODA,
	Ayako MATSUO,	Motoko SANO,
	Toshihiro TAMAKI,	Shiho OHAMA

2. Purposes of Education

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

3. Research Subjects

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.

4. Publications

Original Article

1. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K. Community-based evaluation of laparoscopic versus open simple closure of perforated peptic ulcers. World J Surg. 2011; 35(11): 2485-2492.
2. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K. Early crystalloid fluid volume management in acute pancreatitis: association with mortality and organ failure. Pancreatology. 2011; 11(3): 351-361.
3. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K. Relationships of age, cholecystectomy approach and timing with the surgical and functional outcomes of elderly patients with cholecystitis. 2011; Int J Surg. 9(5): 392-399.
4. Kuwabara, H., Fushimi, K., Matsuda, S. Relationship between hospital volume and outcomes following primary percutaneous coronary intervention in patients with acute myocardial infarction. Circ J. 2011; 75(5): 1107-1112.
5. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K. Reappraising the Surgical Approach on the Perforated Gastroduodenal Ulcer: Should Gastric Resection Be Abandoned? Journal of Clinical Medicine Research. 2011; 3(5): 213-222.
6. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K. Quantification of Resource Utilization to Obtain Functional Recovery in Strokes. Journal of Neurology Research. 2011; 1(3): 96-104.
7. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K. Re-Justification for Reducing the Length of Hospital Stay Based on Community-Based Appraisal of Functional Recovery of Cerebrovascular Disease Patient. Journal of Neurology Research. 2011, 1(2): 59-68.
8. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K. Community-Based Appraisal of the Effects of Parenteral Nutrition Versus Enteral Nutrition on the Quality of Care for Patients With Acute Pancreatitis. Gastroenterology Research. 2011; 4(1): 1-8.
9. Quan, H., Li, B., Couris, CM., Fushimi, K., Graham, P., Hider, P., Januel, JM., Sundararajan, V. Updating and validating the Charlson comorbidity index and score for risk adjustment in hospital discharge abstracts using data from 6 countries. Am J Epidemiol. 2011; 173(6): 676-82.
10. Takahashi, C., Fushimi, K., Matsuda, S. Factors associated with a protracted hospital stay after hip fracture surgery in Japan. Geriatrics & Gerontology International. 2011; 11（4）: 474-481.
11. Imai-Kamata, S., Fushimi, K. Factors associated with adherence to prophylactic antibiotic therapy for elective general surgeries in Japan. International Journal for Quality in Health Care. 2011; 23(2): 167-172.
12. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K: Quantitative evaluation of age disparities in the quality of geriatric acute medical care in Japan. International Journal of Gerontology. 2011; 5(3):

139-145.

13. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K: Community-Based Appraisal of Laparoscopic Abdominal Surgery in Japan. Journal of Surgical Research. 2011; 165(1) : e1-e13.
14. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K..B., Horiguchi, H., Fujimori, K., Yasunaga, H., Miyata, H: Quantitative assessment of the advantages of laparoscopic gastrectomy and the impact of volume-related hospital characteristics on resource use and outcomes of gastrectomy patients in Japan. Annals of Surgery. 2011; 253(1) : 64-70.
15. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Fujimori, K: Reconsidering the value of rehabilitation for patients with cerebrovascular disease in Japanese acute health care hospitals. Value in Health. 2011; 14(1): 166-176.
16. Kuwabara, K., Matsuda, S., Fushimi, K., Ishikawa, K.B., Horiguchi, H., Hayashida, K., Fujimori, K: Contribution of case-mix classification to profiling hospital characteristics and productivity. International Journal of Health Planning and Management. 2011; 26(3): e138-e150.

Educational System in Dentistry

1. Staffs and Students (April,2011)

Professor	Kouji ARAKI	
Junior Associate Professor (non-full time)		
	Yukio NAKAMURA,	Hiroki KATAOKA
Secretary	Satomi ITOH	
Graduate Student	Hirono KIKUCHI,	Teruyo KUROSA

2. Purpose of Education

Main object of educational system in dentistry in the graduate course is to provide opportunity to study evaluation method for dental education curriculum, inspection method of the validity and reliability of the evaluation system for dental education, evaluation system compared between international and Japanese education level in undergraduate or after the graduation periods, and dental clinical skills improvement by the virtual reality simulation system.

3. Research Subjects

1) The development of evaluation method for dental education curriculum
2) The development of inspection method of the validity and reliability of the evaluation system for dental education
3) The development of evaluation system compared between international and Japanese education level in undergraduate or after the graduation periods
4) The development of the program for dental clinical skills improvement by the virtual reality simulation system

4. Clinical Services

In the Clinic of Oral Diagnosis and General Dentistry, University Hospital, we performs manner education, for a student during clinical training.

5. Publication

Educational Media Development

1. Staffs and Students (April,2011)

Professor	Astuhiro KINOSHITA
Assistant Professor	Masayo SUNAGA
Assistant Professor on Special Assignment	
	Yoko HAGIYA
	Izumi KIKUCHI

2. Purpose of Education

We will assist graduate students in understanding new educational systems and media utilizing information-communication technologies, such as the computer-assisted education system, the e-learning system and the live broadcasting lecture system. We will also assist these students in mastering how to create related educational media and apply it to medical, dental, nursing and dental hygiene education, as well as interprofessional cooperation.

First and Second-year students at the School of Dentistry, and first and second-year students at the School of Oral Health Care Sciences will learn to process media information and create media content, as well as how to search the Internet for information that is necessary for their study and research activities. They will also learn how to make use of various databases.

Fourth-year students at the School of Dentistry will acquire the practical knowledge, communication skills and attitude to build good relationships with patients by gaining clinical experience at an early stage. This practice consists of two units; clinical experience in the teaching clinic and the computer-assisted simulation practice. This experience will enhance the students' abilities, enabling them to be effective clinicians.

3. Research Subjects

1) Development of computer-assisted clinical simulation system for medical and dental practice training.

In our university, we executed the Establishment of Computer-Assisted Education System on Clinical Simulation for Medical and Dental Practice Training project, which was adopted as part of the Support Program for Distinctive University Education in 2005, and developed the computer simulation materials on clinical education by utilizing digital clinical data from our Medical and Dental hospitals. We have expanded our study into a new project, 'Progress of Computer-Assisted Simulation for Medical and Dental Practice Training – Computer-Assisted Simulation Promoting Clinical Inference, Decision-making, Problem Solving and Cooperation Abilities of Health Professionals', which was subsequently selected to be part of the Program for Promoting the University Education Reform in 2009 by the Ministry of Education, Culture, Sports, Science and Technology. After utilizing the simulation materials for our students, we will evaluate and analyze their educational efficacy. Furthermore, we will develop a computer-assisted clinical simulation system for the entire university.

2) Development of new education system using information and communication technologies for medical and dental students.

At our university, we executed the Integration of Information and Communication Technologies into Clinical Training project, which was adopted as part of the Support Program for the Contemporary Educational Needs in 2007. The aim of this program is to integrate traditional educational methods with advanced information and communication technologies in order to allow clinical training, practical training and lectures to be effectively interlinked. By expanding digital content and employing an automatic visual recording system, we are planning to establish a digital archive of treatments and surgeries, demonstrations of dental techniques, lectures and student training. We will then launch an on-demand distribution system in order to incorporate this content into clinical education, which the students will be able to use for their self-evaluation and learning.

3) Development and utilization of an educational media for medical and dental students.

- Development and Study of Dental Model and Kit for Practical Training:

Dental and dental hygiene students must acquire skills for measuring periodontal pockets and must learn to identify the base of the pocket. However, few dental models are commercially available, and students cannot measure deep periodontal pockets by practicing on one another. Thus, we plan to develop a new dental model with which the students can practice the probing of deep periodontal pockets.

- Development of Composing and Screening System for Original 3D Movies from Operator's Viewpoint:

  If students can experience and recognize three-dimensional space from the operator' s (instructor' s) viewpoint during their practice sessions and lectures, it would have educational benefits. Thus, we plan to develop a Composing and Screening System for Original 3D Movies from an Operator's Viewpoint. Furthermore, we will improve the quality of distance learning and remotely operated instruction using the superimposing method.
- Development of Dental Handpiece System with CCD camera:

  We plan to develop a system equipped with a CCD camera, mirror and reverse image units in order to allow students in the lecture room to observe dental treatment sites in real-time, thereby giving them a sense of being at a clinic.

4. Books

1. Atsuhiro Kinoshita: The Japanese Society of Oral Care VII "Tooth decay (dental caries) and periodontitis" A loose tooth that is going to fall out, and oral care. P229-230, MANUAL FOR ORAL CARE , Quintessence Publishing Co., Ltd, 2011.

Gerodontology

1. Staffs and Students (April 2011)

Professor	Hiroshi UEMATSU	
Associate Professor	Tsuneto OHWATARI	
Junior Associate Professor	Ken' ichi KOBAYASHI,	Toshiaki SEKITA
Assistant Professor	Kazuo MOTOMURA,	Ayako NAKANE,
	Shino MURATA,	Shinya MIKUSHI,
	Syuuhei TAKEUCHI	
Project Assistant Professor	Satoshi TERANAKA,	Nobuhiro INOKUCHI,
	Yoko WAKASUGI(~2011.3),	Yoshiko UMEDA(2011.4~),
Graduate Student	Ruriko SUZUKI(~2011.3),	Yoshiko UMEDA(~2011.3)
	Ayako NOMURA,	Yousuke AKIMOTO,
	Souichi SHIBANO,	Hideo SAKAGUCHI,
	Hiroshi MAEDA,	Chieko KUBOTA,
	Bai Doug Ying,	Yu YOSHIZUMI(2011.4~),
	Hirotaka SHOJI(2011.4~),	Sachiko OBA(2011.4~),
	Akemi HOSODA(2011.4~)	Yu Su(2011.4~)

2. Purpose of 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.

With regard to dysphagia, which can lead to aspiration pneumonia, we provide comprehensive education on causes, diagnostic methods, and rehabilitation options from a dentistry point of view. Since we regard rehabilitation as the medicine of daily living, we emphasize that dysphagia rehabilitation should be considered a method to ameliorate disability rather than diseases by introducing practical approaches in addition to factual knowledge.

3. Research Subjects

1. Medical management of Elderly Patients During Dental Treatment

   Elderly people suffer from decreases in body function from both aging and illness, and thus face obstacles in everyday activities. We interviewed patients undergoing special outpatient care about their medical condition, researched the medication being taken and identified the major issues. We also report on a number of cases regarding circulatory disease, which is common in elderly people, in order to improve safety during dental treatment. Regarding arrhythmia, which is particularly common, if possible we take an electrocardiogram, and during dental treatment, strive to make the usefulness of the electrocardiogram clear.
2. New Examination Method for Dry Mouth

   Construction of an optical fiber oral fluid measurement system and development of oral moisture measurement devices are underway to provide new methods for examining dry mouth in elderly patients.
3. Oral Stereognosis Ability in the Elderly

   We used near infra-red spectroscopy to measure brain activity of elderly people in an oral stereognosis ability test (OSA test). Furthermore, the OSA test is currently being reformed and examined for practical application as a screening test for dementia.
4. Threshold of Mucous Membrane under Denture Base in Elderly Oral Mucosa Patients

   Using Semmes-Weinstein monofilaments we measured the pain threshold of the mucous membrane under the denture base and examined the change in pain threshold based on the number of remaining teeth or occlusal pattern. Furthermore, we examined possible causes of change in oral pain threshold.
5. State of the art Lasers in Zirconia Prosthetic Processing and Pain-free Treatment

   With the goal of establishing a “ceramic crown digital process”, we manufactured 3D CAD data for crowns and combined nanosecond lasers and femtosecond lasers and tested 3D high-speed laser processing of fully sintered zirconia. We also examined the efficacy of natural teeth with a non-thermal femtosecond laser with an extremely small processing reaction force.
6. Denture Bite Alignment Measuring Equipment using Tactile Sensors

We have developed instruments using tactile sensors to quantify the occlusion dynamics of dentures when biting. In addition we are examining the relationship between subjective evaluations made by practitioners and output from triple axis motion sensors.

7. Deglutition in Elderly Patients Requiring Nursing Care

   We studied swallowing function in elderly patients in long-term nursing care facilities and the dietary planning and oral maintenance in those facilities.

   We also examined the influence on food intake and swallowing function of foods with added fat that were developed to improve both ease of eating and nutrient levels.

8. Eating and Swallowing Rehabilitation in Post-Oral Tumor Surgery Patients

   Our study focused on the swallowing dynamics of pills and the effects of the reclined position, with respect to eating and swallowing disability following oral tumor surgery. We also created a clinical pathway for them and are studying effective rehabilitation methods in order to speed up food intake.

9. Dysphagia of Medullary Infarction Patients

   There are cases of lateral medullary syndrome patients in which food predominantly passes through the affected side, and the cause has been thought to be the laterality of the pharyngeal contraction during the swallowing reflex. Therefore we researched, compared and examined the laterality of the side of the pharynx on which food passes and the number of days after onset of condition, the presence of laterality of pharyngeal contraction, and the point position of food during the swallowing reaction.

10. Dental Approaches to Dysphagia

    Coping methods for food intake and swallowing disability are primarily physical therapy approaches. By clarifying the effects of specific approaches from dental care practitioners, in order to clarify the importance of our existence in this field, we are studying Palatal Augmentation Prosthesis (PAP), Palatal Lift Prosthesis (PLP) and specialty oral care.

11. Screening Methods of Silent Aspiration

    The majority of food intake and swallowing disability screening methods up until now used coughing during accidental swallowing as an index. So we examined the usefulness of a cough test as a screening method for silent aspiration in which there is no coughing. Furthermore, we are conducting research to increase the precision of screening without increasing the difficulty of evaluation.

12. Swallowing Dynamics and Brain Activity

    Using optical topography devices we analyzed which regions of the brain were active during swallowing and application of food intake and swallowing rehabilitation methods.

4. Clinical Services

We manage the outpatient special care and the outpatient dysphagia rehabilitation.

1. Outpatient special care for department elderly:

Comprehensive dental treatment is given to patients who are 65 years and older with diseases spanning multiple specialties. We work together with outpatient specialty departments for complicated cases. Since many of our patients are elderly individuals with cardiovascular disease, in order to carefully manage their overall medical condition, we measure oxygen saturation with a pulse oximeter, perform electrocardiography, and monitoring a blood pressure at the time of their dental treatment. We perform invasive treatments under controlled monitoring by a specialist and take extra safety measures. In addition to providing treatment, we hold consultations before treatment and carry out highly predictable safety management.

2. Outpatient dysphagia rehabilitation:

Patients in this department are mainly inpatients from hospitals affiliated with a medical school or an oral surgery department. For inpatients from oral surgery departments, we conduct the examination and training. For inpatients of our hospitals, we work together with the hospitals physical therapy department. We organize collaboration with these physical therapy and oral surgery departments, and accept about 100 to 150 cases from these departments. With the opening of the new outpatient department, we have received more and more requests from pulmonary, gastroenterology, and head and neck outpatient departments, as well as general medicine clinics and telephone consultations. For each case, we provide continuous guidance not only to the patients but also to associated workers and family members. Furthermore, we help introduce examination and training methods upon requests from other medical institutions that

wish to practice dysphagia rehabilitation.

5. Publications

Original articles

1. Ohsawa I, Uematsu H: Research of masticatory function using hemiplegia simulator equipment.. Gerodontology.1-7.2011.
2. Umeda Y, Mikushi S, Amagasa T, Omura K, Uematsu H: Effect of the reclining in patients after oral tumor surgery., J Medical and Dental Science, 58: 69-77, 2011.

Review Article

Book

Comprehensive Pathology

1. Staffs and Students

Professor	Masanobu KITAGAWA	
Assistant Professor	Takashi ENDO,	Morito KURATA,
	Shinya ABE,	Kouhei YAMAMOTO(on administrative leave)
Research Fellow	Naoe TAIRA	
Laboratory Technician	Miori INOUE	
Technical Assistant	Sachiko ISHIBASHI	
Graduate Students	Shigeaki UMEDA,	Shiho SUZUKI,
	Emiko SUGAWARA,	Yukako MIWA,
	Iichiro ONISHI,	Ruri DAGET,
	Na LI,	Toshiya NAGIRI,
	Tatsuro HIDAKA,	Kenichi MIYAMOTO,
	Keiko YAGI	

2. Purpose of Education

Main objective of comprehensive pathology in the graduate course is to acquire the technique of clinical and basic pathology. This course provides students opportunity to study clinical pathology (for example, histological and cytological diagnosis, autopsy, clinico-pathologic conference) and also basic pathology (molecular pathology and molecular biology).

3. Research Subjects

1) Clinico-pathological study by morphological findings, immunohistochemistry, and electron microscope, etc.
2) Molecular analysis of leukomogenesis induced by Friend leukemia virus (FLV)
3) Enhancement of apoptosis by virus-derived protein and development of apoptosis-induction cancer therapy
4) Molecular pathology of the myelodysplastic syndromes (MDS)
5) Clarification of drug resistance mechanism for hematopoietic malignancies
6) Comprehensive research for aging focus on the decreased immune competence
7) Molecular biology of the cancer progression and metastasis

4. Publications

Original Article

1. Suzuki S, Kurata M, Abe S, Miyazawa R, Murayama T, Hidaka M, Yamamoto K, Kitagawa M. Overexpression of MCM2 in myelodysplastic syndromes association with bone marrow cell apoptosis and peripheral cytopenia. Exp Mol Pathol. 92(1):160-166, 2011
2. Kitagawa M, Kurata M, Yamamoto K, Abe S, Suzuki S, Umeda S. Molecular pathology of myelodysplastic syndromes: biology of medullary stromal and hematopoietic cells (review). Mol Med Report. Jul-Aug ;4(4):591-6. 2011.
3. Okada Y, Kamata S, Akashi T, Kurata M, Nakamura T, Kihara K. Primitive neuroectodermal tumor/Ewing's sarcoma of the urinary bladder: a case report and its molecular diagnosis. Int J Clin Oncol. Aug; 16(4):435-8. 2011.
4. Kurata M, Abe S, Suzuki S, Li N, Ohnishi I, Hasegawa M, Yamamoto M, Kitagawa M. DNA damage-induced apoptosis and genetic background of the host: Hostspecific signaling enhancers of apoptosis. J Med Dent Sci 58：85-88, 2011.
5. Takeuchi K, Soda M, Togashi Y, Sugawara E, Hatano S, Asaka R, Okumura S, Nakagawa K, Mano H, Ishikawa Y. Pulmonary inflammatory myofibroblastic tumor expressing a novel fusion, PPFIBP1-ALK: reappraisal of anti-ALK immunohistochemistry as a tool for novel ALK fusion identification. Clin Cancer Res. 17(10):3341-8. 2011
6. Kurata M, Yamazaki Y, Kanno Y, Ishibashi S, Takahara T, Kitagawa M, Nakamura T. Anti-apoptotic function of Xbp1 as an IL-3 signaling molecule in hematopoietic cells. Cell Death Dis. 2:e118. 2011
7. Yamanami-Irioka A, Uchihara T, Endo T, Irioka T, Watanabe M, Kitagawa M, Mizusawa H. Amnesia in frontotemporal dementia with amyotrophic lateral sclerosis, masquerading Alzheimer disease. Case Reports in Neurology 3:242-247, 2011.
8. Honne K, Kohsaka H, Kaneko H, Komano Y, Nakanishi S, Kitagawa M, Miyasaka N. A Behçet's disease with widespread perforating enteric ulcers preceded by a long history of peripheral gangrenes. Modern Rheumatology

21:651-654, 2011.
9. Asano S, Takemura T, Katoh K, Taneda M, Kitagawa M. Epithelial regeneration after diffuse alveolar damage in relation to underlying disease and treatment: an autopsy study. J Med Dent Sci 58:113-121, 2011.

Integrated Pulmonology

1. Staffs and Students (December, 2011)

Professor	Naohiko INASE	
Junior Associate Professor	Meiyo TAMAOKA	
Assistant Professor	Toshihide FUJIE,	Kimitake TSUCHIYA,
	Sahoko CHIBA,	Ken UCHIBORI
Project Assistant Professor	Hiroyuki SAKASHITA	
Graduate Students	Haruhiko FURUSAWA,	Koji UNOURA,
	Makito YASUI,	Hiroshi ONO,
	Satoshi TAKAYAMA,	Tsukasa OKAMOTO,
	Mayuko TAO,	Yuichiro NEI,
	Yoshitoshi KOMAZAKI,	Masahiro ISHIZUKA,
	Kozo SUHARA,	Toshiharu TSUTSUI

2. Purpose of Education

Integrated pulmonology is a branch of internal medicine which deals with a variety of pulmonary diseases including tumors, infectious diseases, allergic diseases, non-allergic inflammatory diseases, and genetic disorders. Main objective of integrated pulmonology in the graduate course is to provide 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.

3. Research Subjects

1) Pathogenesis of hypersensitivity pneumonitis and detection of environmental causative antign
2) Airway remodeling in bronchial asthma model
3) Acute exacerbation in pulmonary fibrosis
4) Proteomics of pulmonary fibrosis
5) Pathogenesis of pulmonary fibrosis and emphysema

4. Clinical Services

Integrated pulmonology 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.

5. Publications

Original Article

1. Mitaka K, Miyazaki Y, Yasui M, Furuie M, Miyake S, Inase N, Yoshizawa Y: Th2-biased immune responses are important in a murine model of chronic hypersensitivity pneumonitis. Int Arch Allergy Immunol 154: 264-274, 2011.
2. Tateishi T, Ohtani Y, Takemura T, Akashi T, Miyazaki Y, Inase N, Yoshizawa Y: Serial high-resolution computed tomography findings of acute and chronic hypersensitivity pneumonitis induced by avian antigen. J Comput Assist Tomogr 35: 272-279, 2011.
3. Fujii M, Sumi Y, Atarashi K, Takemura T, Inase N: Muscle weakness in extremities and diffuse centrilobular nodules in lungs. Thorax 66: 546-547, 2011.
4. Yamasaki M, Sumi Y, Sakakibara Y, Tamaoka M, Miyazaki Y, Arai H, Kojima K, Itoh F, Amano T, Yoshizawa Y, Inase N: Pulmonary artery leiomyosarcoma diagnosed without delay. Case Rep Oncol 4: 287-298, 2011.
5. Ochi J, Ohkouchi M, Tsukada Y, Tominaga S, Takayama S, Taniguchi Y, Miyamoto Y, Inase N: Amilodarone-induced pulmonary toxicity. Chest Dis Rep 1: 11-13, 2011.
6. Honda T, Tsuzaki Y, Mitaka, Fukusawa K, Miyashita Y, Marino K, Saito A, Oyama T, Inase N: Tracheoesohageal fistula closed by chemoradiotherapy in lung cancer. Case Rep Oncol 4: 350-357, 2011.
7. Unoura K, Miyazaki Y, Sumi Y, Tamaoka M, Sugita T, Inase N: Identification of fungal DNA in BALF from patients with home-related hypersensitivity pneummonitis. Respir Med 105: 1-8, 2011.
8. Kuramochi J, Inase N, Miyazaki Y, Kawachi H, Takemura T, Yoshizawa Y: Lung cancer in chronic hypersensitivity

pneumonitis. Respiration 82: 263-267, 2011.
9. Okamoto T, Miyazaki Y, Sakakibara Y, Tamaoka M, Sumi Y, Inase N: Successful diagnosis of a combined thymic epithelial tumor by endobronchial ultrasound-guided transbronchial needle aspiration. J Med Dent Sci 58: 123-126, 2011.

Geriatrics and Vascular Medicine

1. Staffs and Students

Professor	Kentaro SHIMOKADO, MD	
Associate Professor	Eiji KANEKO, MD	
Assistant Professor	Yasuko ABE MD,	Shohei SHINOZAKI
Graduate Student	Yasuko ABE,	Yasuko USHIO,
	Mizuki IWAMA,	Rie MASUDO,
	Norihiko IZUMIMOTO,	Kenji TOYOSIMA,
	Ayumi TOBA,	Kae ITO,
	Tomomi HAKAMADA	

2. Purpose of Education

1) Undergraduate education of medical students with a particular emphasis on geriatrics
2) Development of research on aging and age-related diseases with a particular emphasis on research of atherosclerosis

3. Research Subjects

1) Cell biological mechanisms of atherogenesis
2) Mechanisms involved in dyslipidemia
3) Mechanisms of aging and age-related diseases
4) Undergraduate and postgraduate education in geriatrics

4. Clinical Services

As a division of the Department of Internal Medicine, we are taking care of elderly patients who are better treated by us rather than by highly specialized experts both at the outpatient clinics and the ward of our university hospital. We also provide subspecialty service such as oriental herbal medicine, mononuclear cell transplantation for PAD, and dyslipidemia clinic.

5. Publications (Original articles)

1. Iijima K, Shimokado K, Takahashi T, Morimoto S, Ouchi Y; Members of JGS Disaster Supportive Center. Actions of the Japan Geriatric Society in response to the 2011 off the Pacific Coast of Tohoku Earthquake: first report. Geriatr Gerontol Int. 2011 ;11:525-6
2. Shohei Shinozaki, Cheol Soo Choi, Nobuyuki Shimizu, Marina Yamada, Minhye Kim, Ting Zhang,H. Henry Dong, Young-Bum Kim_, and Masao Kaneki.Liver-specific Inducible Nitric-oxide Synthase Expression Is Sufficient to Cause Hepatic Insulin Resistance and Mild Hyperglycemia in Mice. J Biolo Chem, 2011• 286:34959-34975
3. Hagita S, Osaka M, Shimokado K, Yoshida M.Adipose inflammation initiates recruitment of leukocytes to mouse femoral artery: role of adipo-vascular axis in chronic inflammation.PLoS One. 2011;6: e19871
4. Iwama M, Shimokado K, Maruyama N, Ishigami A.Time course of vitamin C distribution and absorption after oral administration into SMP30/GNL knockout mice. Nutrition. 2011 Apr;27(4):471-8. Epub 2010 Aug 13.

Esophageal and General Surgery

1. Staffs and Students (April, 2011)

Professor	Tatsuyuki KAWANO	
Junior Associate Professor	Yoshinori INOUE,	Tetsuro NISHIKAGE,
	Yasuaki NAKAJIMA	
Assistant Professor	Kagami NAGAI,	Masatoshi JIBIKI,
	Toshifumi KUDO,	Kenro KAWADA,
	Yutaka TOKAIRIN,	Koji TANAKA
Secretary	Yuri ENDO,	Kae YOSHIZAWA
Graduate Student	Tomoyoshi SUZUKI,	Akihiro HOSHINO,
	Yutaka MIYAWAKI,	Takuya OKADA,
	Hidetoshi UCHIYAMA,	Shinya KOIZUMI,
	Koji YONEKURA,	Kimihiro IGARI,
	Shunsuke OHTA,	Tairo RYOTOKUJI,
	Naoto FUJIWARA,	Masato NISHIZAWA,
	Tuerxun REXIATI,	Swangsri JIRAWAT,
	Ablimitie ZYNUR	

2. Purpose of Education

The history of the department started as the First Department of Surgery of TMDU, and many surgeons and researchers in various specialties have gathered and have been keeping a high level of activities. Our main purposes of education are to make the post-graduate physicians grown up to excellent surgeons and to contribute in development of medical/surgical sciences. Surgeons with high-level medical knowledge and techniques are expected to grow up 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.

3. Research Subjects

1) Development of esophago-gastric surgery.
2) Development of vascular surgery.

4. Clinical Services

Main clinical services are diagnosis and treatment for esophago-gastric and vascular diseases. Post-graduate students learn and study general surgery and sub-specialty, e.g. esophageal surgery, vascular surgery. The territory of clinics is wide and the department provides a full spectrum of standard and special technologies such as minimally invasive surgery and extended radical surgery for malignancies.

5. Publications

1. Nakajima Y, Ohta S, Okada T, Miyawaki Y, Hoshino A, Suzuki T, Kawada K, Nishikage T, Nagai K, Ae K, Kawachi H, Kawano T. Osteoplastic bone metastasis in esophageal squamous cell cancer: report of a case. Surg Today 2011；Epub ahead of print
2. Ohara S, Kawano T, Kusano M, Kouzu T. Survey on the prevalence of GERD and FD based on the Montreal definition and the Rome III criteria among patients presenting with epgastiric symptoms in Japan. J Gastroenterol 2011; 46: 603-611
3. Kumagai Y, Miura K, Nishida T, Igari K, Ochiai T, Iida M, Yamazaki S, Odajima H, Kawano T, Takubo K. Simultaneous resection of metastatic melanoma in the esophagus and primary cutaneous melanoma showing partial regression: report of a case Surg Today, 2011; DOI 10.1007/s00595-011-0101-9
4. Ishikawa S, Makino F, Kobinata S, Ito H, Kawano T, Makita K. C0-administration of ephedrine prevents reductions in cardiac output and systemic oxygen delivery secondary to lung compression maneuvers during one-lung ventilation, without reducing arterial oxygenation. J Anesth, 2011; DOI 10.1007/s00540.010.1078-z Published online: 07 January 2011
5. Hirano M, Ando N, Tsujinaka T, Udagawa H, Yano M, Yamana H, Nagai K, Miyazawa J, Nakamura K, on behalf of Japan Esophageal Oncology Group/Japan Clinical Oncology Group. Influence of preoperative chemotherapy for

advanced thoracic oesophageal squamous cell carcinoma on postoperative complications. Br J Surg 2011; 98: 1735-41.
6. Muramatsu T, Imoto I, Matsui T, Kozaki K, Haruki S, Sudol M, Shimada Y, Tsuda H, Kawano T, Inazawa J. YAP is a candidate oncogene for esophageal squamous cell carcinoma. Carcinogenesis. 2011; 32: 389-398.
7. Aida J, Vieth M, Ell C, May A, Pech O, Hoshihara Y, Kumagai Y, Kawada K, Hishima T, Tateishi Y, Sawabe M, Arai T, MatsuuraM, Takubo K. Palisade vessel as a new histologic marker of Esophageal origin in ER specimen from columnar-lined esophagus. Am J Surg Pathol 2011; 35: 1140-1145.
8. Igari K, Jibiki M, Kudo T, Sugano N, Inoue Y. Drainage surgery followed by postoperative irrigation with gentian violet for prosthetic graft infection caused by methicillin-resistant Staphylococcus aureus. Eur J Vasc Endovasc Surg. 2011; 41: 278-280
9. Notani H, Inoue Y, Sugano N, Jibiki M, Umeda M, Izumi Y. Whole-blood platelet aggregation by porphyromonas gingivalis in patients with peripheral arterial disease. J Med Dent Sci. 2011; 58: 7-14
10. Kangmin Y, Inoue Y, Umeda M, Terasaki H, Chen Z, Iwai T. The periodontal anaerobe porphyromonas gingivalis induced platelet activation and increased aggregation in whole blood by rat model. Thromb Res. 2011; 127: 418-425
11. Toyofuku T, Inoue Y, Kurihara N, Kudo T, Jibiki M, Sugano N, Umeda M, Izumi Y. Differential detection rate of periodontopathic bacteria in atherosclerosis. Surg Today, 2011; 41: 1395-1400
12. Mitaka C, Kudo T, Haraguchi G, Tomita M. Cardiovascular and renal effects of carperitide and nesiritide in cardiovascular surgery patients: a systematic review and meta-analysis. Crit Care. 2011 Oct 27; 15: R258. [Epub ahead of print]
13. Jibiki M, Inoue Y, Kudo T, Toyofuku T. Aortic Aneurysm Requiring Suprarenal Cross-Clamping. Ann Vasc Dis. 2011; suppl. S4-7
14. Chen Z, Nakajima T, Inoue Y, Kudo T, Jibiki M, Iwai T, Kimura A. A single nucleotide polymorphism in the 3'-untranslated region of MyD88 gene is associated with Buerger disease but not with Takayasu arteritis in Japanese. J Hum Genet. 2011; 56: 545-547.

6. Presentations

1. Kawada K, Fujiwara N, Ryotokuji T, Ohta S, Okada T, Jirawat S, Hoshino A, Miyawaki Y, Suzuki T, Tokairin Y, Nakajima Y, Nishikage T, Nagai K, Kawano T. Endoscopic diagnosis for superficial gastrointestinal cancer using transnasal esophagogastroduodenoscopy with FICE system. APDW 2011 Singapore, 2011.10.3
2. Ryotokuji T, Kawada K, Fujiwara N, Ohta S, Okada T, Miyawaki Y, Hoshino A, Suzuki T, Jirewat S, Tokairin Y, Nakajima Y, Nishikage T, Nagai K, Kawano T. A case of squamous cell carcinoma within an esophageal diverticulm treated by Argon plasma coagulation(Poster Presentation). Asian Pacific Digestive Week, Singapore, 2011. 1-4. October.
3. Fujiwara N, Kawada K, Ohta S, Ryotokuji T, Okada T, Jirawat S, Tokairin Y, Nakajima Y, Nishikage T, Nagai K, Kawano T. Argon Plasma Coagulation for the Treatment of Early Esophageal Squamous Cell Carcinomas. Asian Pacific Digestive Week 2011, Singapore, 2011.10.3.
4. Miyawaki Y, Fujiwara N, Ryotokuji T, Ohta S, Okada T, Hoshino A, Swangsri J, Kawada K, Nakajima Y, Nishikage T, Nagai K, Kawano T. The availability of thoracic surgery with anterior phreno-mediastinal approach for radical esophagectomy. 19th European Association for Endoscopic Surgery, Torino, 2011.06.16
5. Okada T, Kawada K, Miyawaki Y, Fujiwara N, Ryotokuji T, Ohta S, Jirawat S, Nakajima Y, Nishikage T, Nagai K, Kawano T. Long-term Prognosis of Esophageal Cancer after Thoracoscopic Esophagectomy. 19th Congress of the European Association for Endoscopic Surgery, Torino, Italy. 2011.6.16
6. Miyawaki Y, Imoto I, Haruki S, Kozaki K, Kawachi H, Shimada Y, Kawano T,Inazawa J. Members of protocadherin superfamily is frequently silenced and work as potential tumor suppressors in esophageal squamous cell carcinoma(ESCC). 70th Annual Meeting of the Japanese Cancer Association, Nagoya, 2011.10.04
7. Ryotokuji T, Izumi Y, Miura A, Tadano S, Kato T, Monma K. Transhiatal chest drainage following minimally invasive esophagectomy. SAGES2011, San Antonio, March 30-April 2, 2011.
8. Kumagai Y, Aida J, Yamasaki S, Ochiai T, Iwakiri K, Kawano T, Hoshihara H, Takubo K Detailed features of palisade vessels as a marker of the esophageal mucosa revealed by magnifying endoscopy 21st World Congress of the International Association of Surgeons, Gatroenterologists and Oncologists 10 November, Tokyo
9. Kumagai Y, Kawada K, Yamazaki S, Ochiai T, Kawano T, Takubo K Prospective replacement of magnifying endoscopy by the newly developed endocytoscope, GIF-Y0002 21st World Congress of the International Association of Surgeons, Gatroenterologists and Oncologists 10 November, Tokyo
10. Igari K, Yonekura K, Uchiyama H, Koizumi S, Toyofuku T, Kudo T, Jibiki M, Sugano N, Inoue Y, Iwai T.

Differential diagnosis of Buerger disease. 1st Japanese-Thai Buerger Disease Forum Oral presentation. Chiang Mai, Thailand. 2011.6.17-19.

11. Koizumi S, Chen Z, Takahashi M, Naruse T, Nakajima T, Chen YW, Inoue Y, Ishikawa I, Iwai T, Kimura A. Synergistic contribution of CD14 and HLA loci in the susceptibility to Buerger disease. 1st Japanese-Thai Buerger Disease Forum. Oral presentation. Chiang Mai. 2011.6.17-19.
12. Toyofuku T, Inoue Y, Kudo T, Sugano N, Jibiki M, Uchiyama H, Yonekura K, Koizumi S. Technique for long-term patency of a femorocrural bypass by vasodilation on the distal side. International Surgical Week 2011. Poster Exhibition. Yokohama, Japan. 2011.8.28-9.1
13. Igari K, Kudo T, Nishizawa M, Uchiyama H, Koizumi S, Yonekura K, Toyofuku T, Jibiki M, Inoue Y. Outcomes following endovascular abdominal aortic repair both within and outside of instructions for use. 12th Annual Congress of Asian Society for Vascular Surgery and 6th Asian Venous Forum Poster presentation. Taipai, Taiwan. 2011.9.29-10.2.
14. Nishizawa M, Igari K, Uchiyama H, Koizumi S, Yonekura K, Toyofuku T, Kudo T, Jibiki M, Inoue Y. Assessment of Coil embolization to Visceral Artery Aneurysms. The 12th Annual Congress of Asian Society for Vascular Surgery. Poster presentation. Taipei. 2011.9.29-10.2
15. Miyai M, Kagayama T, Nishizawa M, Igari K, Uchiyama H, Koizumi S, Yonekura K, Toyofuku T, Kudo T, Jibiki M, Inoue Y. Vascular laboratory. The 12th Annual Congress of Asian Society for Vascular Surgery. Poster presentation. Taipei. 2011.9.30-10.2
16. Nakashima R, Miyai M, Kagayama T, Toyofuku T, Kudo T, Jibiki M, Inoue Y, Usui A. The usefulness of the post-exercise common femoral artery doppler waveform and peak systolic velocity. The 12th International Congress of the Asian Vascular Society. Oral presentation. Taipei. 2011.9.29-10.2
17. Uchiyama H. Outcome of coil embolization for internal iliac artery in patients with endovascular abdominal aortic aneurysm repair. Asian Chapter Congress International Union of Angiology. Beijing. 2011. 10.20-22.
18. Inoue Y, Jibiki M, Kudo T, Toyofuku T. Critical limb ischemia. Diagnosis and treatment. 2011 Asian Chapter Congress of the International Union of Angiology. Oral presentation. Beijing. 2011.10.21-22
19. Inoue Y, Jibiki M, Kudo T, Toyofuku T. Treatment fo pararenal and juxtarenal abdominal aortic aneurysm. 2011 Asian Chapter Congress of the International Union of Angiology. Oral presentation. Beijing. 2011.10.21-22
20. Inoue Y, Jibiki M, Kudo T, Toyofuku T. Bypass surgery and endovascular treatment for occlusive arterial disease. 2011 Asian Chapter Congress of the International Union of Angiology. Oral presentation. Beijing. 2011.10.21-22

Thoracic Surgery

1. Staffs and Students

Professor:	Kenichi OKUBO
Junior Associate Professor:	Hironori ISHIBASHI
Assistant Professor:	Naoyuki FUJIWARA
Hospital Staff:	Chihiro TAKASAKI

2. Purpose of Education

Main objective of Thoracic Surgery in the graduate course is to provide students with opportunity to study surgical anatomy, pathophisiology, and combined modality treatment in order to become the specialized surgeons who have international and scientific feelings.

3. Research Subjects

1) Establishing surgical skills and multimodality treatments for thoracic oncology
2) Developing minimal invasive technique/surgery for thoracic diseases
3) Molecular biological approaches for thoracic malignancies

4. Clinical Services

Thoracic Surgery clinic performs surgical treatments for the diseases of lung, chest wall, and mediastinum. Lung cancer, pleural diseases, and mediastinal tumor are mainly treated with surgery using minimal invasive techniques or function-preserved techniques. Advanced diseases are also treated with extended resection and/or multimodality approach.

5. Publications

1. Chen F, Shoji T, Sakai H, Miyahara R, Bando T, Okubo K, Date H. Lung metastasectomy for colorectal carcinoma in patients with a history of hepatic metastasis. Ann Thorac Cardiovasc Surg. 2011;17:13-8.
2. Chen F, Yoshizawa A, Okubo K, Date H. Tumor extension along chest wall tract after diagnostic intervention in malignant pleural mesothelioma. Interact Cardiovasc Thorac Surg. 2011;12:1060-2. Epub 2011 Mar 1.
3. Sonobe M, Kobayashi M, Ishikawa M, Kikuchi R, Nakayama E, Takahashi T, Menju T, Takenaka K, Miyahara R, Huang CL, Okubo K, Bando T, Date H. Impact of KRAS and EGFR Gene Mutations on Recurrence and Survival in Patients with Surgically Resected Lung Adenocarcinomas. Ann Surg Oncol. 2011 May 24. [Epub ahead of print]
4. Hirooka S, Akashi T, Ando N, Suzuki Y, Ishida N, Kurata M, Takizawa T, Kayamori K, SakamotoK,Fujiwara N, Kojima M, Eishi Y. Localization of the invadopodia-related proteins actinin-1 and cortactin to matrix-contact-side cytoplasm of cancer cells in surgically resected lung adenocarcinomas. Pathobiology 2011; 78(1):10-23. Epub 2011 Apr 5.

Rehabilitation Medicine

1. Staffs and Students (April, 2011)

Associate Professor	Sadao MORITA	
Graduate Student	Kazuhisa INOUE,	Akihito KUBOTA,
	Tomoko ARAKI,	Junya AIZAWA,
	Keisuke KAJI,	Risa NAKAYAMA,
	Kashitarou HYOUDOU,	Kinei BOKU,
	Chisato TAKADA,	Maierhaba AILIXIDING

2. Purpose of Education

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

3. Research Subjects

1) 3-dimention motion analysis in activities of daily living
2) Balance and occlusion
3) Biomechanical analysis of artificial limb
4) Prevention of dislocation after total hip arthroplasty
5) Prevention of disuse bone atrophy

4. Publications

Psychosomatic Dentstry

1. Staffs and Students (April, 2011)

Professor	Akira Toyofuku	
Assistant Professor	Satoshi Ishida	
Hospital Staff	Tatsuya Yoshikawa,	Miho Takenoshita
Graduate Student	Yuuichi Kato,	Tomoko Sato,
	Ayano Katagiri,	Yojiro Umezaki
	Motoko Watanabe,	Ayako So

2. Purpose of 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 trough 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.

3. Research Subjects

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

4. Clinical Services

We take charge of “Head and Neck Psychosomatic Medicine clinic” in dental hospital of Tokyo Medical and Dental University. 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(dysesthesia).

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 400 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. Publications

Original Article

1) Kato Y, Sato T, Katagiri A, Umezaki Y, Takenoshita M, Yoshikawa T, Sato Y, Toyofuku A. : Milnacipran dose-effect study in patients with burning mouth syndrome. Clin Neuropharmacol. 2011 Jul-Aug;34(4):166-9. (IF : 1.578)
2) Uezato A, Yamamoto N, Kurumaji A, Toriihara A, Umezaki Y, Toyofuku A, Nishikawa T. ; Delusional disorder, somatic type treated with electroconvulsive therapy and an antipsychotic with a 5-HT1A agonist property. J ECT 28(1):50-51, 2012. (IF: 1.331)
3) Masamichi Shinoda, Masatake Asano, Daisuke Omagari, Kuniyuki Honda, Suzuro Hitomi, Ayano Katagiri, and Koichi Iwata: ; Nerve Growth Factor Contribution via Transient Receptor Potential Vanilloid 1 to Ectopic Orofacial Pain, J Neuroscience 31(19), 7145-7155, 2011. (IF:7.271)
4) Takanori Tsujimura, Masamichi Shinoda, Kuniya Honda, Suzuro Hitomi, Masaaki Kiyomoto, Shingo Matsuura, Ayano Katagiri, Kojun Tsuji, Makoto Inoue, Yoshi Shiga, Koichi Iwata ; Organization of pERK-immunoreactive cells in trigeminal spinal nucleus caudalis, upper cervical cord, NTS and Pa5 following capsaicin injection into masticatory and swallowing-related muscles in rats, Brain Res 1417 45-54,2011. (IF : 2.623)
5) Honda K, Noma N, Shinoda M, Miyamoto M, Katagiri A, Kita D, Liu MG, Sessle BJ, Yasuda M, Iwata K.; Involvement of peripheral ionotropic glutamate receptors in orofacial thermal hyperalgesia in rats. Mol Pain. 2011 Sep 28;7:75. (IF : 4.148)

Abstract

1) Akihito Uezato, Naoki Yamamoto, Akeo Kurumaji, Akira Toyofuku, Toru Nishikawa ; Cases of oral cenesthopathy, a form of somatic type delusional disorder : presentation and treatment options, The 164th Annual Meeting of the American Psychiatric Association, Honolulu, Hawaii, May 14-18, 2011.
2) Ayano Katagiri, Masamichi Shinoda, Koichi Iwata ; Involvements of satellite glial cell-P2Y12 receptors in mechanical and thermal hyperalgesia following lingual nerve crush in rats. The 4th Asian Pain Symposium, Shanghai, 15-16, May 2011.
3) Tomoko SATO, Yojiro UMEZAKI, Ayano KATAGIRI, Ayako SO, Motoko WATANABE, Miho TAKENOSHITA, Tatsuya YOSHIKAWA, Yusuke SATO, Akira TOYOFUKU ; A Clinical study on unfavorable cases of Dental Implant from the perspective of psychosomatic dentistry. The 21st World Congress on Psychosomatic Medicine, Korea, Seoul, August 25-28,2011.
4) Ayano Katagiri, Masamichi Shinoda, Akira Toyofuku, Koichi Iwata ;Involvements of P2Y12 receptors in satellite glial cell in mechanical and thermal hyperalgesia following lingual nerve crush in rats. The 21st World Congress on Psychosomatic Medicine, Korea, Seoul, August 25-28,2011.
5) Yojiro UMEZAKI, Tomoko SATO, Ayano KATAGIRI, Ayako SO, Motoko WATANABE, Tatsuya YOSHIKAWA, Miho TAKENOSHITA, Akihito UEZATO, Akira TORIIHARA, Akira TOYOFUKU ; Two cases of oral-cenesthopathy effectively treated with low-dose aripiprazole. The 21st World Congress on Psychosomatic Medicine, Korea, Seoul, August 25-28,2011.

Behavioral Dentistry

1. Staffs and Students (April, 2011)

Professor	Shiro Mataki
Associate Professor	Hiroshi Nitta
Graduate Student	Yuji Ito (until March)

2. Purpose of Education

Topic of Behavioral Dentistry included characteristics of human behavior, especially of relationship between patients and dental staff based on the informed consent. Main objective of behavioral dentistry in the graduate course is to provide students opportunity to study application of behavioral science to deal with dental patients showing various perception and behavior in clinic.

3. Reserch Subjects

1) Construction of educational system of behavioral dentistry for dental students
2) Application of behavioral science to development of dental educational curriculum
3) Patients' evaluation of the dental hospital and the dental educational system
4) Dental treatment for sleep apnea and hypoapnea syndrome
5) Application of behavioral science to dental clinic

4. Clinical Services

Behavioral Dentistry provides medical interview for preliminary diagnosis and general dental practice at the clinic of oral diagnosis and general dentist cooperating with General Dentistry.

5. Publications

Original Article

1) Sayaka Katagiri, Hiroshi Nitta, Toshiyuki Nagasawa, et al. Reduced masticatory function in non-elderly obese Japanese adults. Obesity Research & Clinical Practice 5, e279–e286, 2011.

Abstracted Papers Presented at Scientific Meeting

1) Tonami K, Ozaki T, Takahashi F, Yamamoto M, Sasaki Y, Nitta H, Mataki S. Influence of patients' dental profile on the stress during treatment. 89th General Session & Exihibition of the IADR. San Diego, USA, MARCH 16-19, 2011
2) Tonami K, Nitta H, Mataki S. Effect of reasoning on student recollection in medical ethics practice. 37th ADEE Meeting. Antalya, Turkey, September 7-10, 2011.

Temporomandibular Joint and Occlusion

1. Staffs (April, 2011)

Associate Professor	Koji KINO	
Assistant Professor	Akira NISHIYAMA	
Hospital Staff	Kaori TSUKAGOSHI,	Shoko TOBE,
	Natsuko OTOMO	

2. Purpose of Education

Purpose of education for students and residents in this course is to provide an opportunity to learn basic knowledge on diagnostic and therapeutic procedures for temporomandibular diseases. In special course for graduate students and under graduate students, we instruct statistical techniques especially with the multi variate analysis by using clinical data acquired from patients with temporomandibular disorders (TMD).

3. Research Subjects

1) Development of multidimensional evaluation system for etiological factors of TMD
2) Influence of patients' psychosomatic factors for TMD
3) Sleep bruxism: its etiology, influence and treatment
4) Effectiveness of physiological therapy for TMD
5) Mechanisms of occlusal discomfort

4. Clinical Services

Temporomandibular joint clinic provides diagnosis and treatment for diseases and disfunctions of temporomandibular joint and masticatory muscles. We also provide the treatments for the nocturnal bruxism and the occlusal discomfort.

Laboratory Medicine

1. Staffs and Students (April, 2011)

Professor	Nobuo NARA	
Associate Professor	Shuji TOHDA	
Research Associate	Mai ITOH	
Graduate Students	Yuki OKUHASHI,	Yusuke TAKAHASHI,
	Aya ONO	

2. Purpose of Education

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.

3. Research Subjects

1) Mechanism of abnormal growth of acute leukemia cells and lymphoma cells
2) Molecular diagnostic tests for cancer and infectious diseases
3) Detection of minimal residual leukemia or lymphoma cells

4. Clinical Services

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

5. Publications

Original Article

1. Okuhashi Y, Itoh M, Nara N, Tohda S. Effects of combination of notch inhibitor plus hedgehog inhibitor or Wnt inhibitor on growth of leukemia cells. Anticancer Res. 2011;31:893-896.
2. Kawaguchi-Ihara N, Okuhashi Y, Itoh M, Murohashi I, Nara N, Tohda S. Promotionof the self-renewal capacity of human leukemia cells by sonic hedgehog protein. Anticancer Res. 2011;31:781-784.
3. Siegers GM, Dhamko H, Wang XH, Mathieson AM, Kosaka Y, Felizardo TC, Medin JA, Tohda S, Schueler J, Fisch P, Keating A. Human Vδ1 $\gamma\delta$ T cells expanded from peripheral blood exhibit specific cytotoxicity against B-cell chronic lymphocytic leukemia-derived cells. Cytotherapy. 2011;13:753-764.

Review Article

1. Nara N, Suzuki T, Nitta Y. The present state and problems of graduate-entry programs (GEP) in national medical schools in Japan. J Med Dent Sci 2011;58:23-27.
2. Nara N, Suzuki T, Tohda S. The Current Medical Education System in the World. J Med Dent Sci 2011;58:79-83.

Critical Care Medicine

1. Staffs and Students (January 2011~December 2011)

Associate Professor	Chieko MITAKA
Assistant Professor	Toshibumi KUDO (Intensive Care Unit) (2010.6.1~)
	Go Haraguchi (Intensive Care Unit) (2011.4.1~)
	Maiko Yamauchi (Critical Care Medicine) (2011.2.1~)
	Takahiro Toyofuku (Critical Care Medicine) (2011.4.1~)
Hospital Staff	Yutaka MIYAWAKI (Intensive Care Unit) (2009.4.1~)
	Yousuke Ishii (Intensive Care Unit) (2010.5.1～2011.3.31)
	Yasuhiro Ueda (Intensive Care Unit) (2011.10.1~)
Postgraduate students	May Khin Hnin Si (2010.4.1~)
	Miniwan Tulafu (2010.4.1~)

2. Purpose of Education

Undergraduate education

Lectures: Fourth-year medical students

1) Acute respiratory failure and mechanical ventilation (Mitaka)
2) Sepsis and multiple organ dysfunction syndrome (Mitaka)
3) Examination of critical care medicine

Clinical clerkship: Fifth-year and Sixth-year medical students

Critical care medicine is a branch of faculty of medicine which deals with monitoring and care of critically ill patients. Main objective of critical care medicine is to provide students opportunity to study diagnosis and treatment of critically ill patients in the intensive care unit (ICU). Students are taught on clinical practice in the ICU. Students take charge of 1-2 patients with attending physician and intensivist. Students check clinical data every morning and evening and make system-oriented presentation at ICU rounds.

Conference: Students are assigned to read recent articles of critical care medicine and make presentations by power point at the conference..

3. Research Subjects

1) Treatment and prevention of ischemia/reperfusion injury of lung
2) High tidal volume ventilation and remote organ injury
3) A selective inhibitor for inducible NO synthase in endotoxic shock
4) Blockade of NF-κB activation in endotoxic shock
5) Treatment for septic shock by poly (ADP-ribose) synthetase inhibitor
6) Clinical study of atrial natriuretic peptide
7) Effects of atrial natriuretic peptide on acute kidney injury

4. Clinical Services

Critical care medicine provides intensive care and treatment of critically ill patients. The role of intensivists take charge treatment of critically ill patients in the ICU. 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 attending physician. The purpose of critical care medicine is to treat and improve the serious condition by maintaining the patients' hemodynamics to be stable.

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, abnormal electrolyte, acute kidney injury, central nervous system dysfunction, and hospital-acquired infection, mechanical ventilation, pharmacological support, cardiopulmonary support system, blood purification, and nutrition support.

5. Publications

【Original Article】

1. Maejima Y, Okada H, Haraguchi G, Onai Y, Kosuge H, Suzuki J, Isobe M. Telmisartan, a unique ARB, improves left ventricular remodeling of infarcted heart by activating PPAR gamma. Lab Invest. 2011 Jun;91(6):932-44.
2. Sugiyama T, Kimura S, Inagaki H, Yoshikawa S, Haraguchi G, Higuchi K, Kawabata M, Hachiya H, Hirao K, Isobe M. Serial coronary angioscopic findings of drug-eluting stents implanted in a chronic totally occluded lesion. Int J Cardiol. 2011 Feb 25
3. Ishihara T, Haraguchi G, Kamiishi T, Tezuka D, Inagaki H, Isobe M. Sensitive assessment of activity of Takayasu's arteritis by Pentraxin3, a new biomarker. J Am Coll Cardiol. 2011 Apr; 57(16):1712-1713.
4. Konishi M, Haraguchi G, Yoshikawa S, Kimura S, Inagaki H, Isobe M. Additive effects of β-blockers on renin-angiotensin system inhibitors for patients after acute myocardial infarction treated with primary coronary revascularization. Circ J. 2011 Jul 25;75(8):1982-91.
5. Ishihara T, Haraguchi G, Konishi M, Ohigashi H, Saito K, Nakano Y, Isobe M. Effect of adiponectin on cardiac allograft vasculopathy. Circ J. 2011 Jul 25;75(8):2005-12.
6. Toyofuku T, Inoue Y, Kurihara N, Kudo T, Jibiki M, Sugano N, Umeda M, Izumi Y. Differential detection rate of periodontopathic bacteria in atherosclerosis. Surg Today. 2011 Oct;41(10):1395-1400. Epub 2011 Sep 16.
7. Igari K, Jibiki M, Kudo T, Sugano N, Inoue Y. Drainage surgery followed by postoperative irrigation with gentian violet for prosthetic graft infection caused by methicillin-resistant Staphylococcus aureus. Eur J Vasc Endovasc Surg. 2011 Feb;41(2):278-80. Epub 2010 Nov 20.
8. Chen Z, Nakajima T, Inoue Y, Kudo T, Jibiki M, Iwai T, Kimura A. A single nucleotide polymorphism in the 3'-untranslated region of MyD88 gene is associated with Buerger disease but not with Takayasu arteritis in Japanese. J Hum Genet. 2011 Jul;56(7):545-7. doi: 10.1038/jhg.2011.44. Epub 2011 Apr 28.

【Review】

1. Mitaka C, Tomita M. Polymyxin B-immobilized column hemoperfusion therapy for septic shock. Shock 2011;36:332-338
2. Mitaka C, Kudo T, Haraguchi G, Tomita M. Cardiovascular and renal effects of carperitide and nesiritide in cardiovascular surgery patients: a systematic review and meta9analysis. Critical Care 2011;15:R258

【Conference】

1. Polymyxin B-immobilized fiber column hemoperfusion treatment for septic shock, 2011 Shanghai and Beijing Anti-infections Disease Summit, March 3-4,2011
2. May H, Turafu M, Mitaka C. Beneficial effects of poly(adenosine diphoshate-ribose) polymerase inhibitor on rat septic acute lung injury model, 24th Annual congress of European Society of Intensive Care Medicine, Berlin, Germany, October 5, 2011
3. Mitaka C. Procalcitonin and C-reactive protein in SIRS and sepsis, Tbilisi's Third International Symposium, Tbilisi, the Republic of Georgia, November 16, 2011
4. Mitaka C. Renal effects of atrial natriuretic peptide in patients with cardiovascular surgery. 3rd Annual International Congress of Cardiology (ICC-2011), Beijin, China, December 6, 2011
5. Kudo T, et al.Outcomes following endovascular abdominal aortic repair (EVAR) both within and outside of instructions for use. Shanghai-Tokyo Angio-Research Symposium 2011.Shanghai, China; Aug 27, 2011.
6. Yamauchi M, Nakazawa K, Kudou T, Haraguchi G, MitakaC. Multiple bilateral pulmonary bullae formation in a patient receiving chemotherapy with ARDS who received airway pressure release ventilation (APRV). Annual Meeting of American Society of Anesthesiologists. 2011.11 Chicago, USA
7. Miyawaki Y, Fujiwara N, Ryotokuji T, Ohta S, Okada T, Hoshino A, Swangsri J, Kawada K, Nakajima Y, Nishikage T, Nagai K, Kawano T. The availability of thoracic surgery with anterior phreno-mediastinal approach for radical esophagectomy. 19th European Association for Endoscopic Surgery, Torino, 2011.06.16
8. Miyawaki Y, Imoto I, Haruki S, Kozaki K, Kawachi H, Shimada Y, Kawano T, Inazawa J. Members of protocadherin superfamily is frequently silenced and work as potential tumor suppressors in esophageal squamous cell carcinoma(ESCC). 70th Annual Meeting of the Japanese Cancer Association, Nagoya, 2011.10.04
9. Toyofuku T, Inoue Y, Kudo T, Sugano N, Jibiki M, Uchiyama H, Yonekura K, Koizumi S. Technique for long-term patency of a femorocrural bypass by vasodilation on the distal side. International Surgical Week 2011. Poster Exhibition. Yokohama, Japan. 2011.8.28-9.1

【Research grant】

1. Chieko Mitaka, Grants-in Aid for Scientific Research from the Ministry of Education, Science and Culture. Basic research (C) 22592010 Renal protective effects of atrial natriuretic peptide in acute kidney injury
2. Go Haraguchi, Grants-in Aid for Scientific Research from the Ministry of Education, Science and Culture. Young research (B) Role of adiponectine and treatment in septic shock

Liaison Psychiatry and Palliative Medicine

1. Staffs and Students (April, 2011)

Associate Professor	Eisuke MATSUSHIMA	
Junior Associate Professor	Miho MIYAJIMA	
Tokunin Assistant Professor		
Hospital Staff		
Secretary	Kyoko NAKAGAWA	
Graduate Student	Aya KOIZUMI,	Ai TAKEUCHI,
	Motonori KIMURA,	Toshiyuki MARUTANI,
	Hirofumi NAKAMURA,	Makiko KOIKE,
	Ako HANEKAWA,	Mare NISHIURA,
	Mariko KOBAYASHI,	Naoko TUJI,
	Tsuguo IWATANI,	Yuhko KOHNO,
	Nao NAKAYAMA,	Satsuki WATANABE,
	Aya YAMASHITA,	Kanako ICHIKURA,
	Rie OMOYA,	Takamasa NODA,
	Toshimi TAKANO,	Noriko ISHIZUKA,
	Saho WADA,	Noriko YOSHIDA,
	Toshi KURIYAMA,	Shino UMEZAWA,
	Hiroshi KOBO,	Yoko SUZUKI,
	Ayasa MATSUDA.	
Research Student	Okihiko AIHARA,	Ryuho IBARAKI,
	Natsumi NAKAMURA.	

2. Purpose of Education

The purpose of the section is to help understanding characteristics of psychosocial distress in patients with physical and mental disorders from a comprehensive viewpoint. Objects are mainly physical patients accompanied with pain, anxiety, depressive mood and so on. Students study these patients' symptoms, how to diagnose, practice of treatment and methods of preventive measures.

3. Research Subjects

1) Assessment of mental state in cancer and other physical patients using written questionnaire
2) Research on quality of life (QOL) in cancer patients and their families
3) Investigation cognitive function of patients with organic disorders (SLE, diabetics, and so on) undergoing a battery of psychometry tests and neuroimaging examinations
4) Explanation for the relationship between physical symptoms and mental states in patients with psychosomatic diseases including chronic pain and irritable bowel syndrome (IBS)
5) Examination for physiological phenomenon of psychiatric patients using eye mark recorder, electroencephalogram (EEG) and functional MRI (fMRI)

4. Clinical Services

Psychosomatic clinic provides consultation-liaison psychiatry services at the request of the treating medical or surgical staffs. Patients accompanied with insomnia, anxiety, depressive mood and delirium are treated with psychotherapy and prescription medicines.

5. Publications

Original Article

1. Sasai T, Inoue Y, Matsuo A, Matsuura M, Matsushima E: Changes in respiratory disorder parameters during the night in OSA. Respirol 16: 116-123, 2011.
2. Marutani T, Yahata N, Ikeda Y, Ito T, Yamamoto M, Matsuura M, Matsushima E, Okubo Y, Suzuki H, Matsuda T. Functional magnetic resonance imaging study on the effects of acute single administration of paroxetine on motivation-related brain activity. Pstchiat ClinNeurosci 65(2): 191-198, 2011.

3. Tsuji N, Kakee N, Ishida Y, Asami K, Tabuchi K, Nakadate H, Iwai T, Maeda M, Okamura J, Kazama T, Terao Y, Ohyama W, Yuza Y, Kaneko T, Manabe A, Kobayashi K, Kamibeppu K, Matsushima E. Validation of the Japanese version of the Pediatric Quality of Life Inventory (PedsQL)Cancer Module. Health and Quality of Life Outcomes 9: 22, 2011.
4. Wada K, Yoshikawa T, Goto T, Hirai A, Matsushima E, Nakashima Y, Akaho R, Kido M, Hosaka T. National survey of the association of suicide attempts with unreasonable claims and troubles by patients among physicians working at hospitals in Japan. Int J Behav Med
5. Hisamura K, Matsushima E, Nagai H, Mikami A. Comparison of Patient and Family Assessments of Quality of Life of Terminally Ill Cancer Patients in Japan. Psycho-Oncol 20(9): 953-960, 2011.
6. Hara K, Miyajima M, Maehara T, Hara M, Iino H, Matsuda A, Watanabe S, Ohta K, , Matsushima E, Matsuura M. Mismatch negativity for speech sounds in temporal lobe epilepsy. Epilepsy Behav, in press.
7. Tsuji N, Kakee N, Ishida Y, et al. Validation of the Japanese version of the Pediatric Quality of Life Inventory (PedsQL) Cancer Module. Health and Quality of Life Outcomes. 9: 22,2011.

Pharmacokinetics and Pharmacodynamics

1. Staffs and Students (April, 2011)

Professor	Masato YASUHARA	
Associate Professor	Masashi NAGATA	
Graduate Student	Ryosuke ISOZAKI,	Seiji KARAKAWA

2. Purpose of Education

Department of Hospital Pharmacy, University Hospital of Medicine, is in charge of the education of pharmacokinetics and pharmacodynamics for the establishment of safe and effective drug therapy. In the graduate course, the lecture on the recent progress of the pharmacokinetic analysis and drug transport will be given. Students will have the practice of pharmacokinetic analysis and animal experiments.

3. Research Subjects

1) Investigation on the membrane transport of drugs
2) Kinetics of drug action in disease states
3) Therapeutic drug monitoring and clinical pharmacokinetics
4) Development of new drug delivery systems

4. Clinical Services

Department of Hospital Pharmacy provides all services about the pharmacotherapy, including dispensing, formulation, preparation of injections and infusion solutions, drug information, and therapeutic drug monitoring.

5. Publications

Original Article

1. Y. Takahashi, Y. Ishiwata, Y. Kojima and M. Yasuhara: Pharmacodynamics of cibenzoline-induced hypoglycemia in rats. Drug Metab. Pharmacokin., 36, 242-247 (2011).
2. M. Nagata, Y. Hidaka, K. Hatakeyama, Y. Kawano, T. Iwakiri, M. Okumura, K. Arimori: Hepatic fibrosis does not affect the pharmacokinetics of 5-fluorouracil in rats, Biopharm. Drug Dispos., 32, 126-130 (2011).Ishiwata Y, and Yasuhara M: Gatifloxacin-induced histamine release and hyperglycemia in rats. Eur. J. Pharmacol., 645, 192-197 (2010).

Medical Education Research and Development

1. Staffs and Students (April 2011)

Professor	Yujiro TANAKA	
Junior Associate Professor	Makoto TAKAHASHI,	Shinya OOKA,
	Yuki SUMI	
Project Junior Associate Professor	Toru SUGIYAMA	
Attending Staff	Yuko OSAJIMA	

Department of General Medicine was established in 2000, when Prof. Yujiro Tanaka assumed the role of chairman of the department. Since then, our aim has been to coordinate and support a wide range of new innovations for the department of medicine and its affiliated hospitals. Accordingly, we launched the following projects to carry out our mission; 1) Designing a new postgraduate clinical training program for TMDU affiliated hospitals, 2) Forming a patient support system including social casework, 3) Establishing the Center for Cell Therapy, and 4) Reforming undergraduate medical education.

In response to the expansion of our activities, we have had some reforms in our organizations. 1) We founded the Center for Postgraduate Medical Education in 2002. (Director: Prof. Tanaka.) 2) In 2002, we also established the Center for Health and Welfare. And two years later in 2004, it was developed into an independent center as the Department of Medicine when Dr. Masayoshi Shichiri was appointed as the Director. 3) The Center for Cell Therapy, which was first established as a part of the Blood Transfusion Department in March, 2001, became an independent organization in 2003. Then Dr. Tomohiro Morio became the director. 4) Prof. Tanaka became a member of the Board of Education and worked at the committee for curriculum renovations in the Department of Medicine. Then he became the chair of the Education Committee in 2004.

In addition to the curriculum reforms, the Department of General Medicine has been in charge of early clinical training, PBL implementation, supervising patient-doctor communication education, OSCE (objective structured clinical examination) preparation, and BSL (bedside learning). We have also promoted educational alliances with Harvard University since 2002 and with Imperial College, London since 2003.

As mentioned above, a couple of years after their launch, the Center for Health and Welfare and the Center for Cell Therapy became independent from the Department of General Medicine. Meanwhile, new working groups were formed within the department in 2004; the Working Group for Ward Management and the Safety Management Committee. The Department of General Medicine also devised an evaluation system for the residency training program (EPOC), which was later adopted as a national online evaluation system for postgraduate clinical training. We are working in close cooperation with Center for Interprofessional Education which we took in part of its establishment to materialize the interprofessional education introduced due to a revision of new curriculum in 2011.

2. Education

Undergraduate Education

As a division, which is responsible for the education of students and residents, our primary goal is to foster doctors who have both a 'patient-centered perspective as a specialist' and 'up-to-date knowledge as a generalist'. To achieve our goal, we are designing and offering a continuing medical educational (CME) program for clerkship students, emphasizing on educational systems spreading among multiple departments. Since we think it is crucial to foster medical prospective with a patient-centered perspective, we introduced an early exposure course (MIC: Medical Introductory Course) for the 1st and 2nd year medical students, as well as some medicine oriented English courses, including a special course titled "Language and Philosophy of Western Medicine" regarding some of the needs of this globalized era of medicine. In addition, we are managing a training course for simulated patients who can contribute to medical education cooperating with the International Center for Medical Education at the University of Tokyo. To improve the quality of clinical training, we are currently developing an evaluation system for tutors and trainers.

Postgraduate Education (Clinical Training)

Our department has offered the postgraduate clinical training since 2004 according to the new national residency system in Japan. We have also played an important role in developing the online evaluation system for postgraduate clinical training (EPOC), which is used in 60% of education hospitals in Japan. Results of the questionnaire in Match, 2009

showed the highest satisfaction rate among all national universities.

Postgraduate Education (Master's degree courses)

We have been offering master's degree courses in Medical Administration since this MMA program started in 2004, and were in charge of two courses this year, "Human resources management" and "Leadership in the medical care."

3. Research

Research on continuing education in clinical EBM (Tanaka)

Although the theory of EBM (Evidence-Based Medicine) has become common knowledge, there are many practical problems yet to be solved. Research on teaching and assessment techniques for under-and post-graduate clinical training are ongoing.

Medical risk education using the HAZOP method-through analyzing basic surgical procedure (Takahashi)

Structured risk analysis methods, HAZOP, are applied for medical risk management. We have also developed computer software for risk analysis with HAZOP. As a method of medical education for medical risk as well, HAZOP is a comprehensive method that is effective in reducing medical errors.

Review of clinical training in postgraduate clinical education (Tanaka, Takahashi)

The performance evaluation system using EPOC, which is used in 60% of educational hospitals in Japan, was primarily developed at Tokyo Medical and Dental University. We applied this system to a clerkship program to compare its educational effect with that of a residency program.

General research on medical education (Tanaka, Takahashi, Ooka, Sugiyama, Sumi)

We are developing a comprehensive research project regarding postgraduate medical education, primary care in rural regions, development of clinical competence, and a new PBL system.

4. Clinical Practice

Second Opinion (Takahashi, Ooka)

Our hospital is open to the public who ask for second opinions about their recommended treatments so that we can continue to contribute to the provision of safe and high-quality advanced medical technology. Over 300 consultation cases have been performed for patients coming from other hospitals nationwide. The purpose of this section is to assist the patients to exercise their right of self-determination and to be informed of new treatments and diagnostic tests. To provide a qualified second opinion, we have organized the network of specialists in TMDU.

Patient Safety (Ooka)

Dr. Ooka is the General Risk Manager of our university hospital, and our department regularly organizes seminars and training courses. In collaboration with other departments (e.g., Skills Laboratory Center, Infectious Control Committee, etc.), we are working for greater safety and quality of healthcare.

Acute Critical Care and Disaster Medicine

1. Staffs and Students (April, 2011)

Professor	Yasuhiro OTOMO	
Junior Associate Professor	Eiji ISOTANI,	Masahito KAJI,
	Junichi AIBOSHI	
Assistant Professor	Tomohisa SHOUKO,	Naoki TOSAKA,
	Atsushi SHIRAISHI,	Kiyoshi MURATA,
	Syusuke MORI,	Toshiki SERA
Hospital Stuff	Kazuhide YOSHIKAWA,	Minoru UEKI
	Kenichi HONDO,	Mitsuaki KOJIMA
Graduate Student	Koji MORISHITA,	Saori MIKAMI,
	Hiroto USHIZAWA	
Resident	Nao URUSHIBATA,	Satoshi SEKI,
	Kousuke SEKIYA,	Noriaki MORIYAMA

2. Purpose of Education

We, the department of acute critical care and disaster medicine, investigate following wide range of fields, such as the search for mechanisms of biological response to severe stresses, the development of strategy for multiple organ dysfunction from the view of intensive care medicine, basic and clinical research about trauma, trauma preventive medicine and disaster medicine. Our targets of research are practical and cutting edge to work not only as a medical scientist but as a researcher for government projects.

3. Research Subjects

Basic research of the mechanism of multiple organ dysfunction following hemorrhagic/septic shock
Development of strategy for multiple organ dysfunction
Basic and clinical research of multiple trauma
Trauma epidemiology and trauma preventive medicine
Disaster medicine
Clinical research of cerebrovascular disease on acute phase

4. Clinical Services

Our emergency center was authorized to hold the 21st level I center in Tokyo on April 1, 2007. We give treatments over 8000 patients annual who are under critical condition like multiple organ dysfunction, severe sepsis and septic shock, life-threatening trauma as well. We also contribute to medical services, rushing to the emergency scene by a Doctor-Car/Helicopter at times.

Publications

Original Article

1. Morishita K, Otomo Y, Aiboshi J, Kaji M: Encapsulating Peritoneal Sclerosis Complicated by an Intra-abdominal Abscess. Am J Kidney Dis. 58 (2):325-328, 2011.
2. Yanagawa Y, Miyawaki H, Shimada J, Morino K, Satoh E, Otomo Y, Ichihara M, Kondo H: Medical Evacuation of Patients to other Hospitals due to the Fukushima I Nuclear Accidents. Prehosp Disaster Med. 2011.
3. Shoko T, Otomo Y, Shiraishi A: The next day of the disaster – a report from a Japanese disaster medical assistance team. BMJ blogs.2011.

Neuroanatomy and Cellular Neurobiology

1. Staffs and Students (April, 2011)

Professor	Sumio TERADA	
Assistant Professor	Masahiko KAWAGISHI,	Mitsunobu HOSHINO
Technician	Mie TAGUCHI	
Graduate Student	Toshiya TERAISHI,	Yu NAGASHIMA

2. Purpose of Education

Section 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, we offer introductory courses on both optical and electron microscopy (Lectures and Wet labs), with close relation to molecular and cellular neurobiology.

3. Research Subjects

1) Molecular mechanism of intracellular transport, quality control of transporting cargos, and their interrelation (Slow axonal transport and neurodegeneration)
2) Development of the real-time detection system of the biomolecular network in vivo and its application to cell biology
3) Molecular and cellular biological analysis of neuron-specific small G proteins
4) Development of new spectroscopic methods to visualize the localization of biomolecules without fluorescence labeling
5) Search for new cellular morphological regulatory factors on cytoskeletal dynamics
6) Functional image analysis on neuropsychiatric disorders

4. Publications

1. Nagashima Y, Suzuki T, Terada S, Tsuji S, Misawa K. *In vivo* molecular labeling of halogenated volatile anesthetics via intrinsic molecular vibrations using nonlinear Raman spectroscopy. J Chem Phys, 134, 024525 (2011); Published online, 13 January 2011.

Systems Neurophysiology

1. Staff and Students

Professor	Izumi Sugihara
Associate Professor	Yuriko Sugiuchi
Lecturer	Yoshiko Izawa
Assistant Professor	Mayu Takahashi
Graduate Student (JSPS DC1)	Hirofumi Fujita

2. Education

We participate in "Cell Biology II (Function of Cells)" (lectures, 1st year), "Neuroscience" (systematic lectures, 2nd and 3rd years) and "Physiology Lab" (3rd year) courses for medical students as well as in courses for graduate students. We mainly teach neurophysiology parts in these courses. The goal of our education is for students to understand normal function of nerve cells and the nervous system and, on this ground, to understand pathological states of the nervous system in diseases. For this purpose, we give clinically-oriented lectures and laboratory courses linked with morphology and pharmacology. They cover transport and electric potential of the cell membrane (Cell Biology), excitation and synaptic transmission, sensory systems, motor systems, autonomic nervous systems, and higher brain function (Neuroscience), i.e. neurophysiology in general from the cellular through the organismic levels. To support for students to learn for themselves basic matters such as generation and propagation of excitation in nerve cells, we have developed a hand-made computer simulation program for a part of the laboratory course. We have had a "project semester" student (4th year in the medical school) and an exchange student from Imperial Collage London.

3. Research

Our main interest lies in clarifying the structures that underlies function of the central nervous system and then understanding their function. We are focused on the particular central nervous system that is involved in control of eye movements, which is important clinically, has been long studied in details and is located in the cerebrum, brainstem and cerebellum. The cerebellum is another site on which we are also focused. A defect in the cerebellum causes ataxia, a peculiar movement disorder. We approach with electrophysiological, morphological and cell-biological methods.

1) Cerebellar function

The neuronal circuitry that connects the cerebrum, pontine nuclei, cerebellar cortex (hemisphere), cerebellar nucleus (dentate nucl.), thalamus and cerebrum is important for initiation, execution and control of movements. Distinct regions in the cerebellum make specific connections with different areas of the brain stem and are involved in the control of various movements including eye movements. To understand cerebellar function, it is important to have exact idea about cerebellar divisions into such distinct regions as well as specific neuronal circuitry of the regions, and to reveal the principle based on which the cerebellum is organized into regions and functions by way of the input and output systems. Our systematic approach to this question includes electrophysiology, neuronal labeling with marker molecules and tracers, single-axonal reconstruction, three-dimensional mapping of neuronal projection patterns.

2) Neural mechanism of eye movement control

An animal fixates on interesting target by moving its eyes and head. This eye-head coordination system is very interesting as a model of motor control in the central nervous system of higher mammals. To understand the mechanism of the visuo-motor transformation in eye movement system, we analyze neural mechanisms of signal transformation from the superior colliculus (center for rapid gaze shifts) to the brainstem, the midbrain, and the spinal cord using electrophysiological and morphological methods. Furthermore, we analyze the mechanisms for the control of eye movements and visual fixation in the systems from the frontal and parietal cortices to the superior colliculus and the brainstem.

4. Publications

Original Articles

1. Quy, P.N., Fujita, H., Sakamoto, Y., Na, J., Sugihara, I. (2011) Projection patterns of single mossy fiber axons originating from the dorsal column nuclei mapped on the aldolase C compartments in the rat cerebellar cortex. *J Comp Neurol.* **519**: 874-899.

2. Izawa, Y., Suzuki, H., Shinoda, Y. (2011) Suppression of smooth pursuit eye movements induced by electrical stimulation of the monkey frontal eye field. *J. Neurophysiol.* **106**: 2675-2687.
3. Shinoda, Y., Sugiuchi, Y., Takahashi, M., Izawa, Y. (2011) Neural substrate for suppression of omnipause neurons at the onset of saccades. Ann NYAS. **1233**: 100-106.
4. Namba K, Sugihara I, Hashimoto M. (2011) Close correlation between the birthdate of Purkinje cells and the longitudinal compartmentalization of the mouse adult cerebellum. *J. Comp. Neurol.* **519**: 2594-2514.
5. Sugiuchi, Y., Takahashi, M., Izawa, Y., Shinoda, Y. (2011) Input-output organization of inhibitory burst neurons in the interstitial nucleus of Cajal. Ann NYAS. Suppl. **1233**: 133-151.
6. Takahashi, M., Sugiuchi, Y., Shinoda, Y. (2011) Commissural Inhibition between Bilateral Superior Colliculi for Saccades and Bilateral Vestibular Nuclei for Vestibulo-Ocular Reflex (VOR). Ann NYAS. Suppl. **1233**: 152-174.

Reviews

1. Sugihara, I. (2011) Compartmentalization of the deep cerebellar nuclei based on afferent projections and aldolase C expression. *Cerebellum* **10**:449-463.
2. Sugihara, I. (2011) Bright field neuronal preparation optimized for automatic computerized reconstruction, a case with cerebellar climbing fibers. *Neuroinformatics* **9**:113-118.
3. Brown, K.M., Barrionuevo, G., Canty, A.J., De Paola, V., Hirsch, J.A., Jefferis, G.S., Lu, J., Snippe, M., Sugihara, I., Ascoli, G.A. (2011) The DIADEM data sets: Representative light microscopy images of neuronal Morphology to advance automation of digital reconstructions. *Neuroinformatics* **9**:143-157.

Book Chapters

1. Sugihara, I., Fujita, H. (2010) A computer-aided light microscopy system for three-dimensional reconstruction of axonal projections. In: A. Mendez-Vilas and J. Diaz eds. Microscopy: Science, Technology, Applications and Education, Microscopy Book Series No. 4., Badajoz: Formatex. pp. 813-819. (forgot to list last year)

Department of Ophthalmology and Visual Science

1. Staff and students (April, 2011)

Professor;	Manabu Mochizuki	
Associate Professor;	Kyoko Ohno-Matsui	
Assistant Professor;	Sunao Sugita,	Yoshiharu Sugamoto
Hospital staff;	Akiko Tanaka,	Takeshi Yoshida,
	Hiroshi Takase,	Kouju Kamoi,
	Kawaguchi Tatsushi,	Miyanaga Masaru
Graduate student;	Manabu Ogawa,	Moriyama Muka,
	Murai Hideki,	Yuko Kawazoe,
	Ayano Imai	

2. Purpose of education

Ophthalmology and Visual Science deal with the eye. 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. 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.

3. Research subjects

1) Evaluation of the molecular mechanism of immunoregulartion in intraocular inflammation
2) Pathogenic mechanism of intraocular inflammatory diseases
3) Development of novel treatments of intraocular inflammation
4) Molecular diagnosis of virus-infected uveitis and intraocular lymphomas.
5) Evaluation of the change of the circulation as well as the glucose metabolism in the visual cortex using positron emission tomography (PET) in various ocular disorders
6) Mechanism of visual pathway in normal conditions as well as in the patients with amblyopia.
7) Development of a novel treatment for vitreoretinal disorders like retinal detachment, diabetic retinopathy, and macular holes.
8) Analysis of retinochoroidal complications in high myopia (choroidal neovascularization, myopic tractional retinopathy)
9) Evaluation of the molecular mechanism of choroidal angiogenesis using the cultured cells as well as experimental animals (collaboratory project with Department of Cellular Physiological Chemistry)
10) Gene analysis of highly myopic patients (collaborator project with Kyoto University)
11) Establishment of a novel therapy to prevent an axial elongation or the formation of posterior staphyloma
12) Development of new materials for contact lens, the development of a novel drug delivery system using contact lens
13) Effect of the visual background on binocular vision as well as the influence of strabismus on dynamic visual acuity.

4. Clinical serivices

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 uveitis clinic, retinal detachment clinic, diabetic retinopathy clinic, neuro-ophthalmology clinic, high myopia clinic, and medical retina clinic.

Approximately, 1,100 surgeries are performed per year (e.g., cataract surgery, vitreoretinal surgery, glaucoma surgery, strabismus surgery).

5. Publicationss

[Original Article]

1. Yamada Y, Sugita S, Tanaka H, Kamoi K, Takase H, Mochizuki M. Timing of recurrent uveitis in patients with Behçet's disease on infliximab therapy. *Br J Ophthalmol*, 2011;95:205-8.
2. Sugita S, Shimizu N, Watanabe K, Katayama M, Horie S, Ogawa M, Takase H, Sugamoto Y, Mochizuki M. Diagnosis

of bacterial endophthalmitis by broad-range quantitative polymerase chain reaction. *Br J Ophthalmol*, 2011;95:345-349.
3. Sugita S, Yamada Y, Mochizuki M. Relationship between serum infliximab levels and acute uveitis attacks in patients with Behçet's disease. *Br J Ophthalmol*, 2011;95:549-52.
4. Sugita S, Yamada Y, Kaneko S, Horie S, Mochizuki M. Induction of regulatory T cells by infliximab in Behçet's disease. *Invest Ophthalmol Vis Sci*, 2011;52:476-84.
5. Sugita S, Yamada Y, Horie S, Nakamura O, Ishidoh K, Yamamoto Y, Yamagami S, Mochizuki M. Induction of T regulatory cells by cytotoxic T-lymphocyte antigen-2 alpha on corneal endothelial cells. *Invest Ophthalmol Vis Sci*, 2011;52:2598-605.
6. Sugita S, Horie S, Yamada Y, Kawazoe Y, Takase H, Mochizuki M. Suppression of interleukin-17-producing T-helper 17 cells by retinal pigment epithelial cells. *Jpn J Ophthalmol*, 2011;55:565-575.
7. Sugita S, Ogawa M, Inoue S, Mochizuki M. Diagnosis of ocular toxoplasmosis by two polymerase chain reaction (PCR) examinations: qualitative multiplex PCR and quantitative real-time PCR. *Jpn J Ophthalmol*, 2011;55:495-501.
8. Sugita S, Kawazoe Y, Yamada Y, Imai A, Horie S, Yamagami S, Mochizuki M. Inhibitory effect of corneal endothelial cells on IL-17–producing Th17 cells. *Br J Ophthalmol*, 2011;96:293-299.
9. Ohno-Matsui K, Akiba M, Moriyama M, Ishibashi T, Tokoro T, Spaide RF. Imaging Retrobulbar Subarachnoid Space around Optic Nerve by Swept Source Optical Coherence Tomography in Eyes with Pathologic Myopia. *Invest Ophthalmol Vis Sci*, 2011;52:9644-9650.
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13. Nagaoka N, Shimada N, Hayashi W, Hayashi K, Moriyama M, Yoshida T, Tokoro T, Ohno-Matsui K. Characteristics of periconus choroidal neovascularization in pathological myopia. *Am J Ophthalmol*, 2011; 152: 420-427.
14. Ohno-Matsui K, Shimada N, Yasuzumi Y, Hayashi K, Yoshida T, Kojima A, Moriyama M, Tokoro T. Long-term development of significant visual field defects in highly myopic eyes. *Am J Ophthalmol*, 2011; 152: 256-265.
15. Shimada N, Hayashi K, Yoshida T, Tokoro T, Ohno-Matsui K. Development of Macular Detachment after Successful Intravitreal Bevacizumab for Myopic Choroidal Neovascularization. *Jpn J Ophthalmol*, 2011; 55: 378-382.
16. Tanaka Y, Shimada Y, Moriyama M, Hayashi K, Yoshida T, Tokoro T, Ohno-Matsui K. Natural history of lamellar macular holes in highly myopic eyes. *Am J Ophthalmol*, 2011; 152: 96-99.
17. Moriyama M, Ohno-Matsui K, Hayashi K, Shimada N, Yoshida T, Tokoro T, Morita I. Topographical analyses of shape of eyes with pathologic myopia by high-resolution three dimensional magnetic resonance imaging. *Ophthalmology*, 2011; 118: 1626-1637.
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21. Nagaoka N, Ohno-Matsui K. Saka N, Tokoro T, Mochizuki M. Clinical characteristics of patients with congenital high myopia. *Jpn J Ophthalmol*, 2011; 55: 7-10.
22. Hayashi K, Ohno-Matsui K, Shimada N, Moriyama M, Hayashi W, Wang J, Yoshida T, Tokoro T, Mochizuki M. Long-term Results of Photodynamic Therapy for Choroidal Neovascularization in Japanese Patients with Pathological Myopia. *Am J Ophthalmol*, 2011; 151: 137-147.
23. Moriyama M, Ohno-Matsui K, Shimada N, Hayashi K, Kojima A, Yoshida T, Tokoro T, Mochizuki M. Correlation between visual prognosis and fundus autofluorescence and optical coherence tomographic findings in highly myopic eyes with submacular hemorrhage and without choroidal neovascularization. *RETINA*, 2011; 31: 74-80.
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severity of blepharospasm and thalamic glucose metabolism. *Case Report Ophthalmol.* 2011; 2: 50-54.
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26. Emoto H, Suzuki Y, Kiyosawa M. Blepharospasm-A review and updates. Part1. Types and symptoms. *Neuro-ophthalmology Japan*. 2011; 28: 257-263.
27. Emoto H, Suzuki Y, Kiyosawa M. Blepharospasm-A review and updates. Part2. The therapies. *Neuro-ophthalmology Japan*. 2011; 28: 363-370.
28. Suzuki Y, Emoto H, Kiyosawa M. Blepharospasm-update on research. Alteration of central nervous system. *Neuro-ophthalmology Japan*. 2011; 28: 469-475.

[Review Article]

1. Ohno-Matsui K. Advances in Diagnosis and Treatment of Pathologic Myopia. *RETINA Today*, 2011; 5: 45-49.
2. Ohno-Matsui K. Parallel findings in age-related macular degeneration and Alzheimer's disease. *Progress in Retinal and Eye Research*, 2011; 30: 217-238.

[Presentation]

1. Ohno-Matsui K. Analysis of Ocular shape in pathologic myopia. Asia-ARVO 2011, 1.20.2011, Singapore
2. Ohno-Matsui K. Retinal imaging in pathologic myopia. In symposium "Making the best use of retinal imaging" Asia Pacific Academy of Ophthalmology Congress 2011, 2011.3.21, Sydney, Australia
3. Ohno-Matsui K. Anti-VEGF for myopic choroidal neovascularization. In symposium "Are all anti-VEGFs drugs the same?" Asia Pacific Academy of Ophthalmology Congress 2011, 2011.3.22, Sydney, Australia
4. Ohno-Matsui K. Amyloid beta enhances migration of endothelial progenitor cells by up-regulating CX3CR1 and stimulates development of choroidal neovascularization. In symposium "Advaces on molecular mechanisms in intraocular inflammation, neovascularization and neuroprotection". Asia Pacific Academy of Ophthalmology Congress 2011, 2011.3.24, Sydney, Australia
5. Kamoi K. Chinico-pathological features of spontaneous model of EAU. Regulatory T cell expansion offers a strategy for cell-based therapy. The University of Aberdeen Immunology seminar, Scotland, UK. 2011.3.31
6. Kamoi K, Reid DM, Yeoh J, Forrester JV. Regulatory T Cell Expansion in Eye Draining Lymph Nodes Plays a Role in Suppressing Inflammation in Spontaneous EAU and Offers a Strategy for Cell-Based Therapy. The Association for Research in Vision and Ophthalmology 2011 Annual Meeting, Florida, USA. 2011. 5.2
7. Wang J, Ohno-Matsui K, Yoshida T, Shimada N, Mochizuki M, Morita I. Amyloid β enhances migration of endothelial progenitor cells via upregulation of CX3CR1. Association for Research in Vision and Ophthalmology 2011 Annual Meeting, Florida, USA. 2011. 5.3
8. Sugita S. (Tokyo Medical and Dental University) Application of research tools in clinical disease: Comprehensive PCR system for the diagnosis of ocular diseases ARVO/JOS Symposium The 115th Annual Meeting of the Japanese Ophthalmological Society Tokyo 5.15, 2011.
9. Ohno-Matsui K. Amyloid β enhances the migration of endothelial progenitor cells via CX3CR1. 5th International Symposium on Age-Related Macular Degeneration. 2011.9.9. Baden Baden, Germany.
10. Mochizuki M. Molecular diagnosis in intraocular inflammation. (Moderator). International Ocular Inflammation Society 2011, Goa(India), 2011.11.13.
11. Mochizuki M. Ocular sarsoidosis: Diagnostic criteria, differential diagnosis, management. (Organizer). International Ocular Inflammation Society 2011, Goa(India), 2011.11.14.
12. Mochizuki M. Why laser flare photometry is unavoidable in the management of inflammatory intraocular disease. (Chairman). International Ocular Inflammation Society 2011, Goa(India), 2011.11.14.
13. Mochizuki M. Translational research. (Chair person). International Ocular Inflammation Society 2011, Goa(India), 2011.11.14.
14. Sugita S. (Tokyo Medical and Dental University) Symposium : "Translational Research in Ocular Inflammation: Comprehensive PCR system for the diagnosis of ocular diseases" The 11th International Ocular Inflammation Society Congress and International Assembly of Ocular Inflammation Societies (Nov 13-16, 2011, Goa, India)
15. Mochizuki M. The 7th international workshop of Vogt-Koyanagi-Harada disease and sympathetic ophthalmia. Session #2 Management of VKH. (Chair). International Ocular Inflammation Society 2011, Goa(India), 2011.11.15.
16. Sugita S, Ogawa M. (Tokyo Medical and Dental University) Symposium: "Molecular Diagnosis in Intraocular Inflammation: Bacterial Infection" The 11th International Ocular Inflammation Society Congress and International

Assembly of Ocular Inflammation Societies 11.14, 2011, Goa, India)

17. Mochizuki M. Introduction. Ocular Sarcoidosis: Diagnostic Criteria, Differential Diagnosis, Management. International Ocular Inflammation Society 2011, Goa(India), 2011.11.14.
18. Mochizuki M. Introduction. Why laser flare photometry is unavoidable in the management of inflammatory intraocular disease. International Ocular Inflammation Society 2011, Goa(India), 2011.11.14.
19. Mochizuki M. Classification and diagnostic criteria for ocular sarcoidosis. International Ocular Inflammation Society 2011, Goa(India), 2011.11.15.
20. Mochizuki M. HTLV-1 and intraocular inflammation. International Ocular Inflammation Society 2011, Goa(India), 2011.11.15.
21. Kawazoe Y, Sugita, Yamada Y, Mochizuki M. A Case of Psoriasis Triggered by Infliximab in Uveitis Patient with Behçet's Disease. The 11th International Ocular Inflammation Society Congress and International Assembly of Ocular Inflammation Societies 11.16, 2011, Goa, India)
22. Ohno-Matsui K. The potential role of amyloid β in the development of choroidal neovascularization in age-relaed macular degeneration. Syymposium "Fundamental mechanism underlying both physiological and pathological angiogenesis". The 19th Annual Meeting of the Japanese Vascular Biology and Medicine Organization and the 1st Asia-Pacific Vascular Biology Meeting. 2011.12.9, Tokyo

Oto-Rhino-Laryngology

1. Staffs and Students(April, 2011)

Professor	Ken KITAMURA	
Associate Professor	Atsunobu TSUNODA	
Assistant Professor	Hisashi TOKANO,	Yasuhiro SUZUKI,
	Akemi IWASAKI,	Masatoki TAKAHASHI
Hospital Staff	Taro SUGIMOTO,	Yoshihiro NOGUCHI,
	Takao TOKUMARU,	Yusuke KIYOKAWA,
	Yuichiro INABA,	Kota MIZUSHIMA
Research Student	Yoshimi TAMEKUCHI,	Katsura YAMAMOTO,
	Palida AIHAITI,	Ayako NISHIO,
	Keiji HONDA,	Naoto TAKAHASHI,
	Ryoichi YOSHIMOTO	

2. Purpose of Education

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. Research Subjects

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

4. Clinical Services

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.

5. Publications

Original Articles

1. Kitamura K, Nakamura Y, Noguchi Y, Takahashi M: Long term follow-up study of mastoid obliteration using bone pate in cholesteatoma. The Journal of International Advanced Otology 7(3), 42-43, 2011.
2. Noguchi Y, Ito T, Nishio A, Honda K, Kitamura K: Audiovestibular findings in a branchio-oto syndrome patient with a SIX1 mutation. ActaOtolaryngol 131(4): 413-418, 2011.

3. Sumi T, Watanabe I, Tsunoda A, Nishio A, Komatsuzaki A, Kitamura K. Longitudinal study of 29 patients with Meniere's disease with follow-up of 10 years or more (In commemoration of Professor Emeritus Isamu Watanabe). Acta Otolaryngol. 2011 Nov 6 [Epub].
4. Kawashima Y, Géléoc GS, Kurima K, Labay V, Lelli A, Asai Y, Makishima T, Wu DK, Della Santina CC, Holt JR, Griffith AJ. Mechanotransduction in mouse inner ear hair cells requires transmembrane channel-like genes. J Clin Invest. 121: 4796-4809, 2011.
5. Ohno K, Tsunoda A, Shirakura S, Takahashi N, Kishimoto S. The approaches and outcomes of skull base surgery for pediatric sarcoma after initial therapy. Auris Nasus Larynx. 38(2):208-214, 2011.
6. Takahashi N, Tsunoda A, Shirakura S, Kitamura K: Anatomical feature of the middle cranial fossa in fetal periods: possible etiology of superior canal dehiscence syndrome. Acta Otolaryngol. 2011 Dec 27 [Epub].
7. Hagino K, Tsunoda A, Tsunoda R, Kishimoto S. Measurement of the facial nerve caliber in facial palsy: implications for facial nerve decompression. Otol Neurotol. 32(4): 686-689, 2011.
8. Kishine N, Tsunoda A, Kishimoto S, Tomohisa S. Acute abdomen in a patient with cancer pain on oxycodone. Case Reports in Medicine. Article ID 858672, 2011.
9. Fujioka M, Tokano H, Shiina-Fujioka K, Okano H, Edge AS: Generating mouse models of degenerative diseases using Cre/lox-mediated in vivo mosaic cell ablation. J Clin Invest 121: 2462-2469, 2011.
10. Kurima K, Hertzano R, Gavrilova O, Monahan K, Shpargel KB, Nadaraja G, Kawashima Y, Lee KY, Ito T, Higashi Y, Eisenman DJ, Strome SE, Griffith AJ. A noncoding point mutation of Zeb1 causes multiple developmental malformations and obesity in Twirler mice. PLoS Genet. 7: e1002307, 2011.
11. Yamada M, Tsunoda A, Hagino K, Aoyagi M, Kawano Y, Yano T, Tanaka K, Kishimoto S. Surgical management of large juvenile nasopharyngeal angiofibroma invading the infratemporal fossa with intracranial extradural parasellar involvement in an 8-year-old boy. Auris Nasus Larynx. 2011 Aug 30. [Epub]

Conference Presentations

1. Kitamura K, Nakamura Y, Noguchi Y, Takahashi M: Long term follow-up study of mastoid obliteration using bone pate in cholesteatoma. 28th Politzer Society Meeting. Athens Greece, September 2011.
2. Tsunoda A, Kitamura K, Takahashi N, Akita K, Yamaguchi K: The certain etiology of the superior canal dehiscence syndrome: does human evolution cause vertigo? Joint Meeting of European association of Clinical Anatomy and British Association of Clinical Anatomists. Poster, Padova Italy, June 2011.
3. Sugimoto T, Kishimoto S, Ariizumi Y, Tokumaru T, Kawada K, Kawano T: Detection and endoscopic treatment of early hypopharyngeal carcinoma. 12th Asia-Oceania Otolaryngology Congress. Auckland New Zealand, March 2011.
4. Sugimoto T, Kishimoto S, Ariizumi Y, Tokumaru T, Nomura F, Kiyokawa Y: Partial hypopharyngectomy using curved distending laryngoscope. 1st Congress of the Confederation of European Otolaryngology and Head and Neck Surgery. Barcelona Spain, July 2011.
5. Sugimoto T, Kishimoto S: Skull base surgery for malignant tumors arising from the nasal cavity and paranasal sinuses: Treatment outcome in Tokyo Medical and Dental University Hospital. 14th International Rhinologic Society & 30th International Symposium on Infection and Allergy of the Nose. Tokyo Japan, September 2011.
6. Sugimoto T, Kishimoto S: Microscopic and endoscopic surgery for early stage hypopharyngeal cancer. 2nd Asian Society of Head and Neck Oncology (Symposium / Function Preservation in Pharyngeal Cancers). Goa India, October 2011.
7. Noguchi Y, Sawada M, Takahashi M, Tokano H, Kitamura K: Evaluation of BAHA efficacy by self-assessment questionnaires. The 8th Asia Pacific Symposium on Cochlear Implant and Related Sciences. Daegu Korea, October 2011.
8. Takahashi N, Tsunoda A, Kitamura K: Pathology of the superior canal dehiscence (SCD) from a point of human evolution. Collegium Oto-Rhino-LaryngologicumAmicitiae Sacrum. Bruges Belgium, September 2011.
9. Nishio A, Noguchi Y, Kitamura K: A *DFNA5* mutation in two Japanese families with autosomal dominant hereditary hearing loss. 11th Japan-Taiwan Conference on Otolaryngology-Head and Neck Surgery. Kobe, December 2011.
10. Inaba Y, Suzuki Y, Tsunoda A, Kitamura K: A case of left atypical Ramsay Hunt syndrome developing to left Wallenberg syndrome. The 11th Japan-Taiwan Conference on Otolaryngology-Head and Neck Surgery. Kobe, December 2011.

Molecular and Cognitive Neuroscience (Molecular Neuroscience)

1. Staffs and Students (April, 2011)

Professor	Kohichi Tanaka	
Associate Professor	Hidenori Aizawa	
Assistant Professor	Tomomi Aida	
Secretary	Akiko Kusunoki	
Graduate Student	Yuri Hirota,	Zulpiye Habibulla

2. Purpose of Education

The final goal of our research is to understand molecular, cellular, and neuronal ensemble mechanisms underlying higher order brain functions including learning and memory. For that purpose, we combine molecular genetics, physiological and behavioral methods. The laboratory also studies the mechanism that underlies neuronal cell death and regeneration

3. Research Subjects

1) Functions of glutamate transporters in the brain.
2) Role of the lateral habenula in the social avoidance behavior
3) Glia- and neuron-specific functions of TrkB signaling during retinal degeneration and regeneration

4. Publications

Original Article

1. Mookherjee, P., Green, P.S., Watson, G.S., Marques, M.A., Tanaka, K., Meeker, K.D., Meabon, J.S., Li, N., Zhu, P., Olson, V.G., Cook, D.G. GLT-1 loss accelerates cognitive deficits onset in an Alzheimer's disease animal model. *J Alzheimers Dis* 26. 447-455, 2011.
2. Komine, O., Nagaoka, M., Hiraoka, Y., Hoshino, M., Kawaguchi, Y., Pear, E.S., Tanaka, K. RBP-J promotes the maturation of neuronal progenitors. *Dev Biol* 354. 44-54, 2011.
3. Harada, C., Guo, X., Namekata, K., Kimura, A., Nakamura, K., Tanaka, K., Parada, L.F., Harada, T. Glia- and neuron-specific functions of TrkB signaling during retinal degeneration and regeneration. *Nature Communications* 2:189, 2011.
4. Aizawa, H., Amo, R., Okamoto, H. Phylogeny and ontogeny of the habenular structure. *Front Neurosci*. 5:138, 2011.

Biosystem Regulation (Biosystem Regulation)

1. Staffs and Students

Professor	Yuji MIYAHARA
Associate Professor	Akira MATSUMOTO
Assistant Professor	Tatsuro GODA
Assistant Professor	Yasuhiro MAEDA

2. Purpose of Education

(1) Charge: A part of the lecture of biomedical engineering for master's course, a part of the lecture of bio-intelligence science as a graduate education, and the research guidance of the master and the doctor's course are done.

(2) Scope: A lot of biochemical components in serum play an important role in the metabolic cycle, and the homeostasis of those concentrations appears as a result of dynamic equilibrium in the living body. When some change takes place in this metabolic pathway, concentration of biochemical component shifts from the reference value. The detection methodology of the biochemical components and control mechanism of their concentration are studied from the viewpoint of integration of the materials science and the device technology, with biological and medical science.

(3) Knowledge and the technology to be acquired: The processing methods for DNA, proteins, and cells, are acquired. The techniques for measuring the function of the biomolecules and the cells are actually experienced, and the operational theories and principles studied are confirmed. By participating in the on-going research in this laboratory, the meaning of the experiment, how to make the research plan, how to advance the research, and how to analyze the results are learnt.

3. Research Subjects

1. Study on chemical modification and nano-structure formation at the solid/liquid interface for efficient biomolecular recognition

   Interaction between materials surfaces and biomolecules, cell, and organisms plays an important role for designing many biosensors, biochips, and biomaterials. In order to realize effective biomolecular recognition on the surface of a substrate material, functional nano-interface is investigated through chemical modification and formation of nano-structures at the solid/liquid interface.

2. Study on signal transduction mechanism for biomolecular and cellular activities

   Electrostatic interaction between biomolecules and semiconductor materials and devices is investigated to elucidate mechanism for signal transduction from biomolecular recognition into electrical signals. In order to achieve compatibility between biomolecules and semiconductor materials, functional interface molecules are designed and synthesized at the bio/semiconductor interface for efficient signal transduction. Based on these studies on detection methodologies for biomolecules and cell functions, new types of bio-transistors are studied for medical and pharmaceutical applications.

3. Synthesis of biofunctional polymer and development of bio-regulation system

   Through the design of functional polymers that are able to imitate, recognize and feedback information to biology, develop novel materials and devices that assist in medicine and biology. These include alternative materials and devices to insufficiency of the body, nano-materials that realize new mode of pharmacokinetics in cells as well as live cell imaging technologies.

4. Fundamental study on Bioelectronics

   Interdisciplinary field between biotechnology and electronics is explored and investigated. Cell-based biotransistors employing signal processing inside cells are investigated for application to life science field. Information processing devices using both electrons and ions as information carriers are investigated for new types of information processing.

4.Publications

Original Articles

1. Tatsuro Goda and Yuji Miyahara, "Thermo-Responsive Molecular Switches for ATP using Hairpin DNA Aptamers", *Biosens. Bioelectron.*, 2011, 26, 3949-3952. DOI: 10.1016/j.bios.2011.02.041
2. Alessandra Bonanni, Martin Pumera and Yuji Miyahara, "Influence of Gold Nanoparticle Size (2-50 nm) upon its Electrochemical Behavior: An Electrochemical Impedance Spectroscopic and Voltammetric Study", *Phys. Chem. Chem. Phys.*, 2011, 13, 4980-4986. DOI: 10.1039/c0cp01209b

Books and Review articles

1. T. Goda, Y. Miyahara, DNA Biosensing using Field Effect Transistors, *Current Physical Chemistry*, 1, 276-291 (2011) DOI: 10.2174/1877947611101040276
2. A. Matsumoto, Y. Miyahara, Trend and perspective of biosensors (in Japanese), *Ouyoubutsuri*, 80, 205-210 (2011)
3. A. Matsumoto, Y. Miyahara, New trends in NanoBio-Sensing (in Japanese), *Drug Delivery System*, 26, 15-19 (2011)
4. T. Goda, Y. Miyahara, NanoBio FET (in Japanese), in E. Tamiya ed. *Advanced Interdisciplinary Biodevices Based on Nanotechnology*, CMC publishing Co., Chapter 4.4, 163-169 (2011)
5. A. Matsumoto, Y. Miyahara, K. Kataoka, Intelligent Surfaces for Field-Effect Transistor-Based Nanobiosensing, in *Intelligent Surfaces: Polymeric Coatings for Applications in Bio-Related and Life Sciences*, Wiley & Sons Inc, Chapter 4, 123-140 (2011)

Pharmacology and Neurobiology

1. Staffs and Students (April, 2011)

Professor	Tsutomu TANABE	
Assistant Professor	Hironao SAEGUSA,	Shuqin ZONG
Graduate Student		

2. Purpose of Education

2-1

Undergraduate course: Pharmacology course provides the principle of pharmacological basis of therapeutics. Several representative therapeutic drugs in each disease will be picked up and systematic lectures -from basic pharmacology to mechanism of action, drug metabolism, clinical application and side effects- will be provided. Students are projected to acquire self-learning skills during the course and expected to be ready for handling clinical cases by pharmacological means.

We consider education through the pharmacology lab work is important. Students are given opportunity to dissect out several tissues (heart, skeletal muscle, ileum and vas deferens) from living animals by themselves and test the effect of a number of drugs including specific agonist, antagonist and non-selective drugs. Lab work course is divided into two parts. In the first part, students were given several known drugs for testing the known effect on these tissues. In the second part, students are given two unknown drugs and requested to identify the name and concentration of each drug using the tissues they prepare by themselves.

2-2

Graduate course: During the first couple of months, students are requested to acquire basic techniques of biochemistry, molecular biology, pharmacology and electrophysiology that are routinely used in our laboratory. Then students will be given a small project to do using the techniques they have learned during the initial training. Students are also required to read relevant scientific papers and conduct seminar style lectures to other lab members monthly. After completion of the initial phase, students start their own project under the supervision of the faculties in the lab.

3. Research Subject

1. Molecular basis of calcium channelopathy
2. Molecular mechanism of neurodegenerative disease
3. Mechanism of modal shift of cell sensor: from touch perception to pain sensation
4. Molecular mechanism of neuropathic pain
5. Molecular mechanism of drug tolerance
6. Hormonal modulation of stem cell development

4. Publications

Meetings:

1. Takashi Kurihara, Eri Sakurai, Toshihide Asada, Atsuro Miyata and Tsutomu Tanabe: Activation of casein kinase 1 δ/ε in dorsal root ganglia and spinal cord contributes to behavioral hypersensitivity induced by peripheral inflammation in mice, The 84th annual meeting of the Japanese Pharmacological Society, Yokohama 3.22-24, 2011.
2. Eri Sakurai, Takashi Kurihara, Atsuro Miyata and Tsutomu Tanabe: Upregulation of casein kinase 1ε in dorsal root ganglia and spinal cord contributes to neuropathic pain induced by spinal nerve ligation in mice, The 84th annual meeting of the Japanese Pharmacological Society, Yokohama 3.22-24, 2011.
3. Takashi Kurihara, Eri Sakurai, Toshihide Asada, Atsuro Miyata and Tsutomu Tanabe: Activation of casein kinase 1 δ/ε contributes to the signal transduction mechanism of the inflammatory pain, The 64th Seinan branch meeting of the Japanese Pharmacological Society, Fukuoka 11.20, 2011.
4. Takashi Kurihara, Eri Sakurai, Toshihide Asada, Atsuro Miyata and Tsutomu Tanabe: Role of Casein kinase 1 on spinal pain transmission, The 39th Pharmacological Activity Symposium, Fukuoka 11.21-22, 2011.
5. Tsutomu Tanabe, Satoka Hashimoto, Hironao Saegusa, Li Li and Shuqin Zong: Involvement of miRNA in the pathogenesis of Spinocerebellar ataxia type 6 (SCA6), 8th IBRO World Congress of Neuroscience, Florence Italy 7.14-18, 2011.
6. Tsutomu Tanabe, Satoka Hashimoto and Hironao Saegusa: Down regulation of particular miRNAs is responsible for the cell death vulnerability of Spinocerebellar ataxia type 6 (SCA6), the 41st annual meeting of the Society for Neuroscience, Washington DC USA 11.12-16, 2011.

Neurology and Neurological Science

1. Staffs and Students (April, 2011)

Professor, Chairman	Hidehiro Mizusawa	
Professor	Takanori Yokota	
Junior Associate Professor	Kinya Ishikawa,	Nobuo Sanjo,
Assistant Professor	Hiroyuki Tomimitsu,	Satoru Ishibashi,
	Takuya Ohkubo	
Hospital Staff	Makoto Takahasi,	Saneyuki Mizutani,
	Kokoro Ozaki,	Masahiko Ichijo,
	Masaki Ohyagi,	Misako Furuki
Senior Resident	Keiko Ichinose,	Eri Iwasawa,
	Atsuo Aoyama	
Post-doctorial Fellow	Kazutaka Nishina,	Nozomu Sato
	Taro Ishiguro	
Graduate Students (Doctoral course)		
	Toshiki Unno,	Masato Ohbayashi,
	Yusuke Niimi,	Masaki Kobayashi,
	Takumi Hori,	Takaaki Hattori,
	Akira Machida,	Ayaka Yamanami,
	Kazuyuki Saito,	Yuji Hashimoto,
	Tomoko Nishina,	Kiyobumi Ota,
	Piao Wenying,	Temuqina

2. Education

Neurology is a medical specialty concerned with the diagnosis and treatment of disorders of the nervous system including the brain, spinal cord, peripheral nerves, autonomic nerves and skeletal muscles. Since the nervous system extends to the whole body and regulate all the organs, neurologists examine and understand many symptoms of the whole brain and body.

Department of Neurology and Neurological Science at Tokyo Medical and Dental University offers an unique "clinical neurological training for specialist" in a four-year residency program. This program is designed to provide the highest quality clinical training in the clinical practice of neurology, either in an academic or a practice career. To accomplish this, the program integrates extensive practical exposure to all aspects of current clinical neurology with a firm grounding in underlying scientific principles and methods of clinical investigations such as electrophysiology, neuromuscular pathology, neuroimaging, or neurogenetics and so on. The faculty and staff are committed to facilitate resident education and training.

After completion of their training for four years, senior residents are equipped with a lot of clinical experience as attending doctors or teaching assistants in the university hospital and affiliated hospitals. They are eligible for the board certification by the Japanese Society of Neurology.

3. Research Subjects

1) Gene identification and investigation of its pathomechanism for hereditary diseases such as spinocerebellar ataxias, especially for SCA6 and SCA31
2) Development of gene therapies using RNAi and other techniques
3) Basic and clinical researches for neurodegenerative diseases such as spinocerebellar ataxia, amyotrophic lateral sclerosis, and Alzheimer disease
4) Development of neuroregenerative therapy using stem cells for cerebrovascular and neurodegenerative disorders
5) Basic and clinical researches of neurological autoimmune diseases
6) Electrophysiological studies using electric and magnetic stimulation
7) Basic and clinical studies of neuromuscular diseases by studying biopsied peripheral nerves and muscles

4. Clinical Services

We see about 100 out-patients and 40 in-patients daily, and offer in and out-patient consultation services through the

weekday and on weekends. We diagnose and treat stroke patients, as well as patients with epilepsy, headache, multiple sclerosis, Parkinson's disease, spinocerebellar ataxia, and hundreds of other neurological issues, some of which are acute, others may be chronic. We also have an out-patient clinic specialized to patients with dementia corresponding to needs of the rapidly aging society. Our patients will be reliably evaluated and diagnosed with some skillful techniques, such as the electrophysiological, neuroradiological, and neuropsychological tests and pathological diagnosis of biopsied nerves and muscles.

5. Publications

Original Article

1. Ajioka I, Ichinose S, Nakajima K, Mizusawa H. Basement membrane-like matrix sponge for the three-dimensional proliferation culture of differentiated retinal horizontal interneurons. Biomaterials. 2011; 32: 5765-5772.
2. Akaza M, Kanouchi T, Inaba A, Numasawa Y, Irioka T, Mizusawa H, Yokota T. Motor nerve conduction study in cauda equina with high-voltage electrical stimulation in multifocal motor neuropathy and amyotrophic lateral sclerosis. Muscle Nerve. 2011; 43: 274-282.
3. Atarashi R, Satoh K, Sano K, Fuse T, Yamaguchi N, Ishibashi D, Matsubara T, Nakagaki T, Yamanaka H, Shirabe S, Yamada M, Mizusawa H, Kitamoto T, Klug G, McGlade A, Collins SJ, Nishida N. Ultrasensitive human prion detection in cerebrospinal fluid by real-time quaking-induced conversion. Nat Med. 2011; 17: 175-178.
4. Fujita K, Harada M, Sasaki M, Yuasa T, Sakai K, Hamaguchi T, Sanjo N, Shiga Y, Satoh K, Atarashi R, Shirabe S, Nagata K, Maeda T, Murayama S, Izumi Y, Kaji R,Yamada M, Mizusawa H. Multicentre, multiobserver study of diffusion-weighted and fluid-attenuated inversion recovery MRI for the diagnosis of sporadic Creutzfeldt–Jakob disease: a reliability and agreement study. BMJ Open. 2012; 2(1): e000649.
5. Hattori T, Sato R, Aoki S, Yuasa T, Mizusawa H. Different patterns of fornix damage in idiopathic normal pressure hydrocephalus and Alzheimer disease. Am J Neuroradiol. 2012; 33(2): 274-279.
6. Hattori T, Yuasa T, Aoki S, Sato R, Sawaura H, Mori T, Mizusawa H. Altered microstructure in corticospinal tract in idiopathic normal pressure hydrocephalus: comparison with Alzheimer disease and Parkinson disease with dementia. Am J Neuroradiol. 2011; 32: 1681-1687.
7. Irioka T, Miuzsawa H. Hemorrhagic bulla in Churg-Strauss syndrome. Intern Med 2011; 50(19): 2251-2252.
8. Irioka T, Mizusawa H. Ischemic stroke in a young adult with Turner syndrome. Neurol Sci. 2011; 32: 317-319.
9. Ishibashi K, Ishii K, Oda K, Mizusawa H, Ishiwata K. Binding of pramipexole to extrastriatal dopamine D2/D3 receptors in the human brain: a positron emission tomography study using 11C-FLB 457. PLoS One. 2011; 6: e17723.
10. Ishibashi T, Ishibashi S, Uchida T, Nakazawa K, Makita K. Reversible cerebral vasoconstriction syndrome with limb myoclonus following intravenous administration of methylergometrine. J Anesth. 2011; 25: 405-408.
11. Ishikawa K, Dürr A, Klopstock T, Müller S, De Toffol B, Vighetto A, Marelli C, Wichmann HE, Illig T, Niimi Y, Sato N, Amino T, Stevanin G, Brice A, Mizusawa H. Pentanucleotide repeats at the spinocerebellar ataxia type 31 (SCA31) locus in Caucasians. Neurology. 2011; 77: 1853-1855.
12. Ito Y, Sanjo N, Ishikawa K, Tao O, Yokota T, Mizusawa H. Brainstem congestion due to carotid-cavernous fistula via a shunt from the external carotid artery. J Neurol. 2011; 258: 2288-2290.
13. Kinoshita H, Ohkubo T, Yasuda M, Yakushiji F. Yokohama. Serotonin syndrome induced by dextromethorphan (Medicon) administrated at the conventional dose. Geriatr Gerontol Int. 2011; 11(1): 121-122.
14. Kobayashi Z, Tsuchiya K, Komachi H, Miki K, Yokota O, Arai T, Miake H, Ishizu H, Akiyama H, Mizusawa H. Fatal encephalitis in a case of hypereosinophilic syndrome: MRI and autopsy findings. Intern Med. 2011; 50: 1219-1225.
15. Kobayashi Z, Tsuchiya K, Kubodera T, Shibata N, Arai T, Miura H, Ishikawa C, Kondo H, Ishizu H, Akiyama H, Mizusawa H. FALS with Gly725Ser mutation in SOD1 gene: Report of a family including the first autopsy case. J Neurol Sci. 2011; 300; 9-13.
16. Kubodera T, Yamada H, Anzai M, Ohira S, Yokota S, Hirai Y, Mochizuki H, Shimada T, Mitani T, Mizusawa H, Yokota T. *In Vivo* Application of an RNAi Strategy for the Selective Suppression of a Mutant Allele. Hum Gene Ther. 2011; 22: 27-34.
17. Kuwabara S, Yokota T. Propagation: prion-like mechanisms can explain spreading of motor neuronal death in amyotrophic lateral sclerosis? J Neurol Neurosurg Psychiatry. 2011; 82: 1181-1182.
18. Kuwahara H, Nishina K, Yoshida K, Nishina T, Yamamoto M, Saito Y, Piao W, Yoshida M, Mizusawa H, Yokota T. Efficient In Vivo Delivery of siRNA Into Brain Capillary Endothelial Cells Along With Endogenous Lipoprotein. Mol Ther. 2011; 19: 2213-2221.
19. Mayra A, Tomimitsu H,Kubodera T,Kobayashi M,Wenying Piao, Sunaga F, Hirai Y, Shimada T, Mizusawa H,

Yokota T. Intraperitoneal AAAV9-shRNA inhibits target wxpression in neonatal skeletal and cardiac muscles. Biochem Biophys Res Comm. 2011; 405: 204-209.

20. Nagoshi K, Sadakane A, Nakamura Y, Yamada M, Mizusawa H. Duration of Prion Disease is Longer in Japan Than in Other Countries. J Epidemiol. 2011; 21: 255-262.
21. Nishida Y, Irioka T, Sekiguchi T, Mizusawa H. Pure sensory infarct in the territories of anterior cerebral artery. [Reply from theauthors.] Neurology. 2011; 76: 287.
22. Ozaki K, Irioka T, Ishida S, and Mizusawa H. Bilateral Facial Nerve Palsy Caused by a Metastatic Malignant Lymphoma. Intern Med. 2011; 50: 2247.
23. Sekiguchi T, Ishibashi S, Kubodera T, Fukabori J, Uezato A, Kanbayashi T, Takahashi T, Yokota T, Mizusawa H. Anhidrosis associated with hypothalamic lesions related to anti-aquaporin 4 autoantibody. J Neurol. 2011; 258: 2293-2295.
24. Soga K, Irioka T, Yano T, Mizusawa H. Intramedullary spinal cord metastasis with a longitudinally extensive spinal cord lesion. Intern Med 2011; 50: 795-796.
25. Toru S, Kobayashi T, Akaza M, Yokota T, Mizusawa H. Dropped head in polymyositis. Rheumatol Int. 2012; 32: 1105-1107.
26. Uchida A, Sasaguri H, Kimura N, Tajiri M, Ono F, Okubo T, Sakaue F, Kanai K, Hirai T, Sano T, Shibuya K, Kobayashi M, Ueno T, Yamamoto M, Kubodera T, Tomori M, Sasaki K, Enomoto M, Hirai Y, Yasutomi Y, Mochizuki H, Uchihara T, Kuwabara S, Mizusawa H, Yokota T. Non-human primate model of ALS with cytoplasmic mislocalizaion of TDP-43. Brain 2012; 135: 833-846
27. Uno Y, Piao W, Miyata K, Nishina K, Mizusawa H, Yokota T. High-density lipoprotein facilitates in vivo delivery of *α*-tocopherol-conjugated short-interfering RNA to the brain. Hum Gene Ther. 2011; 22: 711-719.
28. Yamanami-Irioka A, Uchihara T, Endo T, Irioka T, Watanabe M, Kitagawa M, Mizusawa H. Amnesia in frontotemporal dementia with amyotrophic lateral sclerosis, masquerading Alzheimer's disease. Case Rep Neurol. 2011; 3: 242-247.
29. Yamane J, Ishibashi S, Sakaguchi M, Kuroiwa T, Kanemura Y, Nakamura M, Miyoshi H, Sawamoto K, Toyama Y, Mizusawa H, Okano H. Transplantation of human neural stem/progenitor cells overexpressing galectin-1 improves functional recovery from focal brain ischemia in the mongolian gerbil. Mol Brain. 2011; 4: 35. [first 3 authors equally contributed]
30. Yoshikawa Y, Horiuchi M, Ishiguro N, Kadohira M, Kai S, Mizusawa H, Nagata C, Onodera T, Sata T, Tsutsui T, Yamada M, Yamamoto S. Alternative BSE risk assessment methodology of imported beef and beef offal to Japan. J Vet Med Sci. 2011[in press]

Psychiatry and Behavioral Sciences

1. Staff members and Students

Professor	Toru NISHIKAWA	
Associate Professor	Akeo KURUMAJI	
Junior Associate Professor	Naoki YAMAMOTO	
Assistant Professor	Takashi TAKEUCHI,	Hotsumi KYONO,
	Masaki NISHIDA(～2010.9),	Kenji NARUSHIMA,
	Mitsuhiro TAKEDA,	Daisuke JITOKU,
	Mizue HOBO(2011.9～),	Akihito UEZATO
Graduate Student	Kenji SASAKI,	Tomoko TANAKA,
	Sayuri ISHIWATA,	MasakazuUMINO,
	Kazuo TAKIGUCHI,	TakuyaYOSHIIKE,
	Junko KANIE,	Emiko HARAMO
Research Student	Megumi GOTO	

2. Education

In the first term (two years) of postgraduate training, residents will learn basic laboratory procedures and diagnostic techniques, psychotherapy and drug treatment, and laws and regulations related to clinical practice , and acquire other general knowledge, all being essential for biological, psychological, social, and ethical approaches to neuropsychiatric diseases. Following the two-year period of mandatory clinical training, basic professional training in psychiatry will be provided for 6～9 months mainly in the university. In the second term of training, they will acquire knowledge and clinical experience necessary for neuropsychiatrists , and undergo practical training at affiliated medical facilities to become qualified psychiatrists. Undergraduate education, which places emphasis on clinical clerkship training after a systematic series of lecture course and seminar-based classes, is designed to develop students' problem-solving skills, and increase their motivation to learn neuropsychiatry, with support from external facilities.

3. Research

Our laboratory is committed to comprehensive research on endogenous psychosis, neurosis, and epilepsy through biological, psychological, and social approaches. In collaboration with external research facilities, we are also involved in social psychiatry, child and adolescent psychiatry, and brain imaging studies:

1) Studies in neurochemistry

(i) Molecular genetic studies to clarify the causes and conditions of neuropsychiatric diseases:

Using animal models with psychotic symptom-causing agents, we are involved in a study to isolate new candidate gene clusters associated with the pathogenesis and pathophysiology of neuropsychiatric disorders from the viewpoint of developmental pharmacology. We are examining the effects of candidate gene clusters in patients with neuropsychiatric disorders.

(ii) Studies in pharmacobiochemistry to develop new therapeutic methods for neuropsychiatric disorders:

We are working to examine the pharmacological/biochemical effects of candidate substances to develop new drugs for neuropsychiatric disorders. Extensive research is being conducted to isolate agents associated with the metabolism of D-serine, an endogenous antipsychotic substance,and examine the effects of D-serine on neurotransmission in the brain.

2) Neurophysiological and psychophysiological studies

(i) A study of biological indicators in schizophrenia with eye cameras:

We are not only involved in studies of monozygotic twins, early-onset patients, and children at a high risk in Japan, but also in an international joint research project of the WHO as a center in charge of operations.

(ii) Studies of neurotransmitter receptor binding in neuropsychiatric disorders with PET:

We are working together with the National Institute of Radiological Sciences to investigate the binding activities of dopamine receptors in various brain areas of the patients with schizophrenia and mood disorders.

(iii) A study of sleep stages and behavior in neuropsychiatric diseases:

A study is being carried out to examine sleep stages and behavior using an originally developed automatic analysis

device (polysomnography) in patients with various psychiatric disorders.
(iv) A study on brain functioning in psychiatric disorders by using the near-infrared spectroscopy (NIRS): To obtain an insight into biological markers of psychiatric disorders, changes in regional brain functions during psychological tasks are examined by measuring the relative concentrations of oxyhemoglobin using NIRS in combination with MRI in the brain areas of the patients with schizophrenia and mood disorders.

3) Psychopathological studies

We are conducting psychological studies of neuropsychiatric diseases from the aspects of phenomenology, anthropology, and linguistics. while employing a psychotherapeutic approach. Other research activities include a review of basic psychiatric concepts and a basic study for the classification and diagnosis of psychiatric disorders, which are important recent issues. In addition to endogenous psychosis including schizophrenia and manic depressive disorder, we are also involved in psychoanalytic studies of neurosis and borderline personality disorder, which are attracting increasing attention, and psychotherapies for them, as well as pathological research on pathography and art therapy in terms of creativity.

4. Clinical practice

Approximately eighty new outpatients visit our department every month, about 30% of which are classified as having "mood disorders" (F3) by ICD-10, 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 in other departments. Patients with senile dementia, child and adolescent psychiatric disorders, substance dependence, and neurosis requiring intensive psychotherapy are often referred to related and advanced facilities for specialized treatment. Since this facility, the psychiatric department of a general hospital, is used for university education and training,most inpatients are classified as F2, followed by F4 and F3 (ICD-10). We also provide care and treatment for patients with sleep rhythm disorders and neurological disorders, including epilepsy and senile dementia. In addition to drug treatment, we have introduced and provided mECT (modified electroconvulsive therapy) for inpatients, and individual and group psychotherapy for the patients in our psychiatric ward and clinic and day care center in close collaboration with rehabilitation facilities in the community. The day care team consists of a doctor, two nurses, and a psycho-social-worker or a clinical psychologist. Day care (partial hospitalization) is the transitional element between inpatient and outpatient care and its indications have a wide range of psychiatric disorders as follows: schizophrenia, depression, bipolar disorder, adjustment disorder and personality disorders. Each member has the own aim and the team gives care with different types of framework. Our day care team regards the potentiality of group very important and the group process could contribute to therapeutic effect. With this kind of experience, patients could develop their ability to communicate with other people and readapt to social situations.

5. Publications (in English)

Original Articles

1. Kurumaji A, Umino M, Nishikawa T. Effects of novelty stress on hippocampal gene expression, corticosterone and motor activity in mice. Neuroscience Research 2011; 71: 161-167.
2. Sekiguchi T, Ishibashi S, Kubodera T, Fukabori J, Uezato A, Kanbayashi T *et al.* Anhidrosis associated with hypothalamic lesions related to anti-aquaporin 4 autoantibody. *J* Neurol 2011; 258(12): 2293-2295.
3. Jitoku D, Hattori E, Iwayawa Y, Yamada K, Toyota T, Kikuchi M, Maekawa M, Nishikawa T, Yoshika T. Association Study of Nogo-related Genes with Schizophrenia in a Japanese Case-control Sample. Am J Med Genet B Neuropsychiatr Genet 2011; 156: 581-592.
4. Tanaka T, Kai N, Kobayashi K, Takano Y , Hironaka N. Up-regulation of dopamine D1 receptor in the hippocampus after establishment of conditioned place preference by cocaine. Neuropharmacology 2011; 61: 842-848.
5. Kuriyama K, Honma M, Shimazaki M, Horie M, Yoshiike T, Koyama S, Kim Y. An N-methyl-D-aspartate receptor agonist facilitates sleep-independent synaptic plasticity associated with working memory capacity enhancement. Scientific Reports 1,Epub 2011; 1: 127.
6. Nishida M, Nariai T, Hiura M, Ishii K, Nishikawa T. Memory Deficits due to brain injury: unique PET findings and dream alterations. BMJ Case Reports, doi: 10. 1136/bcr. 09. 2011. 4845

Neurosurgery

1. Staffs and Students (October, 2011)

Professor:	Kikuo Ohno	
Associate Professor:	Masaru Aoyagi	
Assistant Professors:	Tadashi Nariai,	Taketoshi Maehara
Hospital staffs:	Yoji Tanaka,	Motoki Inaji,
	Takashi Sugawara,	Yoshihisa Kawano,
	Kaoru Tamura,	Sakyo Hirai,
	Yasuhiro Ueda,	Shihori Hayashi,
	Shoko Hara,	Kazuhide Shimizu.
Secretary:	Mariko Tasumi,	Mayako Tokunaga,
Graduate Students:	Keigo Shigeta,	Tomoaki Okada,
	Yoshiyuki Matsuoka,	Yoshihisa Kawano,
	Toshiya Momose,	Shin Hirota,
	Tomoyuki Kino,	Takumi Kudoh,
	Mullah Saad Habib-E-Rasul,	Takashi Shigematsu,
	Ritsu Nishimura	

2. Purpose of Education

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 central nervous system and spinal cord, which will directly benefit for the improvement of clinical results. Main educational purpose of neurosurgery in the graduate course is to provide students opportunity to acquire the proper technique as well as the broad knowledge, and to nurture the mind of exploration.

In the clinical practice, it is important to attach priority to the patients, considering their background. Also in surgery, it is important to preserve the normal brain functions by employing the cutting edge technique. In the research field, it is essential to introduce and develop the latest knowledge and technology by establishing the reciprocal relationship with the other laboratory institutions.

3. Research Subjects

Brain tumors

1. Analysis of the mechanism of tumor proliferation and infiltration, and its application to treatment
2. Analysis of both proliferative and inhibitory cancer genes in cerebral and spinal tumors
3. Studies of photodynamic therapy, irradiation therapy, agents of chemotherapy, immunotherapy, and inhibition of angiogenesis
4. Development of the multi-modal navigation system integrated with anatomical, hemodynamic, and functional information for brain tumor surgery and evaluate its efficacy.

Vascular diseases in the central nervous system and spinal cord

1. Analysis of pathogenesis of vasospasm after subarachnoid hemorrhage and its application to treatment
2. Studies of circulatory disturbance in ischemic and hemorrhagic diseases, and reversibility of the brain tissue
3. Investigations of pathology of Moyamoya disease and the effects of indirect surgical anastomosis on this entity
4. Solutions of problems in the development of endovascular surgery

Neurotrauma

1. Analysis of cell damage and its reversibility, dynamic simulation in cerebrospinal injury
2. Animal experiments concerning treatment of cerebrospinal injury

Functional neurosurgery

1. Pathological analysis and treatment of temporal lobe epilepsy
2. Analysis of intracellular signal transductions

Others

1. Studies of human cerebral circulation, metabolism, and functions using PET, MRI/S, and MEG
2. Studies of receptors in the central nervous system using PET
3. Experiments of brain diseases using animal model MRI and PET

4. Clinical services

Neurosurgery is a clinical department dealing with various diseases of central nervous system and spinal cord including tumors, vascular diseases, trauma, congenital malformation, functional disorders, and infection.

5. Publications

Original Articles

1. Aiyama H, Nakai K, Yamamoto T, Nariai T, Kumada H, Ishikawa E, Isobe T, Endo K, Takada T, Yoshida F, Shibata Y, Matsumura A : A clinical trial protocol for second line treatment of malignant brain tumors with BNCT at University of Tsukuba. Appl Radiat Isot 69(12):1819-1822, 2011
2. Inaji M, Sato K, Momose-Sato Y, Ohno K : Voltage-sensitive dye imaging analysis of functional development of the neonatal rat corticostriatal projection. Neuroimage 54(3): 1831-1839, 2011
3. Maehara T, Ohno K : Preoperative factors associated with antiepileptic drug withdrawal following surgery for intractable temporal lobe epilepsy. Neurol Med Chir (Tokyo) 51(5): 344-348, 2011
4. Miyajima M, Ohta K, Hara K, Iino H, Maehara T, Hara M, Matsuura M, Matsushima E : Abnormal mismatch negativity for pure-tone sounds in temporal lobe epilepsy. Epilepsy Res 94: 149-157, 2011
5. Nair G, Tanaka Y, Kim M, Olson DE, Thulé PM, Pardue MT, Duong TQ : MRI reveals differential regulation of retinal and choroidal blood volumes in rat retina. Neuroimage 54(2): 1063-1069, 2011
6. Ohno K, Maehara T : Neurosurgical emergency medical service after opening of a critical care center in Tokyo Medical and Dental University hospital. Neurosurg Emerg 16: 97-102, 2011
7. Tanaka Y, Nagaoka T, Nair G, Ohno K, Duong TQ : Arterial spin labeling and dynamic susceptibility contrast CBF MRI in postischemic hyperperfusion, hypercapnia, and after mannitol injection. J Cereb Blood Flow Metab 31(6): 1403-1411, 2011
8. Toyohara J, Nariai T, Sakata M, Oda K, Ishii K, Kawabe T, Irie T, Saga T, Kubota K, Ishiwata K : Whole-body distribution and brain tumor imaging with 11C-4DST: a pilot study. J Nucl Med 52(8): 1322-1328, 2011
9. Yamada M, Tsunoda A, Hagino K, Aoyagi M, Kawano Y, Yano T, Tanaka K, Kishimoto S : Surgical management of large juvenile nasopharyngeal angiofibroma invading the infratemporal fossa with intracranial extradural parasellar involvement in an 8-year-old boy. Auris Nasus Larynx. 2011 Aug 30. [Epub ahead of print]
10. Yamamoto T, Nakai K, Nariai T, Kumada H, Okumura T, Mizumoto M, Tsuboi K, Zaboronok A, Ishikawa E, Aiyama H, Endo K, Takada T, Yoshida F, Shibata Y, Matsumura A : The status of Tsukuba BNCT trial: BPA-based boron neutron capture therapy combined with X-ray irradiation. Appl Radiat Isot 69(12): 1817-1818, 2011
11. Yamane J, Ishibashi S, Sakaguchi M, Kuroiwa T, Kanemura Y, Nakamura M, Miyoshi H, Sawamoto K, Toyama Y, Mizusawa H, Okano H : Transplantation of human neural stem/progenitor cells overexpressing galectin-1 improves functional recovery from focal brain ischemia in the Mongolian gerbil. Mol Brain 4: 35, 2011

Endovascular Surgery

1. Staffs and Students (December 2011)

Professor	Shigeru Nemoto	
Associate Professor	Yoshikazu Yoshino	
Assistant Professor	Toshiki Tomori	
Assistant Professor	Kazunori Miki	
Clinical Fellow	Masato Inoue	
Secretary	Yoko Yanagida,	Hitomi Kuwahara

2. Purpose of Education

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 students opportunity to acquire the proper technique as well as the broad knowledge, and to nurture the mind of exploration.

3. Research Subjects

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 legions, 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.

4. Clinical services

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.

5. Publications

Original Articles

1. PRESAT Group: Determinants of poor outcome after aneurysmal subarachnoid hemorrahge when both clipping and coiling are available:Prospective registry of subarachnoid aneuryms treatment (PRESAT) in Japan. World Neurosurgery 76(5):437-445,2011
2. Kobayashi Z, Tsuchiya K, Komachi H, Miki K, Yokota O, Ishizu H, Haga C, Arai T, Akiyama H, Mizusawa H. Fatal encephalitis preferentially involving limbic system and medulla oblongata - an autopsy case of 34-year-old man with prominent eosinophilia. Intern Med 2011; 50: 1219-1225
3. Reversal of Postischemic Hypoperfusion by Tempol: Endothelial Signal Transduction Mechanism. Okada T, Teranishi K, Chen Y, Tomori T, Strasser A, Lenz FA, McCarron RM, Spatz M.Neurochem Res. 2011 Dec 3. [Epub ahead of print]
4. Clinical characteristics and surgical outcomes of patients with aneurysmal subarachnoid hemorrhage and acute subdural hematoma undergoing decompressive craniectomy. Otani N, Takasato Y, Masaoka H, Hayakawa T, Yoshino Y, Yatsushige H, Miyawaki H, Sumiyoshi K, Sugawara T, Chikashi A, Takeuchi S, Suzuki G.World Neurosurg. 2011 Jan;75(1):73-7.

Department of Neuropathology

1. Staff and Students (April 2011)

Professor:	Hitoshi Okazawa	
Associate Professor:	Kazuhiko Tagawa	
Adjunct Lecturer:	Nobuyuki Nukina,	Masaki Sone,
	Toshiki Uchihara	
Assistant Professor:	Takuya Tamura	
Project Assistant Professor:	Hikaru Ito	
Project Assistant Professor:	Tsutomu Oka	
Project Assistant Professor:	Toshikazu Sasabe	
Project Assistant Professor:	Chisato Yoshida	
Technicians:	Tayoko Tajima,	Chie Iinuma,
	Chiharu Mizoi	
Secretary:	Reiko Kikuchi	
Graduate Students:	Yoko Nakamura,	Min Xu,
	Chan Li,	Hong Zhang,
	Tomomi Imamura,	Keisuke Kurosu
Research Trainees:	Ying Mou	

2. Purpose of Education

As educational tasks, we have lecture and experiment classes of neuropathology for medical/dental graduate school program and medical/dental 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. We also guide practical research techniques on neuropathology especially nerurodegenerative diseases.

3. Research Subjects

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

1) Investigation of molecular pathologies of neurodegenerative diseases.
2) Studies on impairment of DNA-repair in polyglutamine diseases.
3) Development of new seed drugs for neurdegeneration.
4) Development of new seed drug for mental retardation.
5) Investigation of molecular functions of Oct-3/4

4. Clinical Services

DNA sequence based diagnosis of PQBP1-related mental retardation.

Publications

Original Articles

1. Oka, T., Tagawa, K., Ito, H. and Okazawa, H. (2011). Dynamic Changes of the Phosphoproteome in Postmortem Mouse Brains. ***PLoS One***. 6, e21405. doi:10.1371/journal.pone.0021405
2. Tamura, T., Sone, M., Iwatsubo, T., Tagawa, K., Wanker, E.E. and Okazawa, H. (2011). Ku70 alleviates neurodegeneration in Drosophila models of Huntington's disease. ***PLoS One***. 6, e27408. doi: 10.1371/journal.pone.0027408
3. Nakamura, Y., Tagawa, K., Oka, T., Sasabe, T., Ito, H., Shiwaku, H., La Spada, A.R. and Okazawa, H. (2012). Ataxin-7 associates with microtubules and stabilizes the cytoskeletal network. ***Hum Mol Genet***. 21 (5): 1099-1110. doi: 10.1093/hmg/ddr539
4. Ress, M., Gorba, C., Gorba, C., de Chiara, C., Bui, T.T.T., Garcia-Maya, M., Drake, A.F., Okazawa, H., Pastre, A., Svergun, D. and Chen, Y.W. (2012). The solution model of the intrinsically disordered polyglutamine tract binding protein-1 (PQBP-1). ***Biophys J***. in press

Immune Regulation

1. Staffs and Students

Professor	Hajime KARASUYAMA	
Associate Professor	Yoshiyuki MINEGISHI	
Assistant Professor	Yohei KAWANO	
Assistant Professor	Shingo SATO	
Technical Official	Toshiyuki KOJIMA	
JSPS Research Fellows	Kazushige OBATA,	Masako SAITO
Medical Fellow	Soichiro YOSHIKAWA	
Graduate Students	Hideto NISHIKADO,	Ryosuke ISHIKAWA,
	Hiromi OGAWA,	Hirofumi YAMAGISHI,
	Mayumi EGAWA,	Mio FUJIMAKI,
	Kayo HORIGUCHI,	Misako IKI,
	Hidemitsu TSUTSUI	
Graduate International Research Student		
	LI Li Hua	

2. Purpose of Education

Main objective of the immunology course for undergraduate students is to provide them the basic ideas how the immune system works and is regulated in various physiological and pathological settings including infections, cancer, autoimmune and allergic disorders, and organ transplantation. In the immunology course for graduate students, they study molecular mechanisms underlying the lymphocyte differentiation and the development of immune disorders such as allergy and primary immunodeficiency, by employing advanced technology in molecular biology, biochemistry, cellular biology and developmental engineering.

3. Research Subjects

1) Molecular basis of allergy: Basophil biology and pathology.
2) Genetic and molecular studies on the pathogenesis of primary immunodeficiencies.
3) Regulation of B cell development

4. Publications

Original Articles

1. Saito, M., Nagasawa, M., Takada, H., Hara, T., Tsuchiya, S., Agematsu, K., Yamada, M., Kawamura, N., Ariga, T., Tsuge, I., Nonoyama, S., Karasuyama, H., and Minegishi, Y.: Defective IL-10 signaling in hyper-IgE syndrome results in impaired generation of tolerogenic dendritic cells and induced regulatory T cells. ***J. Exp. Med***. 208: 235-249, 2011.
2. Jönsson, F., Mancardi, D.A., Kita, Y., Karasuyama, H., Iannascoli, B., Van Rooijen, N., Shimizu, T., Daëron, M, and Bruhns, P.: Mouse and human neutrophils induce anaphylaxis. ***J. Clin. Invest***. 121: 1484-1496, 2011.
3. Nishikado, H., Mukai, K., Kawano, Y., Minegishi, Y., and Karasuyama, H.: NK cell-depleting anti-asialo GM1 Ab exhibits a lethal off-target effect on basophils *in vivo*. ***J. Immunol***. 186: 5766-5771, 2011.
4. Ishikawa, Y., Kobayashi, K., Yamamoto, M., Nakata, K., Takagawa, T., Funada, Y., Kotani, Y., Karasuyama, H., Yoshida, M., and Nishimuar, Y.: Antigen-specific IgG ameliorates allergic airway inflammation via Fc γ receptor IIB on dendritic cells. ***Respir. Res***. 12: 42, 2011.
5. Porcherie, A., Mathieu, C., Peronet, R., Schneider, E., Claver, J., Commere, P-H., Kiefer-Biasizzo, H., Karasuyama, H., Milon, G., Dy, M., Kinet, J-P., Louis, J., Blank, U., and Mecheri, S.: Critical role of the neutrophil-associated high-affinity receptor for IgE in the pathogenesis of experimental cereberal malaria. ***J. Exp. Med***. 208: 2225-2236, 2011.
6. Yamagishi, H., Mochizuki, Y., Hamakubo, T., Obata, K., Ugajin, T., Sato, S., Kawano, Y., Minegishi, Y., and Karasuyama, H.: Basophil-derived mouse mast cell protease 11 induces microvascular leakage and tissue edema in a mast cell-independent manner. ***Biochem. Biophys. Res. Commun***. 415: 709-713, 2011.
7. Watarai A, Niiyama S, Morita M, Bando Y, Minegishi Y, Katsuoka K. Hyper IgE syndrome diagnosed in early infancy by gene analysis of STAT3 mutation. ***Eur J Dermatol***. 21: 254-255, 2011.

Review Articles

1. Karasuyama, H., Mukai, K., Obata, K., Tsujimura, Y., and Wada, T.: Nonredundant roles of basophils in immunity. ***Annu. Rev. Immunol***. 29: 45-69, 2011.
2. Karasuyama, H., Wada, T., Yoshikawa, S., and Obata, K.: Emerging roles of basophils in protective immunity against parasites. ***Trends Immunol***. 32: 125-130, 2011.
3. Karasuyama, H., Obata, K., Wada, T., Tsujimura, Y., and Mukai, K.: Newly appreciated roles for basophils in allergy and protective immunity. ***Allergy*** 66: 1133-1141, 2011.
4. Minegishi, Y., and Saito, M.: Molecular mechanisms of the immunological abnormalities in hyper-IgE syndrome. ***Ann. N. Y. Acad. Sci***. 1246: 34-40, 2011.

Molecular Virology

1. Staffs and Students (April 2011)

Professor	Shoji YAMAOKA	
Project Professor	Eiji IDO	
Assistant Professor	Hiroaki TAKEUCHI,	Yasunori SAITOH,
	Ryuta SAKUMA,	Shin UOTA
Laboratory Engineer	Yoshio INAGAKI	
Secretary	Kumiko THORPE-MATSUI	
Research Assitant	Reiko ONAI,	Kanako MOCHIDA
-Students-		
Ph.D. course	Yasunori HORI,	Miho OHSAKO,
	Eiko OZONO,	Sayaka SUKEGAWA
Master course	Hideki SAITO,	Saori SHIKAMA,
	Yusuke HARADA,	Yuki HASHIDA,
	Masumi FUKAZAWA,	Masato SANO,
	Ayaka KAKEYA,	Ayumi WAKUTSU

2. Purpose of Education

Microbiology covers several aspects of bacteriology, immunology and virology. Through the studies on various microbes it is expected to understand host-parasite relationship and mechanisms of pathogenicity. Unlike the past, microbiology has rapidly been drawn to the center of the biological stage.

Our laboratory mainly deals with viral oncogenesis and immunodeficiency in humans. Especially, several projects are carried out with the emphasis on investigations into the mechanisms of viral replication and pathogenesis induced by human retroviruses (HIV-1 and HTLV-I) and human herpes viruses. The purpose of many of the studies being undertaken is to identify critical events and molecules responsible for the efficient replication of these viruses, and in case of human retroviruses, those for transformation or destruction of normal lymphocytes. Virological, immunological and molecular approaches are being applied for this purpose.

3. Research Subjects

Following studies have been extensively carried out in out laboratory with various biological and molecular biological techniques:

- Pathogenesis of HIV and HTLV (mutation, virulence, apoptosis, polymorphism).
- Studies on signal transduction pathways targeted by viral proteins.
- Molecular cloning by genetic approaches of components essential for virus replication in mammalian cells.

4. Publications: Original articles

1. Kondo S, Wakisaka N, Muramatsu M, Zen Y, Endo K, Murono S, Sugimoto H, Yamaoka S, Pagano JS, Yoshizaki T. Epstein-Barr virus latent membrane protein 1 induces cancer stem/progenitor-like cells in nasopharyngeal epithelial cell lines. J Virol. 201185:11255-64, 2011.
2. Refaat A, Zhou Y, Suzuki S, Takasaki I, Koizumi K, Yamaoka S, Tabuchi Y, Saiki I, Sakurai H. Distinct Roles of Transforming Growth Factor-{beta}-activated Kinase 1 (TAK1)-c-Rel and Interferon Regulatory Factor 4 (IRF4) Pathways in Human T Cell Lymphotropic Virus 1-transformed T helper 17 Cells Producing Interleukin-9. J Biol Chem. 286:21092-9, 2011.
3. Zhang J, Yamada O, Kida S, Matsushita Y, Yamaoka S, Chagan-Yasutan H, Hattori T. Identification of CD44 as a downstream target of noncanonical NF-κB pathway activated by human T-cell leukemia virus type 1-encoded Tax protein. Virology. 413:244-52, 2011.
4. Sakuma R and Takeuchi H. Retroviral Host Cell Factors:APOBEC3G, TRIM5, and Cyclophilins. HIV and AIDS - Updates on Biology, Immunology, Epidemiology and Treatment Strategies ISBN 978-953-307-665-2:183-196. 2011.
5. Furuta RA, Miyazawa T, Sugiyama T, Kuratsune H, Ikeda Y, Sato E, Misawa N, Nakatomi Y, Sakuma R, Yasui K, Yamaguti K, Hirayama F. No association of xenotropic murine leukemia virus-related virus with prostate cancer or chronic fatigue syndrome in Japan. Retrovirology. 17:8-20. 2011.
6. Ohmine S, Sakuma R, Sakuma T, Thatava T, Takeuchi H, Ikeda Y. The antiviral spectra of TRIM5α orthologues

and human TRIM family proteins against lentiviral production. PLoS One. 14;6(1):e16121. 2011.
7. Ndembi N, Iwamoto S, Ngansop C, Lemey P, Abimiku A, Mbanya D, Kaptue L, Ido E: High frequency of HIV-1 dual infections in Cameroon, West Central Africa. J Acquir Immune Defic Syndr, 57: e25-e27, 2011.

Immunotherapeutics

1. Staffs and Students (April, 2011)

Professor	Mari KANNAGI	
Associate Professor	Takao MASUDA	
Assistant Professor	Atsuhiko HASEGAWA	
Assistant Professor	Amane SASADA	
Postdoctoral Position	Takaya HAYASHI,	Ayako TAKAMORI
Graduate Student	Shuichi KINPARA,	Yotaro TAMAI,
	Masashi MIYANO,	Na ZENG,
	Yoko SATO,	Chihiro YAMAGUCHI,
	Satomi ANDO,	Tatsuro TAKAHATA,
	Yuji MURAKAMI	
Research Student	Miyuki SATO	

2. Purpose of Education

Our research area is in between clinical and basic science, involving immunolgy, microbiology, and molecular biology. We participate in education for undergraduate medical students in basic immunology and a part of clinical immunology. For graduate students, we provide opportunity to research for mechanisms of infectious disease and development of immunological therapeutics.

Viral infection causes various diseases by inducing immunodeficiency, malignancy, autoimmunity, and inflammation. Human immunodeficiency virus (HIV) causes acquired immunodeficiency syndrome (AIDS), and Human T-cell leukemia virus type-I (HTLV-I) causes adult T-cell leukemia (ATL) and various chronic inflammatory autoimmune-like diseases. To understand mechanisms of these diseases, investigation on host immunity is indispensable. Immune responses are usually protective but sometimes harmful for the host, and are important determinants for disease manifestation. The goal of our research is elucidation of the role of host immunity in the diseases in order to develop effective immunotherapy. We also investigate intracellular mechanisms of viral replication to target direct molecules for therapy.

3. Research Subjects

1. Analysis of immunological risks for ATL development in HTLV-I-carriers.
2. Development of anti-tumor vaccine against ATL.
3. Immunological and molecular mechanism of HTLV-1-induced leukemogenesis.
4. Molecular mechanism of HIV replication especially related to HIV-1 integrase.
5. Experiments based on gene therapy to suppress HIV-1 replication.

4. Clinical Services

5. Publications

Original article

1. Takamori A, Hasegawa A, Utsunomiya A, Maeda Y, Yamano Y, Masuda M, Shimizu Y, Tamai Y, Sasada A, Zeng N, Choi I, Uike N, Okamura J, Watanabe T, Masuda T, Kannagi M. Functional impairment of Tax-specific but not cytomegalovirus-specific CD8+ T lymphocytes in a minor population of asymptomatic human T-cell leukemia virus type 1-carriers. Retrovirology. 8:100, Dec., 2011
2. I. Choi, R. Tanosaki, N. Uike, A. Utsunomiya, M. Tomonaga, M. Harada, T.Yamanaka, M. Kannagi, J. Okamura on behalf of the ATLL allo-HSCT StudyGroup. Long-term outcomes after hematopoietic SCT for adult T-cell leukemia/lymphoma: results of prospective studies. Bone MarrowTransplantation 46: 116-118, 2011.
3. Ahmed, N., T. Hayashi, A. Hasegawa, H. Furukawa, N. Okamura, T. Chida, T. Masuda, and M. Kannagi. Suppression of human immunodeficiency virus type 1 replication in macrophages by commensal bacteria preferentially stimulating Toll-l ike receptor 4. J Gen Virol 91:2804-13, 2010.
4. Hayashi, T., H. Nishitsuji, A. Takamori, A. Hasegawa, T. Masuda, and M. Kannagi. DNA-dependent activator of IFN-regulatory factors enhances the transcription of HIV-1 through NF-kappaB. Microbes Infect 12:937-47, 2010.
5. Saeng-aroon, S., Tsuchiya, N., Auwanit., W., Ayuthaya. P.I. N., Pathipvanich,P., Sawanpanyalert, P., Rojanawiwat, A., Kannagi, M., Ariyoshi, K., Sugiura, W. Drug-resistant mutation patterns in CRF01_AE cases that failed

d4T+3TC+nevirapine fixed-dosed, combination treatment: Follow-up study from the Lampang cohort. Antiviral Research, 87: 22-29, 2010.

Review Article

1. Kannagi M, Hasegawa A, Kinpara S, Shimizu Y, Takamori A, Utsunomiya A. Double control systems for human T-cell leukemia virus type 1 (HTLV-1) by innate and acquired immunity. Cancer Sci. 102(4):670-6. Apr., 2011.
2. Masuda, T. Non-Enzymatic Functions of Retroviral Integrase: The Next Target for Novel Anti-HIV Drug Development. Frontiers in microbiology. 2, 210, 2011.

International Scientific Meetings

1. Kannagi M, Kinpara S, Hasegawa A, Takamori A, Shimizu Y, Utsunomiya A. The role of innate and acquired immune responses on HTLV-1 infection. The 15th International Conference on Human Retrovirology: HTLV and Related Viruses, Jun. 2011, Leuven, Belgium.
2. Hasegawa A, Takamori A, Utsunomiya A, Maeda Y, Yamano Y, Shimizu Y, Tamai Y, Sasada A, Zeng N, Choi I, Uike N, Okamura J, Watanabe T, Masuda T, Kannagi M. Functional impairment of Tax-specific but not CMV-specific CTLs in a minor population of asymptomatic carriers. The 15th International Conference on Human Retrovirology: HTLV and Related Viruses, Jun. 2011, Leuven, Belgium.
3. Takamori A, Hasegawa A, Utsunomiya A, Maeda Y, Yamano Y, Shimizu Y, Tamai Y, Sasada A, Zeng N, Choi I, Uike N, Okamura J, Watanabe T, Masuda T, Kannagi M. Functional impairment of Tax-specific but not CMV-specific CD8+ T cells in a minor population of asymptomatic carriers. XV International Congress of Virology, Sep. 2011, Sapporo.
4. Kinpara S, Hayashi T, Hasegawa A, Masuda T, Kannagi M. Anti-sense transcripts encoded by HTLV-1 in adult T-cell leukemia cells. XV International Congress of Virology, Sep. 2011, Sapporo.
5. Ahamed N, Hayashi T, Hasegawa A, Okamura N, Masuda T, Kannagi M. Commensal bacteria-mediated suppression of HIV-1 replication in macrophages through innate immune response. XV International Congress of Virology, Sep. 2011, Sapporo.
6. Zeng N, Hasegawa A, Shimizu Y, Tamai Y, Takamori A, Sasada A, Kannagi M. The evaluation of peptide-pulsed dendritic cell vaccine in HTLV-1-infected rats with weak T cell responses against HTLV-1. XV International Congress of Virology, Sep. 2011, Sapporo.
7. Hasegawa A, Takamori A, Utsunomiya A, Maeda Y, Yamano Y, Shimizu Y, Tamai Y, Sasada A, Zeng N, Choi I, Uike N, Okamura J, Watanabe T, Masuda T, Kannagi M. Functional impairment of Tax-specific but not CMV-specific CD8+ T cells in a minor population of asymptomatic carriers. The XXV Symposium of the International Association for Comparative Research on Leukemia and Related Diseases. Sep. 2011, Tokyo.
8. Masuda T. Structural insight for non-enzymatic roles of retroviral integrase: the next target for novel anti-HIV drug development. The 6th German-Japanese HIV-Symposium、November, 2011, Bochum.
9. Sato Y., Sato M., Hasegawa A., Kannagi M. and Masuda T. Evaluation of integrase -mediated stimulatory effect on HIV-1 reverse transcription using nucleocapsid -coated RNA template. The 6th German-Japanese HIV-Symposium、November, 2011, Bochum.
10. Kannagi M. The roles of acquired and innate immune responses on disease development in HTLV-1 infection. 2nd International Symposium「Infection-associated Cancers」March, 2012, Sapporo.

Biodefense Research

1. Staffs and Students

Professor	Toshiaki Ohteki
Junior Associate Professor	Nobuyuki Onai
Assistant Professor	Hiroyuki Tezuka
Project Junior Associate Professor	Yusuke Nakanishi
Project Junior Assistant Professor	Taku Sato
Project Junior Assistant Professor	Satoshi Yotsumoto
Project Junior Assistant Professor	Junpei Asano
Research Technician	Mayuka Hosoi-Amaike
Research Technician	Shoko Kuroda
Research Technician	Tatsunori Yamamura
Secretarial Assistant	Hisako Kamioka

2. Purpose of Education

Our research projects focus on maintenance and failure of immunological homeostasis. Our goal is to define the mechanism of immune cell and tissue stem cell behavior under conditions of health and disease. To accomplish this goal, we are trying to clarify the molecular basis of induction and failure of immunological tolerance by focusing on immune cells and tissue stem cells in the bone marrow, skin, and intestine including its associated lymphoid tissues. On the basis of our findings, we will further pursue our research in the hope of developing new rational therapies for prevention and treatment of disease.

3. Research Subjects

1) Mechanism of tolerance induction and its failure in the mucosa-associated lymphoid tissues.
2) Differentiation and function of dendritic cells
3) Understanding of immunological diseases based on tissue stem cell disorder

4. Publications

[original papers]

1. Tezuka H, Abe Y, Asano J, Sato T, Liu J, Iwata M, and Ohteki T. Prominent role of plasmacytoid dendritic cells in mucosal T cell-independent IgA induction. **Immunity** 34, 247-257, 2011.
2. Mashima H, Sato S, Horie Y, Nakagawa Y, Kojima I, Ohteki T, and Ohnishi H. Interferon Regulatory Factor-2 Regulates Exocytosis Mechanisms Mediated by SNAREs in Pancreatic Acinar Cells. **Gastroenterology** 141, 1102-1113, 2011.
3. Liu J, Guo YM, Hirokawa M, Iwamoto K, Ubukawa K, Michishita Y, Fujishima N, Tagawa H, Takahashi N, Xiao W, Yamashita J, Ohteki T, and Sawada K. A synthetic double-stranded RNA, poly I:C, induces a rapid apoptosis of human $CD34^+$ cells. **Exp Hematol** 2011 Dec 20. [Epub ahead of print]

5. Presentation at international meetings

1. Ohteki T. Regulatory role of interferon in HSC homeostasis-an old cytokine with a new function. ESF-JSPS Frontier Science Conference Series for Young Researchers. “Cutting Edge Immunology and its Clinical Application”. Hulshorst, The Netherlands. 2011.3.2
2. Ohteki T, Ohyagi H, Sawada K and Onai N. Dendritic cells hemophagocytose to fine-tune immune responses. The 6th International Symposium of Institute Network. Tokyo Medical and Dental University, Tokyo, Japan. 2011.6.9
3. Ohteki T. Prominent fole for pDCs in mucosal IgA induction. The 6th Chiba University Global COE Symposium Immune System Regulation toward Disease Control. Chiba, Japan. 2011.11.30
4. Ohteki T. Role for plasmacytoid dendritic cells in gut IgA induction CFCD3rd International pDC Workshop Pasteur Institute, Paris, France. 2011.12.8

Pathological Cell Biology

1. Staffs and Students (April, 2011)

Professor	Shigeomi SHIMIZU	
Associate Professor	Norio SHIMIZU	
Junior Associate Professor	Akimitsu KONISHI	
Tokunin Junior Associate Professor	Tatsushi YOSHIDA	
Assistant Professor	Satoko ARAKAWA	
Tokunin Assistant Professor	Michiko MUROHASHI, Shinya HONDA	Leishuku LI,
Secretary	Sachiko OTSUKA	
Graduate Student	Hirofumi YAMAGUCHI, Shiho YOSHIDA, Kanako TAKEDA	Yuichiro WATANABE, Dai MIYAZAKI,

2. Purpose of Education

Main objective in the graduate course is to provide students opportunity to study the molecular mechanisms of cell death and autophagy, the cell death-related diseases, the physiological and pathological roles of autophagy, and the development mechanism of Epstein-Barr virus (EBV) infection, the employment of immunodeficiency animals for the creation of virus research models and development of an exhaustive pathogenic microbial screening system.

3. Research Subjects

1) Analysis of apoptosis mechanism
2) Analysis of non-apoptotic cell death (autophagic cell death)
3) Physiological and pathological roles of cell death in mammals
4) Analysis of alternative macroautophagy mechanism
5) Physiological and pathological roles of autophagy in mammals
6) Development of novel EBV infection animal models using the hNOG mice
7) Development of an exhaustive pathogenic microbe screening system

4. Clinical Services

No services.

5. Publications

Original Article

1. Hikita H, Takehara T, Kodama T, Shimizu S, Shigekawa M, Hosui A, Miyagi T, Tatsumi T, Ishida H, Li W, Kanto T, Hiramatsu N, Shimizu S, Tsujimoto Y, Hayashi N. Delayed-onset caspase-dependent massive hepatocyte apoptosis upon Fas activation in Bak/Bax-deficient mice. ***Hepatology*** 54: 240-251, 2011.
2. Narita M, Young ARJ, Arakawa S, Samarajiwa SA, Nakashima T, Yoshida S, Hong SK, Berry LS, Reichelt S, Ferreira M, Tavaré S, Inoki K, Shimizu S, Narita M. Spatial coupling of mTOR and autophagy augments secretory phenotypes. ***Science*** 332: 966-970, 2011
3. Yamasaki T, Kawasaki H, Arakawa S, Shimizu K, Shimizu S, Reiner O, Okano H, Nishina S, Azuma N, Penninger JM, Katada T, Nishina H. Stress-activated protein kinase MKK7 regulates axon elongation in the developing cerebral cortex. ***Journal of Neuroscience*** 31: 16872-16883, 2011
4. Sugita S, Shimizu N, Watanabe K, Katayama M, Horie S, Ogawa M, Sugimoto Y, Mochizuki M. Diagnosis of bacterial endophthalmitis by broad-range quantitative PCR. ***Br J Ophthalmol***. 95: 345-349, 2011
5. Ng SB, Selvarajan V, Huang G, Zhou J, Feldman AL, Law M, Kwong YS, Shimizu N, Nagami Y, Aozasa K, Salto-Tellez M, Chng WJ. Activated oncogenic pathways and therapeutic targets in extranodal nasal-type NK/T cell lymphoma revealed by gene expression profiling. ***J Phatol***. 223: 496-510, 2011
6. Abe T, Segawa Y, Watanabe H, Yotoriyama T, Kai Y, Yasuda A, Shimizu N, Tojo N. Point-of-Care Testing System Enabling 30-min Detection of Influenza Genes. ***LAB CHIP***. 11: 1166-1167, 2011
7. Yagasaki H, Kato M, Shimizu N, Shichino H, Chin M, Mugishima H. Autoimmune hemolytic anemia and autoimmune neutropenia in a child with erythroblastopenia of childhood (TEC) caused by human herpesvirus-6 (HHV6). ***Ann***

Hematol. 90: 851-852, 2011

8. Watanabe A, Tagawa H, Yamashita J, Teshima K, Nara M, Iwamoto K, Kume M, Kameoka Y, Takahashi N, Nakagawa T, Shimizu N, Sawada K. The role of microRNA-150 as a tumor suppressor in malignant lymphoma. ***Leukemia***. 25: 1324-1334, 2011
9. Sugita S, Ogawa M, Inoue S, Shimizu N, Mochizuki M. Diagnosis of ocular toxoplasmosis by two polymerase chain reaction (PCR) examinations: qualitative multiples and quantitative real-time. ***Jpn J Ophthalmol***. 55: 495-501, 2011
10. Ng SB, Yan J, Huang G, Selvarajan V, Tay J, Lin B, Bi C, Tan J, Kwong YL, Shimizu N, Aozasa K, Chng W. Dysregulated MicroRNAs Affect Pathways and Targets of Biological Relevance in Nasal-type Natural Killer / T-cell Lymphoma. ***Blood***. 118: 4919-4929, 2011
11. Imadome K, Yajima M, Arai A, Nakazawa A, Kawano F, Ichikawa S, Shimizu N, Yamamoto N, Morio T, Ohga S, Nakamura H, Ito M, Miura O, Komano J, Fujiwara S. Novel Mouse Xenograft Models Reveal a Critical Role of CD4+ T Cells in the Proliferation of EBV-Infected T and NK Cells. ***PLoS Pathogens***, 7: e1002326, 2011
12. Kuwana Y, Takei M, Yajima M, Imadome K, Inomata H, Shiozaki M, Inomata H, Ikumi N, Nozaki T, Shiraiwa H, Kitamura N, Takeuchi J, Sawada S, Yamamoto N, Shimizu N, Ito M, Fujiwara S. Epstein-Barr Virus Induces Erosive Arthritis in Humanized Mice. ***PloS ONE*** 6: e26630, 2011
13. Ramakrishnan R, Donahue H, Garcia D, Tan J, Shimizu N, Rice AP, Ling P. Epstein-Barr virus BART9 miRNA modulates LMP1 levels and affects growth rate of nasal NK T cell lymphomas. ***PLoS ONE***, 6: e27271, 2011.

Pediatrics and Developmental Biology

1. Staffs and Students (April, 2011)

Professor	Shuki Mizutani	
Associate Professor	Tomohiro Morio	
Junior Associate Professor	Masatoshi Takagi,	Mitunori Nisiyama
Assistant Professor	Akihito Sasaki,	Yaeko Motoyoshi,
	Yuuji Sugawara,	Daisuke Tomizawa,
	kenichi Kashimada,	Keisuke Enomoto (Aug～),
	Taku Ishii (Sep～),	Makoto Ono (～Mar),
	Toshiaki Ono (～Mar)	
Tokunin Assistant Professor	Fumiaki Watanabe	
Graduate Student	Takeshi Isoda,	Norimasa Ihara,
	Kaori Nakatani,	Yuuko Ohnishi,
	Eriko Tanaka,	Yuki Aoki,
	Fumihiko Takizawa,	Susumu hosokawa,
	Setuko kaneko,	Kei Takasawa,
	Noriko Mituiki,	Takahiro Kamiya,
	Tetsuro Nagasawa,	Yuuko Komatu,
	Atsuko Taki (～Mar),	Fumiko Honda (～Mar),
	Zeynalov Bakhtiyar (～Mar),	Hideyuki Yokokawa (～Mar),
	Keisuke Nakajima (Apr～),	Yohei Matsubara (Apr～)
Special Study Student	Sayaka Osada	
Collaborator	Minoru Asada（Department of Pharmacology, Nippon Medical School）	
	Hatsume Uno（Sony Life Science Laboratories）	
	Masaki Sato（Sony Life Science Laboratories）	
	Naomi Terada (～Mar)	
Medical Fellow	Konka Boku	

Department of Pediatrics, Neonatal and Maternal Medicine

Professor	Shozaburo Doi	
Associate Professor	Kohsuke Imai (Aug～)	
Junior Associate Professor	Atsuko Taki (Apr～),	Satoshi Araki (～Mar),
	Toshihiko Nishida (～Mar)	

Department of Community Pediatric Health Science

Professor	Masayuki Nagasawa	
Assistant Professor	Akifumi Endo,	Manabu Sugie,
	Tomohiro Udagawa (Apr～),	Eriko Kikuchi (～Mar)

2. Educational activities

Field of Education: Education for the 3rd and the first half of the 4th graders of Medical students was proposed 34 lectures on the basis of two big standpoints, child developments and pediatric diseases, by the staffs of Department of Pediatrics and Developmental Biology, Department of Pediatrics, Perinatal and Maternal Medicine, Department of Research for Regional Pediatrics, and the part-time lecturers. The field of totally 34 lectures is widely covered, for example, Hematology, Oncology, Immunology, Cardiology, Neurology, Endocrinology, Neonatology, Nephrology, Allergy, Pulmonology, Infection, and Social Medicine and so on. Opportunities of training in scientific research were provided for the elective latter half of three 4th graders during so-called project semester. The 5th graders were divided into the small groups, and started and continued for three months to learn the introduction of Clinical Clerkship, so-called Pre-clerkship, classified by organs. We were engaged in the organs of Blood, Chest(Heart) and Neuron shared with the another Departments. Then one month practice in pediatric clinical trainings was provided for the 5th to 6th graders among 13 months, where every student belonged to one of the professional clinical teams (Hematology/Oncology/Immunology, Cardiology, Neurology, Endocrinology, Neonatology and Nephrology) in the University Hospital or some affiliated hospitals (Tsuchiura Kyodo General Hospital, Kawaguchi municipal Medical Center or North Tokyo Social Insurance Hospital), and studied clinical practice as one of the team members. Another mission of this Department was to provide lecture courses

on general pediatrics for the students of Dental and School of Health Science.

Junior clinical fellows who are in the training course of pediatric practice under the supervision of senior staffs were also expected to supervise these medical students. The style of clinical training was maintained and the 1st year trainee as well as the 2nd year trainee could choose the training in the pediatric ward for two months. On the other hand, the 2nd year trainee was in general engaged in the basic training for one month in the pediatric ward in some affiliated hospitals (Musashino Red Cross Hospital, Soka Municipal Hospital or North Tokyo Social Insurance Hospital). Depending on the individuals, they could select the advanced training at the pediatric ward in The University Hospital for two to eight months.

Strategy of Education

It is a goal of education for the 3rd and 4th graders (first half) of medical students to learn the whole picture of general pediatric diseases, and for the 4th graders (latter half, so-called project semester) to touch the basic research, get the fundamental way of thinking and skills of experiments. On the other hand, it is a goal for the 5th and 6th graders (so-called pre-Clerkship and Clinical Clerkship), to be in charge of each patient with pediatric staffs and experience the general steps under the clinical medicine, for example, the following steps how to interview the medical history, get the physical findings, plan the laboratory examinations, differentially diagnose by analyzing the personal data, describe the clinical records, and discuss about the treatment planning. Junior clinical trainees, previously started to train the pediatrics from the 2nd year, became to be able to elect the pediatric training for two months from the 1st year, actually however, the fellows who desired to optionally choose the pediatric training did not necessarily perform it because of too many applicants. The 2nd year junior clinical trainees were divided two groups. Those only required pediatric training for one month were generally planned to experience the common pediatric diseases in the affiliated hospitals. On the other hand, those electively selected pediatrics were basically planned to train almost in university hospitals together with at the affiliated hospitals for one month. Senior clinical trainees were rotated among in the university hospitals and chief affiliated hospitals, planned to experience all kinds of pediatric diseases related to oncology, cardiology, neurology, infections and immunology, endocrinology and metabolic diseases, neonatology, nephrology, pulmonology, digestive diseases, and genomics. Moreover, we educate the students of dentistry and health care sciences, who learn not only general pediatric diseases but the importance of pediatrics as playing roles of total coordination and mutual cooperation beyond specialty for children's care.

3. Research Subjects

The final goal of our research is to elucidate the molecular mechanisms of intractable diseases in children and to develop novel measures to cure the diseases. We are interested in a broad spectrum of subjects in life science field as shown below.

1. Stem cells and hierarchy of infantile leukemic cells
2. Molecular mechanism of aberrant T-cell differentiation and lymphoma development in the absence of ATM
3. Molecular mechanism of Purkinje cell loss in Ataxia telangiectasia
4. Novel roles of ATM in cellular differentiation
5. Ras associated ALPS like syndrome
6. Systematic search for responsible gene for a subset of common variable immunodeficiency
7. Gene hunting for radiosensitive-hyperIgM syndrome
8. Negative regulation of granulocyte activation and apoptosis by Tec family protein
9. Development of innovative techniques for cell therapy and gene therapy
10. Skin barrier and development of atopic dermatitis and of GI allergy
11. Glycobiologic approach for molecular pathogenesis of IgA nephropathy developed in WASP deficiency
12. Involvement of Notch signaling pathway in the process of glomerular sclerosis
13. Molecular mechanisms of primary pulmonary hypertension
14. Lung injury induced by cytokines/monocytes/granulocytes
15. Pathogenesis of periventricular leukomalacia (PVL) and broncho-pulmonary dysplasia (BPD); Development of novel therapy using mesenchymal stem cells for PVL and BPD.
16. Sox family protein in sex differentiation
17. Intrauterine stem cell transplantation for congenital disorders
18. Coagulopathy in hematopoietic cell transplantation and alteration in membrane protein expression in red blood cells

We have been collaborating with Institute of Cancer Research in London (Prof Mel Greaves), Istitute Nazionale Tumori (Dr. D. Delia), University of Queensland (Prof. Peter Koopman), Erasmus University (Prof. Jacques van Dongen), Yonsei

University (Profs. H. Kim, and SK Lee), Sony Life Science Laboratories, Medical Research Institute at TMDU, National Institute for Longevity Sciences, National Research Institute for Child Health and Development, RIKEN Research Center for Allergy and Immunology, Kazusa DNA Research Insititute, National Institute of Advanced Industry and Technology, Metropolitan Institute for Neuroscience, Juntendo University, and many other laboratories.

The research projects of each subspecialty group in the department are as follows.

●Hematology/Oncology/Immunology Group(Basic Research)

Our research focuses on the dissection of molecular basis of DNA damage repair response and the analysis of molecules that play important roles in human immune responses. The main projects includes the following.

Development of *in vitro* and *in vivo* leukemogenesis model that stemmed from defective tumor surveillance system.
Involvement of ATM in T-cell differentiation and adipocyte differentiation.
Molecular pathogenesis of T-cell malignancy in ATM deficiency
Identification of stem cells of infantile leukemia using leukemic-cell transplanted NOG-SCID mice.
Lymphoproliferation and leukemia in Ras associated ALPS like disorder (RALD)
Responsible gene hunting for CVID and for radiosensitive hyperIgM syndrome using next generation sequencing system
Negative regulation of activation and apoptosis of granulocytes by Btk
Application of protein transduction strategy for congenital gene defect
Development of adoptive immunotherapy for immune reconstitution after SCT
Develepment of innovative technique for quality control and cell profiling for processed cells used in regenerative medicine/cell therapy
Dielectric spectrum cytometer for analysis of membrane protein expression in RBC in association with post-transplant coagulopathy

●Cardiology Group

We continued both the basic and clinical studies, which were based on the same themes as in the last year. The theme of basic study was the analysis of mechanism and development of treatments in pulmonary hypertension (PH). The theme of clinical study was the analysis of the left ventricular function of fetuses and neonates. Moreover, we joined at two multi-center clinical studies related to the etiology and management of Eisenmenger syndrome, and therapeutic strategy against Kawasaki Disease.

We have been interested in pulmonary circulation and performed the basic research to elucidate the mechanism of pulmonary hypertension by using monocrotaline-induced pulmonary hypertensive rats. We focused on the role of NF-κB in the progress of PH and the proliferation of pulmonary artery smooth muscle cell (PASMCs), so-called vascular remodeling. We examined whether the selective NF-κB inhibitor, IMD-0354, could protect the PH progress and PASMCs proliferation. IMD-0354 significantly improved the survival curve and attenuated PH and RV hypertrophy. In vitro study, the PASMCs proliferation was suppressed and apoptosis was accelerated. The signal transduction pathway of NF-κB was associated with MCP-1 and ERK. We presented these results and proposed the possibility of future therapy against PH in American Heart Association Conference 2011.

We are also engaged in one clinical study to obscure the left ventricular function in fetus to neonate compared to that in adults which has been almost unclear and not yet correctly evaluated. Therefore, we analyzed LV diastolic and RV functions as well as LV systolic function from the view of localized wall motions and torsions by utilizing new 2D speckle tracking method of echocardiogram. The results could be analyzed on 34 among 56 fetuses on which we examined. Apical portion of the LV counter-clockwise rotated by 2.72 ± 5.41 degrees. On the other hand, basal portion clockwise rotated 0.65 ± 4.15 degrees. Each direction of rotation was the same as in the adults. Conclusively the torsion was counterclockwise by 5.23 ± 5.76 degrees from the viewpoint of apex. The torsion became bigger together with gestational age. There was no change in grade of torsion in between fetuses and neonates just after birth. The torsion became bigger together with days passed after birth.

●Neurology Group

1) Mechanism of neurodegeneration and therapeutic approach in xeroderma pigmentosum
2) Role of oxidative stress in childhood neurodegenerative disease
3) Analysis of multiple malformation disorders with or without intellectual disability using techniques of molecular genetics and cytogenetics (e.g. micro-array CGH) and clinical dysmorphology

4) Derivation of neural stem cell via iPS cell from ataxia telangiectasia
5) Efficacy and safety of very-low-dose betamethasone therapy in ataxia telangiectasia

●Endocrinology Group

Currently, our research is focused on elucidating the molecular mechanisms of congenital diseases of endocrine organs, especially adrenal glands and gonads. Furthermore, we are looking at developing the radical treatment systems for the congenital endocrine diseases by using regenerative medicine as a final target.

Our ongoing projects are bellows

#1: Molecular mechanisms of sexual determination, collaborating with P. Koopman's lab (IMB. The university of Queensland, Brisbane, Australia) A. Sinclair's Lab. (Royal Children's Hospital, Melbourne, Australia) and V. Harely's Lab (Prince Henry's Institute, Melbourne, Australia)
#2: Molecular mechanisms of pathology in congenital adrenal hyperplasia
#3: The effect of epigenetics on vascular endothelial dysfunction in metabolic disease, collaborating with Department of Molecular Medicine and Metabolism of our university.

Current ongoing projects will be integrated systematically, and be developed further in order to accomplish our final target.

●Neonatology Group

1) Analysis of the expression of angiogenesis-related factors in placenta and umbilical vessels in complicated pregnancies
2) Treatment by umbilical cord derived mesenchymal stem cells to lung and brain injury by intra-amnion LPS injection

●Nephrology Group

1) Analyses of the mechanism of pathogenesis for IgA nephropathy in Wiskott-Aldrich syndrome patients
2) Analyses of glomerular epithelial cells (podocytes) unknown function
3) Analyses of the mechanism of kidney function deterioration in nephrotic syndrome patients

We work on these researches in cooperation with Juntendo University (2), and Division of Nephrology and Hypertension, Miller School of Medicine, University of Miami (2).

●Allergy Group

To elucidate molecular mechanisms for food allergy such as against milk and egg is one of the main projects of our group. In the light of recent progress of immunology, we analyze the function of regulatory T cells which inhibit Th2 type immune response. We also define the roles of innate immune responses in host defense against foreign antigens entering skin and mucosal tissues. We are one of the research members on the epidemiological study of allergic disorder supported by a grant-in-aid from Ministry of Health, Labor and Welfare, Japan. In collaboration with the Japanese Society of Pediatric Allergy and Clinical Immunology, we conduct several clinical studies to refine pharmacologic therapy listed in the Japanese pediatric guideline for the treatment and management of asthma. We collaborate with pharmaceutical companies on the study of clinical efficacy of leukotriene antagonist. Clinical and epidemiological study on food allergy is another major field in our study. We conduct clinical studies of specific oral tolerance induction in food allergy in which the offending food is administered orally in order to achieve tolerance.

4. Clinical Services

●Hematology/Oncology/Immunology Group

Hematology-Oncology-Immunology Group treats the patients with hematological malignancies, hematological disorders, malignant solid tumors, and primary immunodeficiency. Our team consists of 7 staff, including 3 senior and 4 junior staff, and cares both inpatients and outpatients cooperatively.

In collaboration with national co-operative clinical research group, we offer the latest treatment for these patients with malignancy. Furthermore, we perform HSCT (hematopoietic stem cell transplantation) for patients with leukemia, refractory malignant solid tumor, and primary immunodeficiency. We also undergo clinical research for effectiveness of activated T cell therapy against refractory persistent virus infection and graft failure after HSCT in collaboration with institutional cell therapy center. Recently, haplo-identical bone marrow transplantation have been applied against intractable leukemia successfully. To overcome the life-threatening coagulopathy and microangiopathy during the SCT, we analyzed SCT cases retrospectively, and proposed a simple clinical score system for prognostic evaluation of coagulopathy in SCT. According to this score, we are evaluating the effectiveness of recombinant thrombomodulin in coagulopathy in SCT.

Our group identified an infant with ras mutation who exhibited both of JMML- and ALPS-like clinical features. From the analysis of several similar cases, we proposed a new clinical concept called "RALD (ras-associated lymphoproliferative disease)" in the international journal.

Conserning Ataxia Telangiectasia, Common Variable Immunodeficiency, and Ras-associated Lymphoproliferative diseases, group members are working as chief organizer of nation-wide clinical research projects financially supported by the Japanese Ministry of Health, Labour and Welfare.

We performed 10 HSCT, which included one unrelated cord blood, three HLA-identical sibling, two related bone marrow, two unrelated bone marrow and two autologous peripheral blood HSCT in 2011. We have more than 40 new outpatients including immunodeficiency, neutropenia, thrombocytopenia, coagulopathy, anemia and so many.

We have performed more than 140 HSCT so far, which includes more than 50 cases with primary immunodeficiency. With these experiences, we are leading this field in Japan.

With the help of pediatric endocrionologists, CLS (child life specialist) and psychotherapists, we are taking care of increasing cancer survivors and supporting their quality of life.

●Cardiology Group

The University Hospital has been certified as a training institute for producing the expert in pediatric cardiology by Japanese Society of Pediatric Cardiology and Cardiac Surgery. There are three pediatric cardiology experts in The University Hospital. We are chiefly engaged in the diagnosis and treatment of congenital and acquired heart disease such as Kawasaki Disease, myocarditis and cardiomyopathy etc, cardiac arrhythmia and pulmonary hypertension.

In-patients were chiefly introduced from the affiliated hospitals. We examined several special examinations for the patients with congenital heart diseases, acquired heart diseases (Kawasaki disease, myocarditis and cardiomyopathies), cardiac arrhythmia and pulmonary hypertension. We performed several examination such as cardiac catheterization, cardiovascular angiogram and myocardial biopsy, and offered medical treatments for heart failure, such as drugs, cardiopulmonary support and cardiac resynchronization therapy, moreover catheter intervensions such as balloon valvuloplasty, PDA coil embolization. We especially tried to evaluate the severity of the patients with pulmonary hypertension and then treat them based on the result. We added the originally-developed precise pulmonary vascular characterization measurement, so called pulmonary vascular pressure-flow relationship study, after the routine examination. As the result, we succeeded in the determination of diagnosis and therapeutic strategy.

We performed the cardiac catheterization on 61 cases (45 with congenital heart disease, 5 with acquired heart disease, 4 with pulmonary hypertension, and 7 patients, with arrhythmia or congenital heart disease, who need catheter ablation therapies). Twenty cases out of twenty one operable cases were surgically performed at The Sakakibara Heart Institute.

Out-patients for pediatric cardiology was 1,500 people per year, and 1100 patients were performed echocardiogram. We have participated in the school heart screening program of Tokyo Metropolitan Institute for Preventive Medicine for more than 20 years. This year, 18 students out of 9,000 first screening students finally visited us for the third screening. Holter twenty-four hours electrocardiogram extermination and Treadmill exercise-induced electrocardiogram were regularly were underwent to evaluate the management level of each student during school life.

●Endocrinology Group

We provide highly specific diagnostic approach and therapy for pediatric endocrine disorders, such as growth retardation, hypogonadism, thyroid diseases, disorder of sex development, disorder of Ca-P-PTH metabolism, type1 diabetes mellitus. In collaborating with the satellite hospitals, we are following more than a thousand patients, and 70~80 children with endocrine disorders hospitalized yearly our university.

Senior physician of our group is an adviser of Tokyo Health Service Association, and leading the newborn screening of congenital adrenal hyperplasia in Tokyo. Since the introduction of the screening, more than hundred CAH patients we treated.

Among many pediatric endocrine disorders, we are directing our effort at the disorders of adrenal gland and sex development, and looking at establishing the clinical center for those patients with pediatric-urologist and other co-medical staffs.

Type1 DM is another disease into which we put a great effort. We manage the Type 1 DM patients' association (Wakamatsu-kai) and organize the summer camp every year. The camp is consisted of more than a hundred participants and provides the valuable educational opportunities for the patients, the medical staffs and the medical students.

●Neurology Group

Child neurology group provides highly specialized diagnostic approach and medical care for neurological disorders such as epilepsy, neuromuscular disorders, infection of nervous system, neurodegenerative diseases and genetic syndromes. In particular, we provide therapeutic approach of xeroderma pigmentosum by using of clinicopathological analysis, and perform molecular genetic testing for multiple congenital malformation disorders with or without intellectual disability. In addition, in cooperation with the department of neurosurgery, we evaluate the indication for surgical treatment and then perfome surgical operation such as focal brain resection to the patient of intractable epilepsy.

●Neonatology group

We have started Neonatal and Infantile High Care Unit (NIHCU) for severely ill neonates and infants since July 2008 and provided medical care for preterm infants (>32 weeks of gestation, >1500g of birth weights) and sick children who have cardiac diseases, respiratory diseases, hypoglycemia, birth asphyxia, infection and so on.

NICU (neonatal intensive care unit) will officially start on April 2012. We will have 6 beds in NICU and provide intensive care for preterm infants (>30 weeks of gestation, >1000g of birth weights) and critically ill newborns.

●Nephrology Group

Nephrology Group provides diagnosis and treatment for patients with acute and chronic glomerular diseases, nephrotic syndrome, and congenital abnormality of kidney and urinary tract. We perform special examination such as kidney biopsy, renogram, MRU, etc. We also participate positively in urinary analysis screening performed at schools.

We provide acute blood purification therapy for acute renal failure patients caused by various diseases, and especially, we perform treatment for atypical hemolytic uremic syndrome patient caused by factor H deficiency.

We participate in multi-institutional joint research of refractory nephrotic syndrome operated by Japanese Study Group of Kidney Disease in Children.

We hold conference together with neighboring institutions regularly to discuss about better treatment for serious kidney diseases and to improve our knowledge. Some members study treatment for serious kidney diseases, kidney transplantation and renal replacement therapy for children at National Research Institute for Child Health and Development.

●Allergy Group

Allergy Group provides diagnostic and medical care for patients with allergic diseases such as asthma, food allergy, atopic dermatitis mainly at outpatient clinic.

5. Publications

Original articles

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Medicine and Rheumatology

1. Staffs and Students (April, 2011)

Professor	Nobuyuki MIYASAKA	
	Masayoshi HARIGAI(1)	
Associate Professor	Hitoshi KOHSAKA	
	Tetsuo KUBOTA(2),	Ryuji KOIKE(3),
	Toshihiro NANKI(1),	Kazuki TAKADA(4)
Junior Associate Professor	Hideyuki IWAI	
Assistant Professor	Fumitaka MIZOGUCHI,	Akito TAKAMURA,
	Sae OCHI,	Michi TANAKA(1),
	Kaori WATANABE(1)	
Visiting Lecturer	Rieko TSUBATA,	Hiroyuki HAGIYAMA,
	Yoshiki NONOMURA,	Yukiko KOMANO,
	Kenji NAGASAKA,	Jun OGAWA,
	Fumihito SUZUKI,	Kayoko KANEKO,
	Peter Y. Shane,	Toru KINO
Graduate Student	Ryoko SAKAI,	Yoshishige MIYABE*,
	Shin FUKUDA*,	Hisanori HASEGAWA*,
	Tadashi HOSOYA*,	Naoki KIMURA*,
	Akiko SUZUKI**,	Hayato YAMAZAKI,
	Yoko NAKAZATO*,	Waka YOKOYAMA*
	(*GCOE QAISS, **GCOE AISS)	
Research Student	Chie MIYABE,	
Resident Physician	Fumio HIRANO,	Tomoko MINAMI,
	Yoko NAKAZATO,	Shoko KASAI,
	Hiroshi KAWANO,	Natsuka UMEZAWA,
	Tetsuya SAITO,	Akio YAMAMOTO,
	Mari KIHARA,	Kenchi TAKENAKA,
	Hiroyoshi MORI,	Yoji KOMIYA,
	Mari NAKAJIMA	
Research Worker	Kazunori IWATA,	Yusuke TAGATA
Medical Fellow	Masashi EBISAWA	
Office Administrator	Rie FUJIME,	Kaori KONNO,
	Momoko MITSUISHI,	Tomoko TAKAHASHI(1)
Technical Staff	Aya SATO,	Sayaka ONO,
	Eri YOSHIMOTO	

(1) Department of Pharmacovigilance, (2) Health care sciences,
(3) Clinical Research Center, (4) Clinical Clerkship Working Group

2. Purpose of Education

We have provided medical students and graduates with the opportunity to obtain the ability to identify important clinical problems and to solve them by clinical reasoning through their active participation into the diagnosis and management of various rheumatic diseases.

3. Research Subjects

Following studies have been extensively carried out in our laboratory with various biochemical, immunological, molecular biological and statistical techniques:

1) Development of new therapeutics for the treatment of rheumatoid arthritis targeting cell cycle regulators, inflammatory moecules and synovial fibroblasts.
2) Investigation of mechanism and development of new therapeutics for the treatment of polymyositis.
3) Analysis of the roles of chemokine and bioactive lipid on the pathogenesis of rheumatic diseases.

4) Establishment of evidence-based treatment of rheumatic diseases by implementing several cohort studies.

4. Clinical Services

We have provided care to a large number of patients with diverse rheumatic diseases with 26,727 clinic visits and 264 hospital admissions in 2011. We have aimed to practice evidence-based medicine and to provide care that is in accordance with the global standard. We have contributed to the development of potential new drugs and treatments through participation into industry- as well as investigator-initiated clinical trials for chemical and biological agents. We have also contributed to the refinement of the care of rheumatoid arthritis patients through the conduct of various pharmacovigilance studies.

5. Publications

Original Article

1. Hashimoto J, Garnero P, van der Heijde D, Miyasaka N, Yamamoto K, Kawai S, et al. Humanized anti-interleukin-6-receptor antibody (tocilizumab) monotherapy is more effective in slowing radiographic progression in patients with rheumatoid arthritis at high baseline risk for structural damage evaluated with levels of biomarkers, radiography, and BMI: data from the SAMURAI study. Mod Rheumatol. 2011 Feb;21(1):10-5.
2. Honne K, Kohsaka H, Kaneko H, Komano Y, Nakanishi S, Kitagawa M, et al. A case of Behcet's disease with widespread perforating enteric ulcers preceded by a long history of peripheral gangrene. Mod Rheumatol. 2011 Dec;21(6):651-4.
3. Kaneko K, Miyabe Y, Takayasu A, Fukuda S, Miyabe C, Ebisawa M, et al. Chemerin activates fibroblast-like synoviocytes in patients with rheumatoid arthritis. Arthritis Res Ther. 2011 Sep 29;13(5):R158.
4. Kawai S, Takeuchi T, Yamamoto K, Tanaka Y, Miyasaka N. Efficacy and safety of additional use of tacrolimus in patients with early rheumatoid arthritis with inadequate response to DMARDs--a multicenter, double-blind, parallel-group trial. Mod Rheumatol. 2011 Oct;21(5):458-68.
5. Kobayashi S, Harigai M, Mozaffarian N, Pangan AL, Sharma S, Brown LS, et al. A multicenter, open-label, efficacy, pharmacokinetic, and safety study of adalimumab in Japanese patients with ankylosing spondylitis. Mod Rheumatol. 2011 Dec 29.
6. Koike R, Tanaka M, Komano Y, Sakai F, Sugiyama H, Nanki T, et al. Tacrolimus-induced pulmonary injury in rheumatoid arthritis patients. Pulm Pharmacol Ther. 2011 Aug;24(4):401-6.
7. Koike T, Harigai M, Inokuma S, Ishiguro N, Ryu J, Takeuchi T, et al. Postmarketing surveillance of safety and effectiveness of etanercept in Japanese patients with rheumatoid arthritis. Mod Rheumatol. 2011 Aug;21(4):343-51.
8. Komano Y, Tanaka M, Nanki T, Koike R, Sakai R, Kameda H, et al. Incidence and risk factors for serious infection in patients with rheumatoid arthritis treated with tumor necrosis factor inhibitors: a report from the Registry of Japanese Rheumatoid Arthritis Patients for Longterm Safety. J Rheumatol. 2011 Jul;38(7):1258-64.
9. Miyabe C, Mitsuhashi Y, Saito M, Tsuboi R. Novel mutation in the ATP2A2 gene in a Japanese Darier's disease patient with extremely hyperkeratotic lesions. J Dermatol. 2011 Oct 31.
10. Miyabe Y, Murata Y, Baba Y, Ito E, Nagasaka K. Successful treatment of cyclosporine-A-resistant cytophagic histiocytic panniculitis with tacrolimus. Mod Rheumatol. 2011 Oct;21(5):553-6.
11. Miyasaka N, Hara M, Koike T, Saito E, Yamada M, Tanaka Y. Effects of intravenous immunoglobulin therapy in Japanese patients with polymyositis and dermatomyositis resistant to corticosteroids: a randomized double-blind placebo-controlled trial. Mod Rheumatol. 2011 Oct 5.
12. Nakashioya H, Nakano K, Watanabe N, Miyasaka N, Matsushita S, Kohsaka H. Therapeutic effect of D1-like dopamine receptor antagonist on collagen-induced arthritis of mice. Mod Rheumatol. 2011 Jun;21(3):260-6.
13. Nonomura Y, Miyabe Y, Tanaka M, Tsubata R, Nanki T, Harigai M, et al. Prominent splenic microcalcifications in a patient with systemic lupus erythematosus complicated by antiphospholipid syndrome. J Clin Rheumatol. 2011 Aug;17(5):288.
14. Okiyama N, Kitajima T, Ito Y, Yokozeki H, Miyasaka N, Kohsaka H. Addition of the collagen binding domain of fibronectin potentiates the biochemical availability of hepatocyte growth factor for cutaneous wound healing. J Dermatol Sci. 2011 Mar;61(3):215-7.
15. Sakai R, Komano Y, Tanaka M, Nanki T, Koike R, Nakajima A, et al. The REAL database reveals no significant risk of serious infection during treatment with a methotrexate dose of more than 8 mg/week in patients with rheumatoid arthritis. Mod Rheumatol. 2011 Aug;21(4):444-8.
16. Takamura A, Komatsu M, Hara T, Sakamoto A, Kishi C, Waguri S, et al. Autophagy-deficient mice develop multiple

liver tumors. Genes Dev. 2011 Apr 15;25(8):795-800.
17. Takenaka K, Takada K, Kobayashi D, Moriguchi M, Harigai M, Miyasaka N. A case of IgG4-related disease with features of Mikulicz's disease, and retroperitoneal fibrosis and lymphadenopathy mimicking Castleman's disease. Mod Rheumatol. 2011 Aug;21(4):410-4.
18. Takeuchi T, Miyasaka N, Tatsuki Y, Yano T, Yoshinari T, Abe T, et al. Baseline tumour necrosis factor alpha levels predict the necessity for dose escalation of infliximab therapy in patients with rheumatoid arthritis. Ann Rheum Dis. 2011 Jul;70(7):1208-15.
19. Tanaka Y, Harigai M, Takeuchi T, Yamanaka H, Ishiguro N, Yamamoto K, et al. Golimumab in combination with methotrexate in Japanese patients with active rheumatoid arthritis: results of the GO-FORTH study. Ann Rheum Dis. 2011 Nov 25.
20. Toyomoto M, Ishido S, Miyasaka N, Sugimoto H, Kohsaka H. Anti-arthritic effect of E3 ubiquitin ligase, c-MIR, expression in the joints. Int Immunol.. 2011 Mar;23(3):177-83.
21. Yamazaki H, Nagasaka K. Successful treatment of steroid-resistant methotrexate-induced interstitial pneumonia with peripherally administered ulinastatin. Mod Rheumatol. 2011 Feb;21(1):79-84.
22. Yamazaki H, Nanki T, Miyasaka N, Harigai M. Methotrexate and trimethoprim-sulfamethoxazole for Pneumocystis pneumonia prophylaxis. J Rheumatol. 2011 Apr;38(4):777; author reply 8.

Dermatology

1. Staffs and Students (April 2011)

Professor	Hiroo YOKOZEKI	
Associate Professor	Takahiro SATOH	
Junior Associate Professor	Kaoru TAKAYAMA,	Yasuhiro MIYAZAKI
Assistant Professor	Aya NISHIZAWA,	Eishi TAKAHASHI,
	Takichi MUNETSUGU	
Hospital Staff	Tsukasa UGAJIN,	Aiko HIRAI,
	Ai AKINO,	Miho HAYASHI,
	Naoko SHINOZUKA,	Nao OKUNO,
	Yumiko FUKUHARA,	Kanako SAITOH
Secretary	Yukako KIKUCHI,	Masae SAKATA,
	Mina ARAI	
Graduate students	Makiko UENO,	Kazumi SAEKI,
	Yuki TAKEHARA,	Risako INOUE,
	Takashi HASHIMOTO,	Rie YU,
	Naoko KATAOKA,	Yuichi ITO,
	Yasumasa KANAI,	Akiko IMAI

2. Purpose of Education

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.

3. Research Subjects

1) Mechanisms of contact hypersensitivity
2) Pathological etiology of atopic dermatitis
3) Mechanisms of eosinophil recruitment to the skin
4) Roles of basophils in human skin diseases
5) Functional roles of PGD2 and its receptors in allergic inflammation
6) Therapeutic approach for skin diseases by stable form of galectin-9
7) Analysis of pathological mechanisms' of hyperhidrosis
8) Investigation of mediators for itch
9) Pathological etiology of chronic prurigo
10) Therapeutic approach for angiosarcoma with HVJ-E.

4. Clinical Services

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.

5. Publications

Original Article

1. Igawa K, Satoh T, Yokozeki H : Possible association of Henoch-Schoenlein purpura in adults with odontogenic focal infection., Int J Dermatol, 50:277-279, 2011
2. Ito Y, Satoh T, Takayama K, Miyagishi C, Walls AF, Yokozeki H : Basophil recruitment and activation in inflammatory skin diseases., Allergy, 66:1107-1113, 2011
3. Imai A, Takayama K, Satoh T, Katoh T, Yokozeki H : Ingrown nail and pachyonychia of the great toes impair lower limb function:improvement of limb dysfunction by medical foot care treatment., Int J Dermatol, 50: 215-220, 2011
4. Ueno M, Yamamoto T, Yamanaka M, Matsunaga T : Nodular amyloidosis in a patient with liver cirrhosis.,

Dermatol Online J, 17:10, 2011
5. Ugajin T, Satoh T, Kanamori T, Aritake K, Urade Y, Yokozeki H: FcεRI, but not FcγR, signals induce prostaglandin D2 and E2 production from basophils., Am J Pathol, 179:775-82, 2011
6. Okiyama N, Kitajima T, Ito Y, Yokozeki H, Miyasaka N, Kohsaka H. Addition of the collagen binding domain of fibronectin potentiates the biochemical availability of hepatocyte growth factor for cutaneous wound healing., J Dermatol, 61:215-7, 2011
7. Kato K, Satoh T, Nishizawa A, Yokozeki H : Psoriasiform drug eruption due to abatacept., Acta Derm Venereol, 91: 362-363, 2011
8. Satoh T, Ito Y, Miyagishi C, Yokozeki H : Basophils infiltrate skin lesions of eosinophilic pustular folliculitis (Ofuji's disease) ., Acta Derm Venereol, 91:371-372, 2011
9. Namiki T, Tanemura A, Valencia JC, Coelho SG, Passeron T, Kawaguchi M, Vieira WD, Ishikawa M, Nishijima W, Izumo T, Kaneko Y, Katayama I, Yamaguchi Y, Yin L,Polley EC, Liu H, Kawakami Y, Eishi Y, Takahashi E, Yokozeki H, Hearing VJ. AMPkinase-related kinase NUAK2 affects tumor growth, migration, and clinical outcome of human melanoma., Proc Natl Acad Sci U S A, 108:6597-602, 2011
10. Hosoya K, Satoh T, Yamamoto Y, Saeki K, Igawa K, Okano M, Moriya T, Imamura O, Nemoto Y, Yokozeki H : Gene silencing of STAT6 with siRNA ameliorates contact hypersensitivity and allergic rhinitis., Allergy, 66:124-131, 2011
11. Matsushima Y, Satoh T, Yamamoto Y, Nakamura M, Yokozeki H. Distinct roles of prostaglandin D2 receptors in chronic skin inflammation., Mol Immunol, 49:304-10, 2011
12. Yamagishi H, Mochizuki Y, Hamakubo T, Obata K, Ugajin T, Sato S, Kawano Y, Minegishi Y, Karasuyama H : Basophil-derived mouse mast cell protease 11 induces microvascular leakage and tissue edema in a mast cell-indepnendent manner., Biochem Biophys Res Commun, 415:709-13, 2011
13. Yamamoto Y, Otani S, Hirai H, Nagata K, Aritake K, Urade Y, Narumiya S, Yokozeki H, Nakamura M, Satoh T: Dual functions of prostaglandin D2 in murine contact hypersensitivity via DP and CRTH2., Am J Pathol, 179:302-314, 2011

Review Article

1. Inoue R, Sohara E, Rai T, Satoh T, Yokozeki H, Sasaki S, Uchida S: Immnolocalization and translocation of AQ5 water channel in sweat glands. The 36th Annual meeting of the Japanese Society for Investigative Dermatology, Kyoto, 2011.12.10
2. Imai A, Takayama K, Satoh T, Katho T, Yokozeki H: Ingrown nail and pachyonychya of great toes cause impared lower limb functions: Improvement of limb function by medical foot care. 22th World congress of Dermatology, Seoul, 2011.5.27
3. Kataoka N, Satoh T, Yokozeki H. Indomethacin-induced inhibition of eosinophil chemotaxis via CRTH2: proposal of a mechanism of action for eosinophilic pustular folliculitis. The 36th Annual meeting of the Japanese Society for Investigative Dermatology, Kyoto, 2011.12.10
4. Saeki K, Satoh T, Yokozeki H. L-selectin ligand synthesis by α(1,3) fucosyltransferases is essential for initial recruitment of basophils and development of chronic allergic inflammation. 2011 The Annual Meeting of the Japanese Society for Immunology, Makuhari, 2011.11.29
5. Satoh T : Prostaglandin D2 and eosinophilic skin diseases. 22th World congress of Dermatology, Seoul, 2011.5.28(Symposium)
6. Takehara Y, Satoh T, Nakamura M, Yokozeki H : Inactivated Sendai Virus particles with and IL-2 gene exert anti-tumor effects on murine angiosarcoma. 2011 The Annual Meeting of the Japanese Society for Immunology, Makuhari, 2011.11.29
7. Takehara Y, Satoh T, Nishizawa A, Masuzaya M, Yokozeki H : Inactivated Sendai Virus particles with and IL-2 gene exert anti-tumor effects on murine angiosarcoma. The 36th Annual meeting of the Japanese Society for Investigative Dermatology, Kyoto, 2011.12.9
8. Hashimoto T, Satoh T, Yokozeki H : Repeated induction of IgE-mediated chronic allergic skin inflammation induces prurigo-like reaction. The 36th Annual meeting of the Japanese Society for Investigative Dermatology, Kyoto, 2011.12.9
9. Nishizawa A, Satoh T, Yokozeki H. Hyperkeratotic type of palmoplantar eczematous reaction : a variant of dyshidrotic eczema? The 36th Annual meeting of the Japanese Society for Investigative Dermatology, Kyoto, 2011.12.9

10. Yamamoto Y, Satoh T, Nakamura M, Yokozeki H : Distinct roles of PGD2 receptors in chronic skin inflammation. 2011 The Annual Meeting of the Japanese Society for Immunology, Makuhari, 2011.11.27

Book

Division of Immunology (Department of Immunology)

1. Staffs and Students (April, 2011)

Professor	Takeshi TSUBATA, M.D., Ph.D.	
Associate Professor	Takahiro ADACHI, Ph.D.	
Assistant Professor	Kozo WATANABE, Ph.D.	
Assistant Professor	Yusuke KISHI,	Naoko MATSUBARA
Technician	Mayuu KAKIUCHI	
Secretary	Hiroko TAKAHASHI	
Graduate Student	Miduo XU,	Dong WENG,
	Wataru TAKASHIMA,	Midori SUNANAGA,
	Miao TANG,	Keito ISHIKURA,
	Toshitaro TAKATA,	Satoya OMORI,
	Shirly PHOON,	Ayse KONUSKAN

2. Purpose of Education

The immune system is essential for host protection against pathogens and cancer cells, and its ability to protect host is augmented by vaccination and previous infection. In contrast, abnormal immune responses are involved in pathogenesis of autoimmune diseases and allergy. Faculty members of the Department of Immunology are coordinating the lecture course of immunology and instructing graduate students to conduct their research projects on immunology for elucidating how the normal immune system respond to pathogens but not self-antigens or environmental antigens, how this discrimination is disrupted in allergy and autoimmune diseases, and how vaccination augments immune responses. Some of the research projects are aiming at developing new strategies for augmenting infection immunity and for controlling abnormal immune responses.

3. Research Subjects

1) Elucidation of the roles of membrane-bound lectins and their glycan ligands in normal and abnormal immune responses of B lymphocytes.
2) Elucidation of the roles of unfolded protein response molecules in B lymphocyte immune responses.
3) Elucidation of the regulatory mechanisms for self-reactive B lymphocytes and their defect in autoimmune diseases.
4) Chemical biology of B lymphocyte immune responses
5) Generation of novel strategies for host protection against pathogens and treatment of autoimmune diseases.

5. Publications

[Original Article]

1. Abdu-Allah, H. H. M., Watanabe, K., Completo, G. C., Sadagopan, M., Hayashizaki, K., Takaku, C., Tamanaka, T., Takematsu, H., Kozutsumi, Y., Paulson, J.C., Tsubata, T., Ando, H., Ishida, H. and Kiso, M. (2011): CD22-antagonists with nanomolar potency: The synergistic effect of hydrophobic groups at C-2 and C-9 of sialic acid scaffold. *Bioorg. Med. Chem.* 19: 1966-1971.
2. Watanabe, K., Tsuchiya, Y., Kawaguchi, Y., Sawada, S.-i., Ayame, H., Akiyoshi, K. and Tsubata, T. (2011): The use of cationic nanogels to deliver proteins to myeloma cells and primary T lymphocytes that poorly express heparan sulfate. *Biomaterials* 32: 5900-5905.
3. Abdu-Allah, H. H. M, Watanabe, K., Kanie, O., Tsubata, T. Ishida, H. and Kiso, M. (2011). Design and synthesis of multivalent heterobifunctional CD22-ligand as a potential immunomodulator. *Synthesis* 18: 2968-2974.
4. Tsubata, T. (2011) Role of inhibitory BCR co-receptors in immunity. *Infectious Disorders - Drug Targets* (in press).
5. Poe, J. C., Smith , S. H., Haas, K. M., Yanabe, K., Tsubata, T., Matsushita, T. and Tedder, T. F. (2011): Amplified B lymphocyte CD40 signaling drives regulatory B10 cell expansion in mice. *PLoS ONE* 6: 22464.
6. Magesh, S., Ando, H., Tsubata, T., Ishida, H. and Kiso, M. (2011): High-affinity ligands of Siglec receptors and their therapeutic potentials. *Current Medicinal Chemistry* 18: 3537-3550.
7. Adachi T, Harumiya S, Takematsu H, Kozutsumi Y, Wabl M, Fujimoto M, Tedder TF. (2012) : CD22 serves as a receptor for soluble IgM. *Eur J Immunol* 42:241-7.

Cellular and Environmental Biology (General Isotope Research Division, Research Center for Medical and Dental Sciences)

1. Staffs and Students (April, 2011)

Associate Professor	Masayuki HARA	
Graduate Student	Satoru MIYAKURA,	Ayako TAKIZAWA

2. Purpose of Education

Living organisms were influenced their life by environment and adapted themselves to it, however, they formed environment and affected it. In other words, the species that cannot fit the changing environment were fallen and replaced by the new species which could adapt itself to. The organisms are as a part of the global environment, so it is thought that the individual structure and working of them are necessary environmental measures for their survival. It may be said that it is excessive suddenness of the change that human activity is environmentally-impacted now.

Main objective of cellular and environmental biology in the graduate course is to provide students opportunity to study the reaction and adaptation of the organisms for the environmental change at cellular level, to consider hazardous property, toxicity, or physiological activity of environmental (or man-made) factor, and to mention the biotechnical action to the environmental problems.

3. Research Subjects

1) Reaction mechanisms of cellular protection systems against environmental oxidation stresses.
2) Modifying mechanisms in higher order structure of chromatin in cellular differentiation.
3) Shifting mechanisms in proteome profiles of cell organelle between pre and post conditions in environment, cell differentiation, disease, or drug exposure.

Human Pathology

1. Staff and Students

Professor	Yoshinobu EISHI	
Assistant Professor	Hiroshi KAWACHI,	Daisuke KOBAYASHI,
	Takashi ITO	
Laboratory Technician	Asuka FURUKAWA	
Technical Assistant	Yoshimi SUZUKI	
Secretary	Miho IWAMITSU	
Graduate Student	Mariko NEGI,	Yuan BAE,
	Naoko OKAMOTO,	Naoki AKAZAWA,
	Tadatsune IIDA,	Akira TAKEMOTO,
	Yoshimi SUZUKI,	Nilufar LOKMAN,
	Tsubasa NAKANO,	Teruko NAKAMURA,
	Kana MINEGISHI,	Pariko YOROZU,
	Hiroki AIKAWA,	Mami HANAO,
	Yurika UENO,	Kousuke TAKEMURA

2. Purpose of education

Department of Human Pathology provides a graduate course for future pathologists to train the skills and knowledge of anatomical pathology and develop the abilities for medical researches. Graduate students are educated to associate their researches with problems in diagnosis and treatment of diseases and etiologies of the diseases of unknown causes. In the course, they usually spend the first two years for anatomical pathology training, searching for their own research theme and another two years for researches and thesis-writing.

3. Research Subjects

1) Endogenous infection (diseases caused by indigenous microorganisms in susceptible hosts)
2) Cancer research (histopathology, carcinogenesis, prognostic factors, and so on)

4. Clinical Services

Teaching staffs in Human Pathology support all functions of Surgical Pathology in our university hospital.

5. Publications

Original Article

1. Izumikawa K, Motoi N, Takaya H, Miyamoto A, Eishi Y, Yoshimura K, Kishi K. A case of concurrent sarcoidosis, aortitis syndrome and Crohn's disease. Intern Med 50(23):2915-7, 2011
2. Nemoto Y, Kanai T, Shinohara T, Ito T, Nakamura T, Okamoto R, Tsuchiya K, Lipp M, Eishi Y, Watanabe M. Luminal CD4$^+$ T cells penetrate gut epithelial monolayers and egress from lamina propria to blood circulation. Gastroenterology 141(6): 2130 -2139,2011
3. Tanabe T, Yamaguchi N, Matsuda K, Yamazaki K, Takahashi S, Tojo A, Onizuka M, Eishi Y, Akiyama H, Ishikawa J, Mori T, Hara M, Koike K, Kawa K, Kawase T, Morishima Y, Amano H, Kobayashi-Miura M, Kakamu T, Nakamura Y, Asano S, Fujita Y. Association analysis of the NOD2 gene with susceptibility to graft-versus-host disease in a Japanese population. Int J Hematol 93(6):771-8,2011
4. Munari F, Lonardi S, Cassatella MA, Doglioni C, Cangi MG, Amedei A, Facchetti F, Eishi Y, Rugge M, Fassan M, de Bernard M, D'Elios MM, Vermi W. Tumor-associated macrophages as major source of APRIL in gastric MALT lymphoma. Blood 16;117(24):6612-6,2011
5. Takamura A, Komatsu M, Hara T, Sakamoto A, Kishi C, Waguri S, Eishi Y, Hino O, Tanaka K, Mizushima N. Autophagy-deficient mice develop multiple liver tumors. Genes Dev 15;25(8):795-800,2011
6. Hirooka S, Akashi T, Ando N, Suzuki Y, Ishida N, Kurata M, Takizawa T, Kayamori K, Sakamoto K, Fujiwara N, Kojima M, Eishi Y. Localization of the invadopodia-related proteins actinin-1 and cortactin to matrix-contact-side cytoplasm of cancer cells in surgically resected lung adenocarcinomas. Pathobiology 78(1):10-23,2011
7. Namiki T, Tanemura A, Valencia JC, Coelho SG, Passeron T, Kawaguchi M, Vieira WD, Ishikawa M, Nishijima W, Izumo T, Kaneko Y, Katayama I, Yamaguchi Y, Yin L, Polley EC, Liu H, Kawakami Y, Eishi Y, Takahashi E,

Yokozeki H, Hearing VJ. AMP kinase-related kinase NUAK2 affects tumor growth, migration, and clinical outcome of human melanoma. Proc Natl Acad Sci U S A 19;108(16):6597-602,2011

8. Mimata A, Fukamachi H, Eishi Y, Yuasa Y. Loss of E-cadherin in mouse gastric epithelial cells induces signet ring-like cells, a possible precursor lesion of diffuse gastric cancer. Cancer Sci 102(5):942-50. doi: 10.1111/j.1349-7006,2011
9. Iwasaki M, Tsuchiya K, Okamoto R, Zheng X, Kano Y, Okamoto E, Okada E, Araki A, Suzuki S, Sakamoto N, Kitagaki K, Akashi T, Eishi Y, Nakamura T, Watanabe M. Longitudinal cell formation in the entire human small intestine is correlated with the localization of Hath1 and Klf4. J Gastroenterol 46(2):191-202,2011
10. Kuramochi J, Inase N, Miyazaki Y, Kawachi H, Takemura T, Yoshizawa Y. Lung cancer in chronic hypersensitivity neumonitis. Respiration 82:263-267, 2011
11. Ueno H, Mochizuki H, Shirouzu K, Kusumi T, Yamada K, Ikegami M, Kawachi H, Kameoka S, Ohkura Y, Masaki T, Kushima R, Takahashi K, Ajioka Y, Hase K, Ochiai A, Wada R, Iwaya K, Nakamura T, Sugihara K. Actual status of distribution and prognostic impact of extramural discontinuous cancer spread in colorectal cancer. J Clin Oncol 29:2550-2556, 2011
12. Sakamoto K, Aragaki T, Morita K, Kawachi H, Kayamori K, Nakanishi S, Omura K, Miki Y, Okada N, Katsube K, Takizawa T, Yamaguchi A. Down-regulation of keratin 3 and keratin 13 expression in oral squamous cell carcinoma and epithelial dysplasia: a clue for histopathogenesis. Histopathology 58:531-542, 2011

Gastroenterology and Hepatology

1. Staffs and Students (April, 2011)

Professor	Mamoru WATANABE	
Associate Professor	Naoya SAKAMOTO (Department for Hepatitis Control),	
	Ryuichi OKAMOTO (Department of Advanced Therapeutics in Gastrointestinal Diseases)	
Junior Associate Professor	Kiichiro TSUCHIYA,	
	Tetsuya NAKAMURA (Department of Advanced Therapeutics in Gastrointestinal Diseases)	
	Sei KAKINUMA (Department for Hepatitis Control),	
	Makoto NAGANUMA (Department of Advanced Therapeutics in Gastrointestinal Diseases)	
	Akihiro ARAKI (Department of Endoscopic Diagnosis and Therapeutics)	
	Shinya OOKA (Department of Professional Development,),	
Assistant Professor	Masakazu NAGAHORI,	Shinji SUZUKI,
	Cheng-Hsin AZUMA,	Takashi NAGAISHI,
	Mina NAKAGAWA,	
	Eriko OKADA（Department of Endoscopic Diagnosis and Therapeutics）	
Tokunin Assistant Professor	Yasuhiro NEMOTO（GCOE, Megumi TASAKA	
Hospital Staff	Yuki SAKURAI,	Toshimitsu FUJII ,
	Junnko FUJIKI(April～),	Eiko SAITO(April～),
	Hukiko KAWAI(April～),	Yuko OSAJIMA,
	Junko MORIO(April～),	
Medical Fellow	Shiro YUI(April～)	
Graduate Student	Masahiro SUZUKI,	Akiko KITAZUME,
	Tomohiro MIZUTANI,	Yoshihito KANO,
	Kei KIYOHASHI,	Sayuri NITTA,
	Xiu ZHENG,	Michihiro SHIMIZU,
	Miyako MURAKAWA,	Tatsuro MURANO,
	Naoto TSUGE,	Masayoshi FUKUDA,
	Kouhei YOSHINO,	Go ITOH,
	Nobukatsu HORITA,	Yu MATSUZAWA,
	Kengo NOZAKI,	Masahiro TAKAHARA,
	Yuki YAMAUCHI(April～)	

2. Education Principles

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.

3. Basic Research Projects

- Elucidating the pathophysiology of inflammatory bowel diseases and development of treatment by disease-specific immue-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.
- Analysis of interferon-resistant hepatitis C virus.
- Comprehensive analysis of susceptibility genes for various gastrointestinal diseases.

4. 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 double-balloon enteroscopy.
- Advanced diagnosis and treatment of colonic diseases by colonoscopy.
- Development of minimally-invasive diagnostic modalities for gastrointestinal diseases (i.e. CT colonography).
- Improved chemotherapy for gastric and pancreatic malignancies.

5. Publications

1. Asahina Y, Tsuchiya K, Muraoka M, Tanaka K, Suzuki Y, Tamaki N, Hoshioka Y, Yasui Y, Katoh T, Hosokawa T, Ueda K, Nakanishi H, Itakura J, Takahashi Y, Kurosaki M, Enomoto N, Nitta S, Sakamoto N, Izumi N: Association of gene expression involving innate immunity and genetic variation in IL28B with antiviral response. **Hepatology**. 55:20-29, 2011
2. Funaoka Y, Sakamoto N, Nakagawa M, Kakinuma S, Suda G, Watanabe T, Nitta S, Kitazume A, Kiyohashi K, Murakawa M, Azuma S, Tsuchiya K, Watanabe M: Analysis of interferon signaling by infectious hepatitis C virus clones with substitutions of core amino acids 70 and 91. **Journal of Virology**. 85: 5986- 5994, 2011
3. Hibi T, Sakuraba A, Watanabe M, Motoya S, Ito H, Motegi K, Kinouchi Y, Takazoe M, Suzuki Y, Matsumoto T, Kawakami K, Matsumoto T, Hirata I, Tanaka S, Ashida T, Matsui T: Retrieval of serum infliximab level by shortening the maintenance infusion interval is correlated with clinical efficacy in Crohn's disease. (Epub ahead of print) **Inflamm Bowel Dis**. 2011
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Surgical Oncology

1. Staffs and Students

Professor:	Kenichi SUGIHARA	
Junior Associate Professor:	Masayuki ENOMOTO,	Mikito INOKUCHI
Assistant Professor:	Satoru IIDA,	Takanobu SATO,
	Tsuyoshi NAKAGAWA,	Keiji KATO,
	Shunsuke KATO,	Takatoshi MATSUYAMA,
	Mikiko HAYASHI	
Professor:	Kazuyuki KOJIMA (Minimally invasive surgery center)	
Associate Professor:	Hirotoshi KOBAYASHI (Minimally invasive surgery center)	
Associate Professor:	Hiroyuki UETAKE (Translational oncology)	
Assistant Professor:	Toshiaki ISHIKAWA (Translational oncology)	
Associate Junior Professor:	Tetsuro HIGUCHI (Graduate education program for cancer treatment specialists)	
Assistant Professor:	Megumi ISHIGURO (Graduate education program for cancer treatment specialists)	
Graduate Student:	Yoichi TORIYA,	Takashi KUWAYAMA,
	Yasushi TAKATSUNO,	Ken HINOUE,
	Hiroaki ONO,	Satoshi OKAZAKI,
	Sho OTSUKI,	Yashar MURATE,
	Goshi ODA,	Akifumi KIKUCHI,
	Shunsuke TSUKAMOTO,	Yoshitake FUJIMORI,
	Ahamad KAMAS,	Shinichi YAMAUCHI,
	Kohji MIYAZAKI,	Nobuko TAMURA,
	Hideaki MURASE,	Toshiyuki ISHIBA,
	Sai SUGIMOTO,	Daiki MASUDA,
	Mai KASAHARA	

2. Purpose of Education

Main objective of surgical oncology in the graduate course is to provide students with opportunity to study oncology in order to become the well-rounded surgeon who has international and scientific feelings.

3. Research Subjects

1) Role of Cox-2 and VEGF in growth of solid tumor and angiogenesis
2) Identification of predictive factors for chemo-responsiveness and prognosis in cancer by molecular biological technique.

4. Clinical Services

Surgical oncology clinic performs less invasive operation for cancer of stomach, colon and rectum, and breast with new devices including laparoscope, thereby allowing physiological and neurological functions to be preserved. Moreover, treatment with chemotherapeutic agents for cancer is also conducted.

5. Publications

Original Articles

1. Kobayashi H, Mochizuki H, Morita T, Kameoka S, Teramoto T, Kameoka S, Saito Y,Takahashi K, Hase K, Oya M, Maeda K, Hirai T, Kameyama M, Shirouzu K, Sugihara K.Characteristics of recurrence after curative resection for T1 colorectal cancer: Japanese multicenter study. J Gastroenterology 2011;46:203-211
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3. Aoyagi H, Iida S, Uetake H, Ishikawa T, Takagi Y, Kobayashi H, Higuchi T, Yasuno M, Enomoto M, Sugihara K. Effect of classification based on combination of mutation and methylation in colorectal cancer prognosis. Oncology Reports 2011;25:789-794
4. Kobayashi H, Enomoto M, Higuchi T, Uetake H, Iida S, Ishikawa T, Ishiguro M, Sugihara K. Clinical significance of lymph node ratio and location of nodal involvement in patients with right colon cancer. Digestive Surgery

2011;28:190-197
5. Oka S, Tanaka S, Kanao H, Ishikawa H, Watanabe T, Igarashi M, Saito Y, Ikematsu H, Kobayashi K, Inoue Y, Yahahi N, Tsuta S, Simizu S, Iishi H, Yamano H, Kudo S, Tsuruta O, Tamura S, Saito Y, Cho E, Fujii T, Sano Y, Nakamura H, Sugihara K, Muto T. Mid-term prognosis after endoscopic resection for submucosal colorectal carcinoma: summary of a multicenter questionnaire survey condacted by the colorectal endoscopic resection standardization implementation working group in Japanese society for cancer of the colon and rectum. Digestive Endoscopy 2011;23:190-194
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8. Shirouzu K, Akagi Y, Fujita S, Ueno H, Takii Y, Komori K, Ito M, T, Sugihara K, and Cooperative Investigators on behalf of the Study Group of the Japanese. Society for Cancer of the Colon and Rectum (JSCCR) on Clinical Significancer of the Mesorectal Extension of Rectal Cancer. Ann Surg 2011;253:704-710
9. Sato H, Maeda K, Sugihara K, Mochizuki H, Kotake K, Teramoto T, Kameoka S, Saito Y, Takahashi K, Hirai T, Ohue M, Shirouzu K, Sakai T, Watanabe T, Hirata K, Hatakeyama K. High-risk stage II colon cancer after curative resection. J Surg Oncol 2011;104:45-52
10. Hirose M, Fukui H, Igarashi Y, Fujimori Y, Katake Y, Sekikawa A, Ichikawa K, Tomita S, Imura J, Ajioka Y, Ueno H, Hase K, Ohkura Y, Kashida H, Togashi K, Nishigami T, Matsui T, Yao T, Wada R, Matsuda K, Watanabe T, Ochiai A, Sugai T, Sugihara K, Fujimori T. Detection of desmoplastic reaction in biopsy specimens is useful for predicting the depth of invasion of early colorectal cancer: a Japanese collaborative study. J Gastorenterol 2010:45:1212-1218
11. Kobayashi H, Mochizuki H, Kato T, Mori T, Kameoka S, Shirouzu K, Saito Y, Teramoto T, Watanabe M, Morita T, Hida J, Ueno M, Ono M, Yasuno M, Sugihara K. Study Group for Rectal Cancer Surgery of the Japanese Society for Cancer of the Colon and Rectum, Lymph node ratio is a powerful prognostic index in patients with stage III distal rectal cancer: a Japanese multicenter study. Int J Colorectal Dis 2011;26:891-896
12. Miyaguchi K, Fukuoka Y, Mizushima H, Yasen M, Nemoto S, Ishikawa T, Uetake H, Tanaka S, Sugihara K, Arii S, Tanaka H. Genome-wide integrative analysis revealed a correlation between lengths of copy number segments and corresponding gene expression profile. Biomedical Infomatics 2011;7(6):280-284
13. Hamada C, Sakamoto J, Satoh T, Sadahiro S, Mishima H, Sugihara K, Saji S, Tomita N. Does 1 year adjuvant chemotherapy with oral 5-FUs in colon cancer reduce the peak of recurrence in 1 year and provide long-term OS benefit? Jpn J Clin Oncol 2011;41:299-302
14. Nagahara M, Nishida N, Iwatsuki M, Ishimaru S, Mimori K, Tanaka F, Nakagawa T, Sato T, Sugihara K, Hoon DS, Mori M. Kinesin 18A expression: clinical relevance to colorectal cancer progression. Int J Cancer. 2011 Dec 1;129(11):2543-52. Epub 2011 Jun 9
15. Inokuchi M, Murayama T, Hayashi M, Takagi Y, Kato K, Enjoji M, Kojima K, Kumagai J, Sugihara K. Prognostic value of co-expression of STAT3, mTOR and EGFR in gastric cancer. Experimental and Therapeutic Medicine 2011;2: 251-256
16. Sugita H, Iida S, Inokuchi M, Ishiguro M, Ishikawa T, Takagi Y, Enjoji M, Yamada H, Uetake H, Kojima K, Sugihara K. Methylation of BNIP3 and DAPK indicates lower response to chemotherapy and poor prognosis in gastric cancer. Oncology Reports 2011;25: 513-518
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19. Kinugasa Y, Arakawa T, Abe S, Ohtsuka A, Suzuki D, Murakami G, Fuzimiya M, Sugihara K. Anatomical Reevaluation of the Anococcygeal Ligament and Its Surgical Relevance. Dis Colon Rectum 2011; 54: 232–237
20. Tamura N, Kinoshita T. A Case of Meyaplastic carcinoma of the Breast. Jpn J Clin Oncol 2011; 41(8):1045
21. Nagao T, Kinoshita T, Tamura N, Hojo T, Morota M, Kagami Y. Locoregional recurrence risk factors in breast cancer patients with positive axillary lymph nodes and the impact of postmastectomy radiotherapy. Int J Clin Oncol

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22. Onoe S, Kinoshita T, Tamura N, Nagao T, Kuno H, Hojo T, Akashi-Tanaka S, Tsuda H. Feasibility of breast conserving surgery for Paget's disease. Breast 2011; 20 (6): 515-518
23. Yoshimura T, Nagahara M, Kuo C, Turner RR, Soon-Shiong P, Hoon DS. Lymphovascular invasion of colorectal cancer is correlated to SPARC expression in the tumor stromal microenvironment. Epigenetics 2011; 6: 1001-1011

Physiology and Cell Biology

1. Staffs and Students (April 2011)

Professor	Noboru MIZUSHIMA	
Assistant Professor	Akiko KUMA,	Taki NISHIMURA,
	Atsushi TANAKA	
Medical Fellow	Chieko KISHI	
Postdoctoral Fellow	Eisuke ITAKURA,	Ikuko HONDA
Graduate Students	Anoop Kumar Gopi VELIKKAKATH,	
	Kay KITAMURA,	Mayurbhai Himatbhai SAHANI,
	Hideaki MORISHITA,	Quy PHAM NGUYEN,
	Takako NAITO,	Takeshi KAIZUKA,
	Peidu JIANG	

2. Purpose of Education

Our department is a branch of basic medical science. In the undergraduate course, our department deals with physiology and introductory cell biology. Our main object in the graduate course is to provide a wide range of views to understand human biology using various research techniques such as molecular biology, biochemistry, cell biology and mouse genetics.

3. Research Subjects

1) Molecular mechanism of autophagy, a dynamic degradation system within cells
2) Physiological and pathophysiological roles of autophagy
3) Development of new methods for monitoring autophagy
4) Membrane dynamics of mitochondrial fission and fusion

4. Publications

Original Article

1. 1. Katayama, H., Kogure, T., Mizushima, N., Yoshimori, T., Miyawaki, A. A sensitive and quantitative technique for detecting autophagic events based on lysosomal delivery. ***Chem. Biol.*** 18:1042-1052 (2011).
2. Yoshii, S.R., Kishi, C., Ishihara, N., Mizushima, N. Parkin mediates proteasome-dependent protein degradation and rupture of the outer mitochondrial membrane. ***J. Biol. Chem.*** 286:19630-19640 (2011).
3. Asano, T., Komatsu, M., Yamaguchi-Iwai, Y., Ishikawa, F., Mizushima, N., Iwai, K. Distinct mechanisms of ferritin delivery to lysosomes in iron depleted and iron-replete cells. ***Mol. Cell Biol.*** 31, 2040-52 (2011)
4. Takamura, A., Komatsu, M., Hara, T., Sakamoto, A., Kishi, C., Waguri, S., Eishi, Y., Hino, O., Tanaka, K., Mizushima, N. Autophagy-deficient mice develop multiple liver tumors. ***Genes Dev.*** 25: 795-800 (2011).
5. Itakura, E., Mizushima, N. p62 targeting to the autophagosome formation site requires self-oligomerization but not LC3 binding. ***J. Cell Biol.*** 192: 17-27 (2011).

Review Article

1. Mizushima, N., Komatsu, M. Autophagy: renovation of cells and tissues. ***Cell*** 147:728-41 (2011).
2. Klionsky, D.J., Baehrecke, E.H., Brumell, J.H., Chu, C.T., Codogno, P., Cuervo, A.M., Debnath, J., Deretic, V., Elazar, Z., Eskelinen, E.L., Finkbeiner, S., Fueyo-Margareto, J., Gewirtz, D., Jäättelä, M., Kroemer, G., Levine, B., Melia, T.J., Mizushima, N., Rubinsztein, D.C., Simonsen, A., Thorburn, A., Thumm, M., Tooze, S.A. A comprehensive glossary of autophagy-related molecules and processes (2nd edition). ***Autophagy*** 7:1273-1294 (2011).
3. Mizushima, N. Autophagy in Protein and Organelle Turnover. ***Cold Spring Harb. Symp. Quant Biol.*** 2011 Aug 3.
4. Mizushima, N., Yoshimori, T., Ohsumi, Y. The Role of Atg Proteins in Autophagosome Formation. ***Annu. Rev. Cell Dev. Biol.*** 27:107-32 (2011).
5. Stappenbeck, T.S., Rioux, J.D., Mizoguchi, A., Saitoh, T., Huett, A., Darfeuille-Michaud, A., Wileman, T., Mizushima, N., Carding, S., Akira, S., Parkes, M., Xavier, R.J. Crohn disease: A current perspective on genetics, autophagy and immunity. ***Autophagy*** 7: 1-20 (2011)
6. Levine, B., Mizushima, N., Virgin, H.W. Autophagy in immunity and inflammation. ***Nature*** 469: 323-335 (2011).

Award

1. Noboru Mizushima: Takeda Prize for Medical Science (November, 2011)

Conference Chair / Organizer

1. The 6th Autophagy Conference 2011.1.12-14 Kakegawa, Japan
2. Zing conference on Autophagy 2011.12.7-11 Cancun, Mexico

Cardiovascular Medicine

1. Staffs and Students (April, 2011)

Professor	Mitsuaki Isobe	
Clinical Professor	Kenzo Hirao	
Associate Professor	Takashi Ashikaga	
Junior Associate Professor	Hitoshi Hachiya	
Assistant Professor	Mihoko Kawabata,	Tetsuo Sasano,
	Hiroshi Inagaki,	Shunji Yoshikawa,
	Ken Kurihara,	Yasuaki Tanaka,
	Go Haraguchi,	Ryoko Azuma,
	Masanori Konishi	
Graduate Student	Chisato Takamura,	Yu Hatano,
	Kentaro Takahashi,	Kengo Tanabe,
	Daisuke Tezuka,	Takeshi Sasaki,
	Masakazu Ohno,	Koji Higuchi,
	Munehiro Kamimura,	Taro Sasaoka,
	Tatsuya Hayashi,	Masaaki Shoji,
	Shingo Maeda,	Kiyoshi Ohtomo,
	Tetsuo Kamiishi,	Masahiko Setoguchi,
	Susumu Tao,	Tomoko Manno,
	Hiroshi Kawata,	Daisuke Ueshima,
	Tomoyo Sugiyama,	Kensuke Ihara,
	Tomofumi Nakamura,	Koji Sugiyama,
	Kei Takayama,	Ryota Iwatsuka,
	Toru Miyazaki,	Yoko Kato,
	Yuji Konishi,	Yoichi Otaki

2. Education

We are dealing with pathophysiology of circulatory system expecially cardiovascular diseases. Cardiovascular diseases are principal cause of death in our country. These diseases are categorized into several fields. They include ischemic heart disease, myocardial disease, valvular disease, atherosclerosis, arrhythmia, and infectious disease. The common final figure of these diseases is heart failure leading to patients' death. Based on recent progresses in molecular biology and bioengineering our knowledge on the pathophysiology of these diseases has been expanded rapidly. There are variety of new diagnositic technologies including imaging tests, hematological tests and electrophysiological tests. In addition, development in the treatment of cardiovascular disease is overwhelming. They include intravascular catheter intervention, catheter ablation and operation. Medical treatment has also been progressed rapidly. Further, gene therapy for cardiovascular diseases has started. All of these fields are our focus for education. In this course, students learn about modern knowledge and technologies in cardiovascular diseases, especially in the field of pathophysiology, diagnosis, treatment and prevention.

3. Research Subjects

The purposes of our investigation are to reveal the etiology and pathophysiology of cardiovascular diseases, and to develop new technologies for diagnosis and treatment. For that purpose we investigate clinical cases and model animals. Currently our investigations are focusd on arteriosclerosis, atherosclerosis, cardiomyopathy, myocarditis, arrhythmias, cardiac rejection and heart failure. The relationship between gene mutation and cardiovascular disease, electrophysiology, myocardial cell transplantation and myocardial regeneration are also our major subjects of research.

1) Clinical study of gene therapy for coronary artery disease (Isobe)
2) Clinical study for treatment of acute coronary syndrome (Isobe, Inagaki, Kimura)
3) Molecular mechanism and treatment of myocardial ischemia and reperfusion injury (Isobe, Haraguchi)
4) Molecular mechanism and treatment of coronary restenosis and vascular disease (Isobe)
5) Gene therapy of myocarditis and cardiac chronic rejection (Isobe, Suzuki)

6) Cardiac rejection and immunological tolerance (development of safe immunosuppressive therapy) (Isobe, Suzuki)
7) Treatment of heart failure and cardiomyopahty by myocardial regeneration (Isobe, Suzuki)
8) Regulation of arteriosclerosis by targeting transcription factors (Isobe)
9) Gene therapy of vascular disease (Isobe)
10) Diagnostic imaging of aortitis (Isobe)
11) Molecular mechanism and treatment of aortitis (Isobe)
12) Assessment of vascular endothelial dysfunction in vasculitis, heart failure and arrhythmia(Isobe)
13) Application in gene therapy for heart failure and cardiomyopathy(Isobe)
14) Molecular system of myocardial remodering in heart failure and ventricular hypertrophy(Isobe)
15) Therapy of sleep apnea syndrome with heart failure(Isobe)
16) Assessment by imaging of coronary artery and cardiac function(Isobe Tezuka)
17) System of origin with tachyarrhythmias (particularly supraventricular tachycardia)(Hirao)
18) Medical therapy and ablation for tachyarrhythmias (Hirao)
19) Research for the conduction of atrio-ventricular node(Hirao)
20) Research and Therapy for arrhythmia by using Cardioendosope(Hirao)
21) Research of atrial fibrillation from origin of pulmonary vein(Hirao)
22) Research of genetic factor with atrial fibrillation(Hirao)
23) Research of ablation for atrial fibrillation(Hirao Hachiya)

We conduct collaborative researches with not only Medical Research Institute and other facilities in our university but also domestic and foreign institutes according to research projects. Since clinical cases in our hospital are diverse and abundant, clinical investigations are also our major target. Therefore, we can provide many research projects depending on students' need. We encourage and help students to pursue their own original way of investigation.

4. Clinical Services

Students are also encouraged to learn about clinical cardiology. They can participate in any clinical activities underwent in our hospital including cardiac catheterization, electrophysiological study, catheter ablation, various imaging tests, cardiac pathology, and patients care.

5. Publications

Review

1. Suzuki J*, Ogawa M, Watanabe R, Takayama K, Hirata Y, Nagai R, Isobe M. Roles of prostaglandin E2 in cardiovascular diseases: focus on the potential use of a novel selective EP4 receptor agonist. Int Heart J. 52(5):266-269, 2011

Original Article

1. Sugiyama T, Kimura S, Inagaki H, Yoshikawa S, Haraguchi G, Higuchi K, Kawabata M, Hachiya H, Hirao K, Isobe M: Serial coronary angioscopic findings of drug-eluting stents implanted in a chronic totally occluded lesion. Int J Cardiol, 153(2): E29-E31, Dec 2011
2. Yonetsu T, Kakuta T, Lee T, Takahashi K, Yamamoto G, Iesaka Y, Fujiwara H, Isobe M: Impact of plaque morphology on creatine kinase-MB elevation in patients with elective stent implantation. Int J Cardiol 146(3): 454-455, Feb 2011
3. Maeda S, Iesaka Y, Otomo K, Uno K, Nagata Y, Suzuki K, Hachiya H, Goya M, Takahashi A, Fujiwara H, Isobe M: No severe pulmonary vein stenosis after extensive encircling pulmonary vein isolation: 12-month follow-up with 3D computed tomography. Heart Vessel 26: 440-448, 2011
4. Miyazaki S, Kuwahara T, Kobori A, Takahashi Y, Takei A, Sato A, Isobe M, Takahashi A: Long-Term Clinical Outcome of Extensive Pulmonary Vein Isolation-Based Catheter Ablation Therapy in Patients with Paroxysmal and Persistent Atrial Fibrillation. Heart. 2011 Apr; 97(8):668-73.
5. Ogawa M, Suzuki J (corresponding author), Yamaguchi Y, Muto S, Itai A, Hirata Y, Isobe M, Nagai R. The effects of pharmacological plasminogen activator inhibitor-1 inhibition in acute and chronic rejection in murine cardiac allografts. Transplantation. 91(1): 21-26, 2011 (Jan)
6. Aoyama N, J Suzuki, Wang D, Ogawa M, Kobayashi N, Hanatani T, Takeuchi Y, Izumi Y, Isobe M: Porphyromonas gingivalis Promotes Murine Abdominal Aortic Aneurysms via Matrix Metalloproteinase-2 Induction. J Period Res,

46: 176-183, 2011
7. Konishi M, Haraguchi G, Ishihara T, Ohgashi H, Saito K, Nakano Y, Isobe M: Adioponectin protects doxorubicin-induced cardiomyopathy by anti-apoptotic effects through AMPK upregulation in mice. Cardiovasc Res 89: 309-319, 2011
8. Maejima Y, Nobori K, Ono Y, Adachi S, Suzuki J, Hirao K, Isobe M, Ito H: Synergistic Effect of Combined HMG-CoA Reductase Inhibitor (Statin) and Angiotensin-II Receptor Blocker Therapy in Patients with Chronic Heart Failure - The HF-COSTAR Trial-, Circ J 75(3): 589-595,2011
9. Miyazaki S, Kuwahara T, Kobori A, Takahashi Y, Takei A, Sato A, Isobe M, Takahashi Y: Preprocedural predictors of atrial fibrillation recurrence following pulmonary vein antrum isolation in patients with paroxismal atrial fibrillation: Long-term follow-up results. J Cardiovasc Electrophysiol 22: 621-625, June 2011
10. Ngoc PB, Suzuki J, Ogawa M, Hishikari K, Takayama K, Hirata Y, Nagai R, Isobe M. The anti-inflammatory mechanism of prostaglandin E2 receptor 4 activation in rat experimental autoimmune myocarditis. J Cardiovasc Pharm 57(3): 365-372, March 2011
11. Maejima Y, Okada H, Haraguchi G, Onai M, Kosuge H, Suzuki J, Hirao K, Isobe M: Telmisartan, a Unique ARB, Improves Left Ventricular Remodeling of Infarcted Heart by Activating PPAR gamma. Lab Invest 91(6): 932-944, June 2011
12. Maeda S, Uno K, Iesaka Y, Otomo K, Nagata Y, Suzuki K, Hachiya H, Goya M, Takahashi A, Fujiwara H, Hiraoka M, Isobe M: Complex anatomy surrounding the left atrial posterior wall: Analysis with 3D computed tomography. Heart Vessel, 27: 58-64, 2011(Jan)
13. Yonetsu T, Kakuta T, Takahashi K, Kawaguchi N, Yamamoto G, Koura K, Hishikari K, Iesaka Y, Fujiwara H, Isobe M: In vivo critical fibrous cap thickness for rupture-prone coronary plaques assessed by optical coherence tomography. Eur Heart J 32(10): 1251-1259, May 2011
14. Ishihara T, Haraguchi G, Kamiishi T, Tezuka D, Inagaki H, Isobe M: Sensitive assessment of activity of Takayasu's arteritis by pentraxin3, a new biomarker. J Am Coll Cardiol 57:1712-1713, Apr 2011
15. Konishi M. Haraguchi G, Yoshikawa S, Kimura S, Inagaki H, Isobe M: Additive Effects of β-blockers on Renin-Angiotensin-System Inhibitors for Patients after Acute Myocardial Infarction Treated with Primary Coronary Revascularization. Circ J 75(8)：1982-1991, 2011
16. Ishihara T, Haraguchi G, Konishi M, Ohigashi H, Saito K, Nakano Y, Isobe M: The effect of adiponectin on the cardiac allograft vasculopathy. Circ J 75(8)：2005-2012, 2011
17. Lee T, Kakuta T, Yonetsu T, Takahashi K, Yamamoto G, Iesaka Y, Fujiwara H, Isobe M: Assessment of echo-attenuated plaque by optical coherence tomography and its impact on post-procedural creatine kinase-myocardial band elevation in elective stent implantation. JACC: Cardiovasc Intervent 4: 483-491, 2011
18. Miyazaki S, Kuwahara T, Kobori A, Takahashi Y, Takei A, Sato A, Isobe M, Takahashi A: Prevalence, Electrophysiological Properties and Clinical Implications of Dissociated Pulmonary Vein Activity Following Pulmonary Vein Antrum Isolation. Am J Cardiol 108(8): 1163-1172, Oct 2011.
19. Sasaki T, Hachiya H, Hirao K, Higuchi K, Hayashi T, Furukawa T, Kawabata M, Takahashi A, Isobe M: Utility of Distinctive Local Electrogram Pattern and Aortographic Anatomical Position in Catheter Manipulation at Coronary Cusps J Cardiovasc Electrophysiol 22(5): 521–529 May 2011
20. Tanaka Y, Tada H, Ito S, Naito S, Higuchi K, Kumagai K, Hachiya H, Hirao K, Oshima S, Taniguchi K, Aonuma K, Isobe M: Gender and Age Differences in Candidates for Radiofrequency Catheter Ablation of Idiopathic Ventricular Arrhythmias. Circ J 75(7): 1585-1591, 2011
21. Matsumoto K, Ogawa M, Suzuki J*, Hirata Y, Nagai R, Isobe M: Regulatory T Lymphocytes Attenuate Myocardial Infarction-Induced Ventricular Remodeling in Mice. Int Heart J 52 (6): 382-387, 2011
22. Ihara K, Nitta J, Sato A, Iwai S, Asano M, Kanoh M, Muramatsu K, Yamato T, Matsumura Y, Takei K, Asakawa K, Hirao K, Isobe M: Coexistence of left-sided atriovetrucaular accessory pathways with a common inferior pumlmonary ostium. Circ Arrythm Electrophysiol 4: 310-317, 2011.
23. Kurabayashi M, Miwa N, Ueshima D, Sugiyama K, Yoshimura K, Shimura T, Aoyagi H, Azegami K, Okishige K, Isobe M: Factors leading to failure to diagnose acute aortic dessection in the emergency room. J Cradiol 58: 287-293, 2011(Nov)
24. Kawabata M, Hirao K, Hachiya H, Higuchi K, Tanaka Y, Yagishita A, Inaba O, Isobe M: Role of oral amiodarone in patients with atrial fibrillatin and congestive heart failure. J Cardiol 58: 108-115, 2011.
25. Takahashi Y, Takahashi A, Kuwahara T, Okubo K, Fujino T, Takagi K, Nakashima E, Kamiishi T, Hikita H, Hirao K, Isobe M: Renal function after catheter ablation of atrial fibrillation. Circulation, 124: 2380-2387, 2011

26. Yagishita A, Takahashi Y, Takahashi A, Fujii A, Kusa S, Fujino T, Nozato T, Kuwahara T, Hirao K, Isobe M: Incidence of late thromboembolic events after catheter ablation of atrial fibrillation. Circ J 75: 2343-2349, 2011
27. Ohno M, Hashimoto Y, Suzuki M, Matsumura A, Isobe M: Current state of symptomatic aortic valve stenosis in the Japanese elderly. Circ J 75: 2374-2381, 2011
28. Lee T, Yonetsu T, Koura K, Hishikari K, Murai T, Iwai T, Takagi T, IesakaY, Fujiwrara H, Isobe M, Kakuta T: Impact of coronary plaque morphology assessed by optical coherence tomography on cardiac troponin elevation in patients with elective stent implantation. Circ Cardiovasc Interv 4(4): 378-386, 2011
29. Watanabe R, Nakajima T, Ogawa M, Suzuki J, Muto S, Itai A, Hirata Y, Nagai R, Isobe M.: Effects of pharmacological suppression of plasminogen activator inhibitor-1 in myocardial remodeling after ischemia reperfusion injury. Int Heart J 52 (6): 388-392, 2011
30. Tanabe, K ; Kishi, S ; Aoki, J ; Tanimoto, S ; Onuma, Y ; Yachi, S ; Taniwaki, M ; Nakajima, Y ; Nakajima, H ; Hara, K ; Isobe, M: Impact of Coronary Calcium on Outcome Following Sirolimus-Eluting Stent Implantation. Am J Cardiol 108(4): 514-517, Aug 2011
31. Yonetsu, T; Kakuta, T; Lee, T ; Takahashi, K ; Yamamoto, G ; Iesaka, Y; Fujiwara, H; Isobe, M: Impact of plaque morphology on creatine kinase-MB elevation in patients with elective stent implantation. Int J Cardiol 146(1): 80-85, Jan 2011

Anesthesiology

1. Staffs and Students (April, 2011)

Professor	Koshi MAKITA	
Associate Professor	Koichi NAKAZAWA	
Junior Associate Professor	Tokujiro UCHIDA,	Seiji ISHIKAWA
Assistant Professor	Akio MASUDA,	Megumi OHATA,
	Hiroyuki KOBINATA,	Mamoru YAMAMOTO,
	Takashi HAKUSUI,	Eri IKEDA,
	Yoshie OTANI,	Akiko FUJISAWA
Hospital Staff	Takafumi OMORI,	Koji KIDO,
	Arisa TOMOZAWA,	Mariko SENDA,
	Nobuhiro SHIOTA,	Kaname MORIKAWA,
	Tetsuo KOYANAGI,	Rie KOMURA,
	Kunio SUZUKI	
Graduate Student	Wei FAN,	Naoko YAMAKAWA,
	Fukami NAKAJIMA,	Yutaka MIURA,
	Hiroyuki ITO	

2. Purpose of Education

The Department of Anesthesiology is an integral part of the health care system providing valuable perioperative services as well as pain relief and critical care management. Our goals of education are understanding clinical patho-physiology and clinical pharmacology, which are essential for daily clinical activities to treat patients with critical illness undergoing major surgery and to relieve patients suffering from severe pain.

3. Research Subjects

1) Acute lung injury
2) Lung protective ventilation
3) Biomarkers for lung injury
4) Regeneration and repair of lung tissue in injured lung
5) Effect of neonatal exposure to inhalational anesthetics
6) Clinical studies

4. Clinical Services

Service of the Department of Anesthesiology covers perioperative management of surgical patients and pain relief services for patients suffering severe chronic pain.

5. Publications

1) Ishibashi T, Ishibashi S, Uchida T, Nakazawa K, Makita K. Reversible cerebral vasoconstriction syndrome with limb myoclonus following intravenous administration of methylergometrine. J Anesth. 2011; 25: 405-8
2) Ishikawa S, Lohser J. One-lung ventilation and arterial oxygenation. Curr Opin Anaesthesiol 2011; 24: 24-31.
3) Ishikawa S, Makino F, Kobinata S, Ito H, Kawano T, Makita K. Co-administration of ephedrine prevents reductions in cardiac output and systemic oxygen delivery secondary to lung compression maneuvers during one-lung ventilation, without reducing arterial oxygenation. J Anesth 2011; 25:163-169.
4) Ishikawa S. Arterial oxygenation during one-lung ventilation may not improve within 30 min. J Clin Monit Comput 2011; 25: 143-144.
5) Nakazawa K, Yokoyama K, Makita K. A case of difficult extubation and difficult tracheostomy following failure of partial resection for orofacial arteriovenous malformation. Anesth Resuscitation 2011; 47; 69-71
6) Takei T, Fukushima H, Hatakeyama J, Fujisawa M, Ito T. Acute Amiodarone Poisoning Occurring Twice in the Same Subject. Clin Toxicol 2011; 49: 944-5
7) Uchida T. Acute lung injury and alveolar epithelial function. J Anesth. 2011;25(1):152-4.
8) Yamakawa N, Uchida T, Matthay MA, Makita K. Proteolytic release of the receptor for advanced glycation end products from in vitro and in situ alveolar epithelial cells. Am J Physiol Lung Cell Mol Physiol. 2011;300:L516-25.

9) Yamamoto H, Uchida T, Yamamoto Y, Ito Y, Makita K. Retrospective analysis of spontaneous recovery from neuromuscular blockade produced by empirical use of rocuronium. J Anesth. 2011; 25: 845-9

Cardiovascular Surgery

1. Staffs and Students (April. 2011)

Professor	Hirokuni ARAI	
Associate Professor		
Junior Associate Professor		
Assistant Professor	Kiyoshi TAMURA,	Satoru KAWAGUCHI,
	Satoru MAKITA,	Naoto MIYAGI,
	Kenji YOKOYAMA	
Hospital Staff	4	
Graduate Student	2	
Research Student	0	

2. Purpose of education

Cardiovascular Surgery is a branch of medical science which deals the surgical treatment of the disease of heart and aorta. Main objective of Cardiovascular Surgery in the graduate course is to provide students opportunity to study surgical anatomy, pathophysiology, pharmacology, and advanced treatment. Students are also taught basic research for the surgical treatment.

3. Research Subjects

1) Developing new device in OPCAB surgery and evaluation in clinical use
2) Developing new technique/surgery for ischemic heart disease
3) Developing technique of beating mitral valve surgery
4) Research for artificial heart implantation

4. Clinical Services

Surgical treatment of the disease of heart and aorta, especially for ischemic and valvular heart disease, and aortic disease are performed. Especially for elderly patients, we offer minimally invasive surgery. We also offer the forefront science and technology to our treatment and surgery.

5. Publications in English

1. Yamasaki M, Sumi Y, Sakakibara Y, Tamaoka M, Miyazaki Y, Arai H, Kojima K, Itoh F, Amano T, Yoahizawa Y, Inase N. Pulmonary Artery Leiomyosarcoma Diagnosed without Delay. Case report in oncology 2011 (4) 287-298

International Presentation

1. Hirokuni Arai「Recent Advance in IMR Repair and Mitral Complex Remodeling」
   The Society of Thoracic Surgeons of Thailand 25th Annual Meeting Special guest lecture 2011/1/22 Bangkok
2. Hirokuni Arai「Off Pump CABG : My technique, my devices, and my results」The Society of Thoracic Surgeons of Thailand 25th Annual Meeting Scientific Session 1-CABG 2011/1/22 Bangkok
3. Hirokuni Arai「Tips and pitfalls in beating mitral valve plasty without aortic cross clamp」The Society of Thoracic Surgeons of Thailand 25th Annual Meeting Scientific Session2:Mitral valve 2011/1/22 Bangkok
4. Hirokuni Arai「Beating Mitral Value Plasty without aortic cross clamp:Technique and Results」 2011/5/28 Phuket
5. Hirokuni Arai「Beating Mitral Valve,New Era for Reparative Surgery 不停跳二尖瓣成形术、新的修復肘代」China Heart Congress 2011 2011/8/14 Beijing
6. Eiki Nagaoka, Naoto Miyagi, Kiyoshi Tamura, Satoru Makita and Hirokuni Arai. Papillary Muscle Relocation: A Repair Technique for Functional Mitral Regurgitation 2011 MITRAL CONCLAVE, New York, US. May 5.
7. Eiki Nagaoka, Kiyoshi Tamura, Satoru Makita, Naoto Miyagi, and Hirokuni Arai. Indication Of Mitral Valve Repair For Active Endocarditis – Should Mitral Valve Repair Be Performed In Every Case? ASCVTS-ATCSA 2011 Joint Meeting of 19th ASCVTS and 21st ATCSA, Phuket, Thailand, May28
8. Eiki Nagaoka, Kiyoshi Tamura, Satoru Makita, Naoto Miyagi, and Hirokuni Arai. Papillary Muscle Relocation: Repair Technique for Functional Mitral Regurgitation The Society for Heart Valve Disease 6th Biennial Meeting (Joint meeting with HVSA), Barcelona, Spain, June 28

9. Tatsuki Fujiwara, Eiki Nagaoka, Taijyu Watanabe, Naoto Miyagi, Takashi Kitao, Daisuke Sakota, Taichi Mamiya, Tadahiko Shinshi, Hirokuni Arai, and Setsuo Takatani. MedTech Dispo, A Disposable Mag-lev Centrifugal Blood Pump for ECMO ISRBP 19th Congress of the International Society for Rotary Blood Pumps, Louisville, Kentucky, USA, 2011, September8-10
10. Eiki Nagaoka, Tatsuki Fujiwara, Daisuke Sakota, Takashi Kitao, Taichi Mamiya, Tadahiko Shinshi, Hirokuni Arai, and Setsuo Takatani. Less Invasive Extracorporeal VAD System with MedTech Mag-Lev: a feasibility study in animals 2011, September 9.

Bio-informational Pharmacology

1. Staffs and Students (April, 2011)

Professor	Tetsushi Furukawa, MD, PhD
Associate professor	Junko Kurokawa, PhD
Assistant professor	Yusuke Ebana, MD, PhD

2. Purpose of Education

This laboratory focuses on understanding pathogenesis of intractable and common cardiovascular diseases using multidisciplinary approach (patch-clamp, cell biology, optical recording, genetic analysis, and computational analysis). Our ultimate goal is to improve diagnosis and management of intractable and common cardiovascular diseases.

3. Research Subjects

1. Gender-specific medicine (GSM) for cardiovascular diseases

Susceptibility of several diseases and responsibility to various drugs and therapy exhibit gender-difference, and cardiovascular system show unique gender difference. We have previously reported that non-genomic actions of sex hormones play an important role creating gender-difference in cardiac arrhythmia. As a next step, we focused on the role of XY chromosome in gender difference. Using a novel ink-jet method to visualize mouse coronary artery (developed by Dr. Kurihara's labo.), we found gender differences in coronary artery architecture during embryo stage. In XY-Sry mice, the Sry gene that is responsible for male gonad generation has been spontaneously trans-located to the autosome. When XX female mice and XY-Sry mice are mated, XX female, XXSry male, XY- female, and XY-male are generated (sex chromosome complement mouse). We are currently examining if difference in coronary artery circulation is due to XX/XY chromosome difference. (collaboration with Prof. Y. Kurihara in the University of Tokyo Graduate School of Medicine)

2. Pathogenesis of atrial fibrillation (AF)

Atrial fibrillation (AF) is the most frequent persistent arrhythmias, reaching more than 3.5 million patients in Japan. Associated cerebral infarction due to cardiogenic thrombosis (250,000 patients /year in Japan) causes reduced QOL and is one of the main causes of bedridden old people. We have taken following approaches to establish protection and treatment of atrial AF.

a. GWAS (genome-wide association study) in AF

We carry out most extensive GWAS (genome-wide association study) in Japan to determine gene polymorphisms associated with AF. In this year, we also participated in the international Meta-analysis called as CHARGE study. We found 12 SNPs associated with AF: among them, 6 SNPs were associated with both European/American and Japanese, 4 with European/American but not with Japanese, and 2 with Japanese but not with European/American. (collaboration with Prof.. Nakamura Y in The Institute of Medical Science, The University of Tokyo, Dr. Tanaka T. in RIKEN, Dr. Sawabe M. in Tokyo Metropolitan Geriatric Hospital, and Department of Cardiology in this University)

b. Biological functional analysis of AF-associated SNP

The SNP most significantly associated with AF (labo-name AF#1) located in the haplo-block with no genes, and the closest gene is Pitx2, which is located about 150 kb depart. We first performed SNP-discovery in this haplo-block, and we analyzed the association of AF. We found a group with 21 SNPs as a candidate of functional SNP, in which SNPs are in LD relation within the group, and are not in LD relation between the groups. Next, we examined histone code of these 21 SNPs. We found one SNP as bivalent, the region including this SNP suppressed Pix2 transcription, and there is significant difference in Pitx2 transcription between protective and risk allele. Thus, this SNP is the functional one, affecting the transcription of Pitx2 in a bivalent manner.

c. Inflammatory and immunological mechanisms in atrial fibrillation

AF is a multifactorial disease, and inflammatory response is believed to play a role in linking between these risks and AF. We examined the relation between atrial dilatation, one of the most frequently found risk factor and inflammation. We found that stretch-induced ATP release and thereby recruitment of macrophages act as an initial factor to provoke atrial inflammation.

3. Pathogenesis of ventricular tachyarrhythmias and sudden cardiac death

Despite extensive effort by many researchers for years, ventricular tachycardia and fibrillation remain the main cause of sudden death, and the biggest challenge in arrhythmia research. Our laboratory approaches this issue using 2

genetically engineered mice.

a. Analysis of *NOS1AP* (NOS1 associated protein) KO mice

In recent GWAS performed in Western countries, *NOS1AP* is surprisingly the most closely related gene to sudden cardiac death. We analyzed *NOS1AP* KO mice to clarify the mechanism of association between *NOS1AP* and sudden cardiac death. Our data showed that *NOS1AP* KO mice suffered from oxidative stress to a greater magnitude than WT mice, resulting in depressed cardiac function and greater susceptibility to sudden death.

(collaboration with Dr. N. Kato in National Center for Global Health and Medicine)

b. KO mice for a transcription regulator specific to the His-Purkinje system

Recent clinical data implicate the importance of His-Purkinje system (HPS) in development of ventricular tachycardiac/fibrillation, and cardiac sudden death ("Purkinje arrhythmias"). We created mice deficient of a transcription regulator specifically expressed in HPS. Mice exhibited similar phenotype as Brugada syndrome (BrS) and/or early repolarization syndrome (ERS), including elevated J-wave, and right bundle branch block pattern in surface ECG, and greater arrhythmogeniety. This mouse could provide a mouse model of BrS and/or ERS.

(collaboration with Prof. N. Miura Hamamatsu University School of Medicine, Dr. Wataru Shimizu in National Center for Cardiovascular Diseases, and Dr. Akihiko Nogami in Yokohama Rosai Hospital)

4. Use of iPS cells for arrhythmia research

Traditional arrhythmia researches have been performed in cardiomyocytes of species other than human, or in cultured cells, in which human ion channel genes have been heterologously expressed. The milieu different from human cardiac myocytes (especially the lack of excitation-contraction coupling machinery) is the huge limitation for arrhythmia research. Cardiomyocytes differentiated from human iPS cells could overcome this critical limitation, and would bring marked advance in arrhythmias researches. We take following 2 approaches.

a. Establishment of human iPS-derived cardimyocytes (hiPS-CM) from familiar sudden death patients (LQT, Brugada syndrome)

We try to establish and characterize iPS cell-derived cardiomyocytes from human fibroblasts obtained from familiar sudden death patients (LQT, Brugada syndrome). We have able to establish iPS cells from LQT1, LQT2, LQT3, and Brugada syndrome. Our data showed that hiPS-CM from LQT patients maintain some of electrophysiological phenotype found in LQT patients' hearts. In addition, in hiPS-CM from LQT3 patient, we found that abnormal Ca2+ handling contributed to the arrhythmogenecity.

(collaboration with Prof. K. Fukuda in Keio University School of Medicine)

b. Drug screening system using human iPS cells-derived cardiomyocytes

The most frequent cause of recall of drugs on market is QT prolongation and related arrhythmias. Thus, discovery of new drugs requires thorough text of safety for QT prolongation, which consists of hERG assay in vitro, QT assay in vivo in large animals, and thorough QT test (TQT) in healthy human volunteer. Since in vivo assay in large animals and TQT in human are associated with huge effort and financial cost, the high quality in vitro assay system is strongly warranted. We examined if cardiomyocytes derived from human iPS cells could provide an assay system in human tissues in pre-clinical study step, and facilitate new drug discovery and prevent unexpected drug side effects.

(collaboration with Prof. Kenji Yasuda in Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University, and Dr. Y. Kanda in National Institute of Health Sciences)

5. Use of state-of-art technology for cardiovascular research

a. Use of motion vector technology for in vitro analysis of cardiac contraction

To analyze cardiac contractility, one has to perform echocardiography or catheter measurement of intra-cardiac pressure/intra-cardiac volume in vivo. Thus, to examine possible cardiac toxicity of new drugs, one must wait until in vivo assay. Motion vector technology created by Sony Co. can non-invasively estimate contraction and relaxation speed of cardiac myocytes in vitro. We verified using well-defined drugs that motion vector technology can assess drug's effects on contraction and relaxation of cardiac myocytes. We also confirmed that motion vector can be monitored simultaneously with electrical activity of cardiomyocytes (MEA), and also that this technology can be applied to the hiPS-CMs.

(collaboration with Dr. Akio Yasuda, Dr. Eriko Matsui, Dr. Tomohiro Hayakawa, Dr. Hatsune Uno, and Dr. Takeshi Kunihiro in Sony Co.)

b. Basic research for generation of 3-D simulator of cardiac electrical activity

Calculation speed of Japanese super-computer becomes the fastest in the world. One of the suggested applications of

super-computer to medical field is the creation of 3-D simulator of human body. Since computer model of electrical activity of cardiomyocytes has been well established, and predicting QT prolongation-associated arrhythmias is strongly warranted, heart 3-D simulation model is one of the most promising one. Within the framework of FIRST Program "Development of medical technologies for treating intractable cancers and cardiovascular diseases" (Leader Dr. Ryozo Nagai), subtheme "Optimized medicine using cardiac simulator" (Leader Dr. Toshiaki Hisada), we are assigned to obtain parameter to incorporate into computer model from patch-clamp experiments. Based on these parameters, Dr Hisada's laboratory is current underway to construct 3-D computer simulator. We also obtained data in 12-lead ECG in dogs for future validation of 3-D simulator.
(collaboration with Prof. Toshiaki Hisada, Prof. Seiryo Sugiura, and Dr. Junichi Okada in Graduate School of Frontier Sciences, the University of Tokyo)

4. Publications List

Original Article

1. Sugiyama H, Nakamura K, Morita H, Akagi S, Tani Y, Katayama Y, Nishii N, Miyoshi T, Nagase S, Kohno K, Kusano FK, Ohe T, Kurokawa J, Furukawa T, Ito H. Circulating KCNH2 current-activating factor in patients with heart failure and ventricular tachyarrhythmia. *PLoS ONE*, 2011;6:e19897.

Molecular Medicine and Metabolism

1. Staffs and Students (April, 2011)

Professor	Yoshihiro OGAWA	
Tokunin Professor	Yasutomi KAMEI	
Associate Professor	Takayoshi SUGANAMI	
GCOE Junior Asscoiate Professor	Naoki SAWADA	
Tokunin Assistant Professor	Misa KIM-SAIJO,	Xunmei YUAN,
	Ibuki SHIRAKWA,	Mayumi TAKAHASHI,
	Miyako TANAKA,	Michiko ITOH
JSPS Research Fellow	Rumi HACHIYA	
Secretary	Hiroko TAKAHASHI	
Graduate Students	Masayuki ICHIOKA,	Naoto TSUDA,
	Tatsuya EHARA,	Hirohide NANBU,
	Yorihiro IWASAKI,	Fumihiko TAKIZAWA,
	Chikako AOYAMA,	Kenji IKEDA,
	Kuniha KONUMA,	Toshiyuki SAKURAI,
	Maki HATTORI	

2. Purpose of Education

The concept of the metabolic syndrome has come before the footlight because it is a precursory state of atherosclerotic diseases. It has been defined as a constellation of abdominal obesity, insulin resistance, hyperlipidemia, and hypertension, and is a multi-factorial pathologic condition that arises from complex interactions between genetic and environmental factors. In our laboratory, all the staffs and students have been provided the unique opportunities to investigate the pathophysiologic and therapeutic implication of adipocytokines, nuclear hormone receptors, and transcriptional co-activators/co-repressors toward the better understanding of the molecular mechanism of the metabolic syndrome.

3. Research Subjects

1) Molecular mechanism underlying adipose tissue inflammation
2) Role of central leptin signaling in regulation of peripheral inflammation
3) Metabolic analysis of transgenic mice overexpressing RXRγ in skeletal muscle
4) Regulation of hepatic lipogenesis gene expression via DNA methylation.
5) Molecular mechanisms for the impaired angiogenesis in diabetes

4. Publications

Original Articles

1. M. Ichioka, T. Suganami, N. Tsuda, I. Shirakawa, Y. Hirata, N. Satoh-Asahara, Y. Shimoda, M. Tanaka, M. Kim-Saijo, Y. Miyamoto, Y. Kamei, M. Sata, Y. Ogawa. Increased expression of macrophage-inducible C-type lectin in adipose tissue of obese mice and humans. **Diabetes** 60: 819–826, 2011.
2. N. Satoh-Asahara, T. Sugamami, T. Majima, K. Kotani, Y. Kato, R. Araki, K. Koyama, T. Okajima, M. Tanabe, M. Oishi, A. Himeno, S. Kono, A. Sugawara, M. Hattori, Y. Ogawa, A. Shimatsu; The Japan Obesity Metabolic Syndrome Study (JOMS) Group. Urinary cystatin C as a potential risk marker for cardiovascular disease and chronic kidney disease in patients with obesity and metabolic syndrome. **Clin. J. Am. Soc. Nephrol.** 6: 265-273, 2011.
3. M. Tanaka, T. Suganami, M. Kim-Saijo, C. Toda, M. Tsuiji, K. Ochi, Y. Kamei, Y. Minokoshi, Y. Ogawa. Role of central leptin signaling in the starvation-induced alteration of B cell development. **J. Neurosci.** 31: 8373-8380, 2011.
4. S. Sugita, Y. Kamei, F. Akaike, T. Suganami, S. Kanai, M. Hattori, Y. Manabe, N. Fujii, T. Takai-Igarashi, J. Oka, H. Aburatani, T. Yamada, H. Katagiri, S. Kakehi, Y. Tamura, S. Takasuga, T. Sasaki, H. Kubo, K. Nishida, S. Miura, O. Ezaki, Y. Ogawa. Metabolic analysis of transgenic mice overexpressing RXR γ in skeletal muscle: increased glucose tolerance and suppression of obesity-induced fatty liver. **PLoS ONE** 6: e20467, 2011.
5. M. Itoh, T. Suganami, N. Nakagawa, M. Tanaka, Y. Yamamoto, Y. Kamei, S. Terai, I. Sakaida, Y. Ogawa. Melanocortin-4 receptor-deficient mice as a novel mouse model of non-alcoholic steatohepatitis. **Am. J. Pathol.** 179: 2454-2463, 2011.

Review Articles

1. M. Itoh, T. Suganami, R. Hachiya, and Y. Ogawa. Adipose tissue remodeling as homeostatic inflammation. **Int. J. Inflamm.** 2011: 720926, 2011.

Department of Nephrology

1. Staffs and Students (April, 2011)

Professor	Sei SASAKI	
Associate Professor	Shinichi UCHIDA,	Tatemitsu RAI (Dept. of Blood Purification),
	Yumi NODA (Dept. of Chronic Kidney Disease)	
Junior Associate Professor	Tomokazu OKADO	
Assistant Professor	Kayoko ETO,	Eisei SOHARA (Dept. of Blood Purification)
	Shotaro NAITO (Dept. of Blood Purification)	
	Soichiro IIMORI (Dept. of Chronic Kidney Disease)	
Hospital Staff	Tomoki KAWASAKI,	Ikue ISHIMOTO,
	Takeshi ONISHI,	Yuri KASAGI (Dept. of Blood Purification)
	Yuya ARAKI (Dept. of Blood Purification, 2011.7~)	
	Sayaka YAMAMOTO (Dept. of Blood Purification, ~2011.6)	
Technician	Motoko CHIGA	
Secretary	Asa MURANO,	Miki SAKIYAMA,
	Yukiko ITO	
Graduate Student	Naohiro NOMURA,	Katsuyuki OI,
	Gulibaha TALATI,	Mai WAKABAYASHI,
	Hidenori NISHIDA,	Muhammad Zakir Hossain Khan,
	Koichiro SUSA,	Kiyoshi ISOBE,
	Takayasu MORI,	Yuichi INOUE,
	Daiei TAKAHASHI,	Moko MISAWA,
	Eriko KIKUCHI	

2. Purpose of Education

The policy of the *Department of Nephrology* is to accomplish trustworthy medicine and to educate excellent academic scientists and nephrologists.

Our department is one of the initial institutes that started the hemodialysis therapy in Japan, and thus, has a long experience of clinical practice of kidney diseases. Through the activities our department has brought up a number of leading nephrologists who contribute to establishing nephrology in Japan and in the world. Academic research is another important mission of our department. Research from bench experiments to clinical studies has been performed to understand the pathogenesis of the diseases and to develop new therapeutic strategies. Especially, our study on "water-electrolyte transport in the kidney and related diseases" is well known worldwide for its originality and high quality. We hope new young scientists and physicians join us for future science and nephrology.

3. Research Subjects

We have been studying renal membrane transporters and channels for more than 20 years. Most of the AQP water channels and CLC chloride channels were cloned in our laboratory in 1990s (***Nature1993, PNAS1994, JBC1993&1994, Neuron1994, etc***) and the physiological roles in vivo have been analyzed by generating the KO mice (***Nature Genet1999, PNAS2006, etc***). Recently, we are interested in regulators of transporters and channels (***JCB2008***), and discovered a novel kinase cascade (WNK-OSR1/SPAK-NCC) regulating NaCl balance in the body (***Cell Metab 2007, Hum Mol Genet 2010, JCS 2011, PLoS One 2011***). Based on the molecular mechanisms we identified, we hope to find the way to regulate renal transporters and channels.

4. Clinical Services

We are taking care of a variety of kidney diseases including acute kidney injury, chronic kidney disease, blood purification, and renal transplantation. We routinely perform renal biopsy.

5. Publications

1. Chiga M, Rafiqi FH, Alessi DR, Sohara E, Ohta A, Rai T, Sasaki S, Uchida S. Phenotypes of pseudohypoaldosteronism type II caused by the WNK4 D561A missense mutation are dependent on the WNK-OSR1/SPAK kinase cascade. *J. Cell Sci.* 124:1391-5, 2011.

2. Iimori S, Mori Y, Akita W, Kuyama T, Takada S, Asai T, Kuwahara M, Sasaki S, Tsukamoto Y. Diagnostic usefulness of bone mineral density and biochemical markers of bone turnover in predicting fracture in CKD stage 5D patients-a single-center cohort study. *Nephrol. Dial. Transplant*. 0:1-7, 2011.
3. Ikeda M, Andoo A, Shimono M, Takamatsu N, Taki A, Muta K, Matsushita W, Uechi T, Matsuzaki T, Kenmochi N, Takata K, Sasaki S, Ito K, Ishibashi K. The NPC motif of aquaporin-11, unlike the NPA motif of known aquaporins, is essential for full expression of molecular function. *J. Biol.Chem*. 286:3342-50, 2011.
4. Inaguma D, Ando R, Ikeda M, Joki N, Koiwa F, Komatsu Y, Sakaguchi T, Shinoda T, Yamaka T, Shigematsu T. Nephrologist care for 12 months or more increases hemodialysis initiation with permanent vascular access. *Clin. Exp. Nephrol*. 15:738-744, 2011.
5. Kanda E, Erickson K, Bond TC, Krisher J, McClellan WM. Hemodialysis treatment center early mortality rates for incident hemodialysis patients are associated with the quality of care prior to starting but not following onset of dialysis. *Am. J. Nephrol*. 33:390-7, 2011.
6. Koiwa F, Komukai D, Hirose M, Yoshimura A, Ando R, Sakaguchi T, Komatsu Y, Shinoda T, Inaguma D, Joki N, Nishida H, Ikeda M, Shigematsu T. Influence of renin-angiotensin system on serum parathyroid hormone levels in uremic patients. *Clin. Exp. Nephrol*. 2011 Sep 14, published online.
7. Kuwahara M, Iimori S, Kuyama T, Akita W, Mori Y, Asai T, Tsukamoto Y, Adachi S, Rai T, Uchida S, Sasaki S. Effect of anemia on cardiac disorders in pre-dialysis patients immediately before starting hemodialysis. *Clin. Exp. Nephrol*. 15:121-125, 2011.
8. Li PK, Chow KM, Matsuo S, Yang CW, Jha V, Becker G, Chen N, Sharma SK, Chittinandana A, Chowdhury S, Harris DC, Hooi LS, Imai E, Kim S, Kim SG, Langham R, Padilla BS, Teo BW, Togtokh A, Walker RG, Wang HY, Tsukamoto Y. Asian chronic kidney disease best practice recommendations: positional statements for early detection of chronic kidney disease from Asian Forum for Chronic Kidney Disease Initiatives (AFCKDI). *Nephrology (Carlton, Vic)* 16: 633-641, 2011.
9. Lin SH, Yu IS, Jiang ST, Lin SW, Chu P, Chen A, Sytwu HK, Sohara E, Uchida S, Sasaki S, Yang SS. Impaired phosphorylation of Na(+)-K(+)-2Cl(-) cotransporter by oxidative stress-responsive kinase-1 deficiency manifests hypotension and Bartter-like syndrome. *Proc. Natl. Acad. Sci. U S A*. 108:17538-43, 2011.
10. Maeda Y, Araki Y, Uno T, Nishigaki K, Inaba N. Successful treatment of statin resistant hypercholesterolemia by an inhibitor of cholesterol absorption, ezetimibe. *J. Med. Cases* 2:44-7, 2011.
11. Maeda Y, Araki Y, Uno T, Nishigaki K, Inaba N. Does a proton pump inhibitor cause hypokalemia? *Int. Med*. 50:1045-1050, 2011.
12. Maeda Y, Kojima N, Araki Y, Uno T, Kuyama T, Nishigaki K. Acquired factor V inhibitor developing after percutaneous ethanol injection therapy for hepatocellular carcinoma. *J. Med. Cases* 2:132-7, 2011.
13. Maeda Y, Araki Y, Uno T, Yoshida A, Nishigaki K, Inaba N, Hayashi H, Deguchi Y. Measurement of glomerular filtration rate by rapid intravenous injection of a newly developed inulin fraction. *J. Rural Med*. 6:9-15, 2011.
14. Maeda Y, Araki Y, Uno T, Nishigaki K, Inaba N. Successful treatment of hypertension in anuric hemodialysis patients with a direct renin inhibitor, aliskiren. *J. Rural Med*. 6:26-31, 2011.
15. Maeda Y, Araki Y, Uno T, Kuyama T, Nishigaki K. Estimated glomerular filtration rate in peritoneal dialysis practice. *Clin. Exp. Nephrol*. 15:611-2, 2011.
16. Mandai S, Nagahama K, Tsuura Y, Hirai T, Yoshioka W, Takahashi D, Aki S, Aoyagi M, Tanaka H, Tamura T. Recovery of renal function in a dialysis-dependent patient with microscopic polyangiitis and both myeloperoxidase anti-neutrophil cytoplasmic antibodies and anti-glomerular basement membrane antibodies. *Intern. Med*. 50:1599-1603, 2011.
17. Morishita Y, Hanawa S, Miki T, Sugase T, Sugaya Y, Chinda J, Iimura O, Tsunematsu S, Ishibashi K, Kusano E. The association of plasma prorenin level with an oxidative stress marker, 8-OHdG, in nondiabetic hemodialysis patients. *Clin. Exp. Nephrol*. 15:398-404, 2011.
18. Morishita Y, Watanabe M, Nakazawa E, Ishibashi K, Kusano E. The interaction of LFA-1 on mononuclear cells and ICAM-1 on tubular epithelial cells accelerates TGF-β1-induced renal epithelial-mesenchymal transition. *PLoS One*. 6:e23267, 2011.
19. Morishita Y, Ohnishi A, Watanabe M, Ishibashi K, Kusano E. Establishment of acute kidney injury mouse model by 0.75% adenine ingestion. *Ren. Fail*. 33: 1013-8, 2011.
20. Naito S, Ohta A, Sohara E, Ohta E, Rai T, Sasaki S, Uchida S. Regulation of WNK1 kinase by extracellular potassium. *Clin. Exp. Nephrol*. 15:195-202, 2011.
21. Nomura N, Tajima M, Sugawara N, Morimoto T, Kondo Y, Ohno M, Uchida K, Mutig K, Bachmann S, Soleimani M,

Ohta E, Ohta A, Sohara E, Okado T, Rai T, Jentsch TJ, Sasaki S, Uchida S. Generation and analyses of R8L barttin knockin mouse. *Am. J. Physiol. Renal. Physiol.* 301:F297-307, 2011.

22. Ohashi T, Uchida K, Uchida S, Sasaki S, Nitta K. Dexamethasone increases the phosphorylation of nephrin in cultured podocytes. *Clin. Exp. Nephrol.* 15:688-93, 2011.
23. Ohno M, Uchida K, Ohashi T, Nitta K, Ohta A, Chiga M, Sasaki S, Uchida S. Immunolocalization of WNK4 in mouse kidney. *Histochem. Cell Biol.* 136:25-35, 2011.
24. Ohta E, Akazawa M, Noda Y, Mandai S, Naito S, Ohta A, Sohara E, Okado T, Rai T, Uchida S, Sasaki S. Severe hyperparathyroidism in a pre-dialysis chronic kidney disease patient treated with a very low protein diet. *J. Bone Miner. Metab*. 2011, published online.
25. Oi K, Sohara E, Rai T, Misawa M, Chiga M, Alessi DR, Sasaki S, Uchida S. A minor role of WNK3 in regulating phosphorylation of renal NKCC2 and NCC co-transporters *in vivo*. *Biology Open* BIO2011048, 2011, published online.
26. Sasaki S, Ohmoto Y, Mori T, Iwata F, Muraguchi M. Daily variance of urinary excretion of AQP2 determined by sandwich ELISA method. *Clin. Exp. Nephrol.* 2011 Dec 10, published online.
27. Sohara E, Rai T, Yang SS, Ohta A, Naito S, Chiga M, Nomura N, Lin SH, Vandewalle A, Ohta E, Sasaki S, Uchida S. Acute insulin stimulation induces phosphorylation of the Na-Cl cotransporter in cultured distal mpkDCT cells and mouse kidney. *PLoS One*. 6:e24277, 2011.
28. Soma J, Sato K, Nakaya I, Yahata M, Sakuma T, Sato H. Systemic non-amyloidotic fibril deposition disease: A probable variant form of fibrillary glomerulonephritis. *Clin. Nephrol.* 75:74-79, 2011.
29. Takahashi D, Nagahama K, Tsuura Y, Tanaka H, Tamura T. Sunitinib-induced nephrotic syndrome and irreversible renal dysfunction. *Clin. Exp. Nephrol*, 2011, published online.
30. Taniguchi M, Tanaka M, Hamano T, Nakanishi S, Fujii H, Kato H, Koiwa F, Ando R, Kimata N, Akiba T, Kono T, Yokoyama K, Shigematsu T, Kakuta T, Kazama JJ, Tominaga Y, Fukagawa M. Comparison between whole and intact parathyroid hormone assays. *Ther. Apher. Dial.* 15 Suppl 1:42-49, 2011.
31. Watanabe R, Nakaya I, Yahata M, Takahashi T, Sasajima T, Takeuchi K, Oura H, Sakuma T, Tomichi N, Mori Y, Soma J. Pulmonary hypertension confirmed histologically five months prior to scleroderma renal crisis onset. *Mod. Rheumatol.* 21:320-324, 2011.
32. Yui N, Lu HJ, Bouley R, Brown D. AQP2 is necessary for vasopressin- and forskolin mediated filamentous actin depolymerization in renal epithelial cells. *Biology Open*, 2011, published online.

Comprehensive Reproductive Medicine (Maternal and Women's Clinic)

1. Staffs and Students (2011)

Professor :	Toshiro Kubota	
Associate Professor :	Satoshi Obayashi	
Professor(chairman) :	Naoyuki Miyasaka	
Junior Associate Professor :	Naoyuki Yoshiki,	Tatsuya Harada,
	Yoshihito Momohara	
Assistant Professor :	Masakazu Terauchi,	Akira Wakabayashi,
	Tomonori Ishikawa,	Kimio Wakana,
	Masaki Sekiguchi,	Noriko Sudo(Oshima),
	Satoko Takamine,	Shinji Takahashi,
	Tomomi Ookawa,	Maiko Kitano
Hospital Staff :	Sanae Aoki,	Kaoru Tsukamoto,
	Nobuyuki Kidera,	Shiho Ooide,
	Miki Sugawa	
Graduate Student :	Noriko Sudo(Oshima),	Yuki Iwahara,
	Makiko Tajima,	Mikayo Toba,
	Masaya Uno,	Shiro Hiramitsu,
	Yoshinori Ookura,	Reiko Tajirika,
	Atsushi Yamamoto,	Makoto Iizuka,
	Kiyotaka Takagi,	Izumi Honda,
	Aiko Motoshita,	Kazuki Yamada,
	Yuki Hirose	

2. Purpose of 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. Research Subjects

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 clump)

3. Measurement of intra-cellular IP_3

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

4. Clinical Services

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.

5. Publications

Original Article

1. Miyasaka N, Kubota T. Unusually intense 18F-fluorodeoxyglucose (FDG) uptake by a mature ovarian teratoma: A pitfall of FDG positron emission tomography. J Obstet Gynaecol Res 37(6):623-628, 2011
2. Aso T,Uchiyama S,Matsumura Y,Taguchi M,Nozaki M,Takamatsu K,Ishizuka B, Kubota T. Mizunuma H,Ohta .A Natural S-(−)Equol supplement alleviates hot flushes and other menopausal symptoms in equal nonproducing postmenopausal Japanese women. Journal of Women' s Health Vol.20(00) ,2011
3. Nohara M, Momoeda M, Kubota T,Nakabayashi M. Menstrual cycle and menstrual pain problems and related risk factors among Japanese female works. Industrial Health2011 49 :228-234,2011
4. Takimoto H, Hayashi F, Kusama K, Kato N, Yoshiike N, Toba M, Ishibashi T, Miyasaka N, Kubota T. Elevated maternal serum folate in the third trimester and reduced fetal growth: A longitudinal study J Nutr Vitaminol 57:130-137, 2011
5. Yoshiki N, Okawa T, Kubota T. Single - incision laparoscopic myomectomy with intracorporeal suturing. Fertility and Sterility 95(7):2426-2428, 2011
6. Terauchi M, Obayashi S, Akiyoshi M, Kato K, Matsushima E, Kubota T. Effects of oral estrogen and hypnotics on Japanese peri- and postmenopausal women with sleep disturbance. J Obstet Gynaecol Res 37(7): 741-749, 2011
7. Terauchi M, Akiyoshi M, Owa Y, Kato K, Obayashi S, Kubota T. Effects of the Kampo medication keishibukuryogan on blood pressure in perimenopausal and postmenopausal women. Int J Gynecol Obstet 114(2): 149-152, 2011
8. Terauchi M, Hiramitsu S, Obayashi S, Akiyoshi M, Owa Y, Kato K, Matsushima E, Kubota T. Effects of three Kampo formulae—Tokishakuyakusan (TJ-23), Kamishoyosan (TJ-24), and Keishibukuryogan (TJ-25)—on Japanese peri- and postmenopausal women with sleep disturbances. Arch Gynecol Obstet 284(4): 913-921, 2011
9. Terauchi M, Honjo H, Mizunuma H, Aso T. Effects of oral estradiol and levonorgestrel on cardiovascular risk markers in postmenopausal women. Arch Gynecol Obstet (in press)
10. Terauchi M, Hiramitsu S, Akiyoshi M, Owa Y, Kato K, Obayashi S, Matsushima E, Kubota T. Associations between insomnia, anxiety and depression in peri- and post-menopausal women. Maturitas (in press)
11. Wakana K, Yasugi T, Nako Y, Nei T, Ozaki Y, Mizutani K. Successful surgical treatment and chemotherapy for ovarian cancer in a patient with idiopathic thrombocytopenic purpura. International Journal of Clinical Oncology 2011 ;16(4):447-9
12. Oshima-Sudo N, Qin Li, Hoshino Y, Nakahama K, Kubota T, Morita I. Optimized method for culturing outgrowth endothelial progenitor cells. Inflammation and Regeneration 31;219-227, 2011
13. Toba M, Miyasaka N , Sakurai U, Yamada I, Eishi Y, Kubota T. Diagnostic possibility of diffusion tensor imaging for the evaluation of myometrial invasion in endometrial cancer : An ex vivo study : Journal of Magnetic Resonance Imaging 34:616-622,2011
14. Akiyoshi M, Kato K, Owa Y, Sugiyama M, Miyasaka N , Obayashi S, Kubota T, Aso T, Kimura T, Moritani T, Sato

K. Relationship between estrogen,vasomotor symptoms, and heart rate variability in climacteric women. Journal of Medical and Dental Sciences Vol.58 No.2,2011

International Presentation

1. Uno M, Saitoh Y, Uota S, Kubota T, Yamaoka S : NF-kappaB inducing kinase contributes to the manifestation of cancer phenotypes in ovarian cancer cells through constitutive activation of NF-kappaB 13th International TNF Conference (TNF2011) Awajishima, 2011.5
2. Iwahara Y, Nagai A, Yoshiki N, Yamashita K, Kubota T : Identification of Heme Oxygenases in human endometrium and adenomyotic tissue. 67th ACM (Annual Clinical Meeting) of SOGC (The society of Obstetrician and Gynecologist of Canada) Vancouver June 21-25,2011
3. Oshima-Sudo N, Yoshida T, Hoshino Y, Komaki M, Nakahama K, Kubota T, Abe M, Morita I : Tissue engineered capillary vessels for regenerative medicine. The 9th Japan-Korea Joint Symposium on Vascular Biology, Busan, Korea, Aug 26, 2011
4. Kubota T : New criteria of diagnosis and treatment in polycystic ovary syndrome (PCOS) in Japan. 16th World Congress on In Vitro Fertilization, Tokyo, Japan, Sep, 2011
5. Terauchi M, Hiramitsu S, Akiyoshi M, Owa Y, Kato K, Obayashi S, Matsushima E, Kubota T : 22nd North American Menopause Society Annual Meeting, Washington DC, Sep 23,2011
6. Oshima-Sudo N, Yoshida T, Hoshino Y, Komaki M, Nakahama K, Kubota T, Abe M, Morita I : Vascular regeneration using cell-printing system: The First Asia-Pacific Vascular Biology Meeting, Tokyo, Dec 10, 2011

Urology

1. Staffs and Students (December, 2011)

Professor and Chairman	Kazunori Kihara	
Associate Professor	Yasuhisa Fujii (~June),	Hitoshi Masuda (July~)
Lecturer	Hitoshi Masuda (~June),	Fumitaka Koga (May~),
	Kazutaka Saito (July~)	
Assistant Professor	Fumitaka Koga (~April),	Kazutaka Saito (~June),
	Noboru Numao (~January, February~Lecturer of Center for minimally invasive surgery),	
	Yoh Matsuoka,	Junichirou Ishioka,
	Minato Yokoyama,	Mizuaki Sakura (July~October),
	Manabu Tatokoro (November~)	
Hospital Staff	Yoshinobu Komai,	Shuichiro Kobayashi,
	Toshiki Kijima,	Yasukazu Nakanishi,
	Hideki Takeshita,	Yuichi Kubo,
	Masaya Ito,	Makoto Kagawa,
	Akitetsu Miyakawa,	Hiroshi Fukushima
Graduate Student	Toshiki Kijima,	Naoko Kawamura,
	Naotaka Fukui,	Sachi Kitayama,
	Yasukazu Nakanishi,	Yuichi Kubo,
	Hideki Takeshita,	Shuichiro Kobayashi,
	Toshihiro Kanda,	Masaya Ito,
	Takayuki Nakayama,	Masaharu Inoue,
	Hajime Tanaka	

2. Purpose of Education

We are committed to offering educational programs to facilitate the development of outstanding academic urologists of the next generation. We believe that one of our missions is to educate students, residents and fellows in the art and science of urology and thereby to train the future leaders in the field. The continuous commitment to clinical and translational research is reflected to publications in international journals, presentations at international meetings and awards, which are listed below.

3. Research Subjects

Clinical Research

1) Innovation and establishment of minimally invasive, gasless single port access urological surgery
2) Development of optimal 3-dimentional prostate needle biopsy
3) Development of nomograms for optimal detection of prostate cancer
4) Sequential combination therapy to prolong survival of advanced prostate cancer patients
5) Development and establishment of curative and minimally invasive bladder preservation using low-dose chemoradiotherapy plus partial cyctectomy
6) Development and establishment of minimally invasive, nonischemic nephron-sparing surgery against kidney cancer
7) Development and establishment of focal therapy using hemiablative brachytherapy against prostate cancer
8) Sequential combination therapy to prolong survival of advanced kidney cancer patients, starting with immunotherapy combined with multiple molecular targeted agents
9) Application of diffusion-weighed MRI to diagnosis, assessment of therapeutic effects and monitoring of relapse in urological cancer
10) Application of serum C-reactive protein as a prognostic biomarker of urological malignancies and as a marker for surgical invasiveness

Translational Research

1) Development of differentiation-inducing therapy against hormone-resistant prostate carcinomas
2) Investigation on molecular mechanisms, in particular deregulation of the NO system, underlying voiding and erectile dysfunction to develop rational therapy

3) Overcoming therapeutic resistance to chemo- and/or radiotherapy against urological malignancies using novel molecular targeted agents
4) Investigation on functional roles of p63 protein in urothelial carcinomas

4. Clinical Services

Our mission is to provide the best urological care to all patients. Besides offering urological practices of the international standard, we are making a continuous effort to improve daily practices. The gasless single port access urological surgery, which we have innovated its concept and developed surgical techniques specific to all urological organs, has been officially approved as medical services provided by the Japanese Governmental Health Insurance System in April 2008. These minimally invasive surgical techniques can be fundamentally applied to all patients having urological malignancies, even those having locally advanced disease and previous histories of abdominal surgery.

5. Publications (International)

Original Article

1. Hayasaka K, Koyama M, Fukui I. FDG PET imaging in a patient with primary seminoma of the prostate. Clin Nucl Med. 36:593-594, 2011.
2. Inamura K, Fujiwara M, Togashi Y, Nomura K, Mukai H, Fujii Y, Yamamoto S,Yonese J, Fukui I, Ishikawa Y. Diverse Fusion Patterns and Heterogeneous Clinicopathologic Features of Renal Cell Carcinoma With t(6;11) Translocation. Am J Surg Pathol. 2011 Sep 28. [Epub ahead of print] PubMed PMID: 21959307.
3. Ito M, Saito K, Yasuda Y, Sukegawa G, Kubo Y, Numao N, Kitsukawa S, Urakami S, Yuasa T, Yamamoto S, Yonese J, Fukui I. Prognostic Impact of C-reactive Protein for Determining Overall Survival of Patients With Castration-resistant Prostate Cancer Treated With Docetaxel. Urology. 2011 Nov;78(5):1131-1135.
4. Iwai A, Koga F, Fujii Y, Masuda H, Saito K, Numao N, Sakura M, Kawakami S, Kihara K. Perioperative complications of radical cystectomy after induction chemoradiotherapy in bladder-sparing protocol against muscle-invasive bladder cancer: a single institutional retrospective comparative study with primary radical cystectomy. Jpn J Clin Oncol, 41: 1373-1379, 2011.
5. Kagawa M, Kijima T, Fujii Y, Yokoyama M, Ishioka J, Matsuoka Y, Numao N, Saito K, Koga F, Masuda H, Kihara K: A case of metastatic testicular germ-cell tumor with rhabdomyosarcoma successfully treated with germ-cell tumor-oriented chemotherapy. Int Canc Conf J: 1-5, 2011.
6. Kihara K. Minimum incision endoscopic radical prostatectomy. Nihon Rinsho, 69 :Suppl 5:350-354, 2011.
7. Kobayashi S, Koga F, Yoshida S, Masuda H, Ishii C, Tanaka H, Komai Y, Yokoyama M, Saito K, Fujii Y, Kawakami S, Kihara K. Diagnostic performance of diffusion-weighted magnetic resonance imaging in bladder cancer: potential utility of apparent diffusion coefficient values as a biomarker to predict clinical aggressiveness. Eur Radiol 21: 2178-2186, 2011.
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12. Sakura M, Kawakami S, Ishioka J, Fujii Y, Yamamoto S, Iwai A, Numao N, Saito K, Koga F, Masuda H, Kumagai J, Yonese J, Fukui I, Kihara K. A novel repeat biopsy nomogram based on three-dimensional extended biopsy. Urology. 77(4):915-920. 2011.
13. Takazawa R, Kitayama S, Tsujii T. Successful outcome of flexible ureteroscopy with holmium laser lithotripsy for renal stones 2 cm or greater. Int J Urol. 2011 Dec 6. doi: 10.1111/j.1442-2042.2011.02931.x. [Epub ahead of print]
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Review Article

1. Masuda H, Kihara K, Fujii Y, Koga F, Saito K, Sakura M, Okada Y, Kawakami S. Renal Cell Carcinoma in Dialysis Patients with End Stage Renal Disease: Focus on Surgery and Pathology Hemodialysis - Different Aspects. 31-44, 2011.ISBN 978-953-307-315-6, Publisher: InTech.
2. Saito K, Kihara K. C-reactive protein as a biomarker for urological cancers. Nat Rev Urol. 2011 Oct 25;8(12):659-66. doi: 10.1038/nrurol.2011.145.

Award

1. Yokoyama M, Fujii Y, Iimura Y, Saito K, Koga F, Masuda H, Kihara K. Best of Poster: A nomogram for predicting the development of chronic kidney disease within 2 years after radical nephrectomy in patients with renal cortical tumor. Awarded by American Urological Association at AUA annual meeting, Washington, DC, USA, May, 2011.

Presentations at International Meetings

1. Araki S, Sakura M, Tatokoro M, Yoshida S, Yokoyama M, Saito K, Koga F, Masuda H, Fujii Y, Kawakami S, Kihara K. A single-dose administration of antibiotic prophylaxis in minimally invasive radical prostatectomy; a prospective study of 300 consecutive cases. The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/18-22.
2. Fujii Y, Saito K, Iimura Y, Yasuda Y, Koga F, Masuda H, Yonese J, Ishikawa Y, Fukui I, Kihara K. INCIDENCE OF BENIGN PATHOLOGIC LESIONS AT NEPHRECTOMY FOR RENAL MASSES PRESUMED TO BE STAGE 1

RENAL CELL CARCINOMA IN JAPANESE PATIENTS: IMPACT OF SEX, AGE AND TUMOR SIZE. The 2011 Genitourinary Cancers Symposium, Orland, USA, 2011/2/17-19.

3. Fujii Y, Sakura M, Saito K, Iimura Y, Yasuda Y, Koga F, Masuda H, Kawakami S, Yonese J, Fukui I, Kihara K. NOMOGRAM TO PREDICT MINIMAL-FAT ANGIOMYOLIPOMA AT NEPHRECTOMY FOR RENAL MASSES PRESUMED TO BE STAGE 1 RENAL CELL CARCINOMA: IMPACT OF SEX, AGE, AND TUMOR SIZE The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/14-19.
4. Iimura Y, Saito K, Fujii Y, Ishioka J, Iwai A, Numao N, Okada Y, Koga F, Masuda H, Kihara K. Use of C-reactive protein to predict perinephric or renal sinus fat invasion in patients with clinical T1N0M0 renal cell carcinoma The 2011 Genitourinary Cancers Symposium, Orland, USA, 2011/2/17-19.
5. Iwai A, Koga F, Kawakami S, Fujii Y, Masuda H, Saito K, Kihara K. Does induction chemoradiothepy compromise subsequent radical cystectomy? A single-institutional comparative study of perioperative complications according to the Clavien-Dindo classification. The 2011 Genitourinary Cancers Symposium, Orland, USA, 2011/2/17-19.
6. Kagawa M, Yoshida S, Numao N, Komai Y, Sakura M, Okada Y, Koga F, Saito K, Masuda H, Fujii Y, Ishii C, Kawakami S, Kihara K. Can men with a normal digital rectal examination and with negative findings on pre-biopsy multi-parametric magnetic resonance imaging avoid immediate prostate biopsy? The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/14-19.
7. Kijima T, Masuda H, Yoshida S, Tatokoro M, Araki S, Yokoyama M, Numao N, Okada Y, Saito K, Koga F, Fujii Y, Kihara K. Antibiotic prophylaxis is not necessary in minimally invasive surgery for renal and adrenal tumors: A prospective study of 310 consecutive patients, 2011 Annual Meeting of AUA. Washington D.C., 2011/3/19.
8. Kijima T, Yoshida S, Tatokoro M, Araki S, Yokoyama M, Numao N, Okada Y, Saito K, Koga F, Masuda H, Fujii Y, Kihara K. Antibiotic prophylaxis is not necessary in minimally invasive surgery for renal and adrenal tumors: A prospective study of 301 consecutive patients The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/14-19.
9. Kitahara S., Nakayama T., Yano M., Kihara K. Plasma D-dimer levels in prostate cancer patients treated with androgen-suppression therapy, 31tst Congess of the Societe International D'Urologie. Berlin, Germany, 2011/10/18.
10. Kobayashi S, Yoshida S, Koga F, Ishii C, Tanaka H, Komai Y, Saito K, Masuda H, Fujii Y, Kawakami S, Kihara K. Diffusion-Weighted Magnetic Resonance Imaging Reflects Clinical Aggressiveness of Bladder Cancer The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/20.
11. Kobayashi S, Yoshida S, Koga F, Ishii C, Tanaka H, Komai Y, Saito K, Masuda H, Fujii Y, Kawakami S, Kihara K. Diffusion-Weighted magnetic resonance imaging reflects pathologic phenotypes of bladder cancer The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/18.
12. Koga F, Yoshida S, Tatokoro M, Kawakami S, Fujii Y, Kumagai J, Neckers L, Kihara K. Potential role of Hsp90 inhibitors to overcome chemoradiotherapy resistance associated with HER-2 and NFκB overexpression in muscle-invasive bladder cancer The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/20.
13. Koga F, Yokoyama M, Ishioka J, Numao N, Saito K, Masuda H, Fujii Y, Kawakami S, Kihara K. Who are at high-risk for cancer death among muscle-invasive bladder cancer patients treated with chemoradiation-based bladder-sparing protocols? The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/20.
14. Koga F, Totokoro M, Kijima T, Sakura M, Saito K, Masuda H, Fujii Y, Kawakami S, Kihara K. Sensititivity to chemoradiation predicts development of metastasis in muscle-invasive bladder cancer patients The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/17.
15. Koga F, Yokoyama M, Ishioka J, Numao N, Saito K, Masuda H, Fujii Y, Kawakami S, Kihara K Pathology-based risk stratification of muscle-invasive bladder cancer patients undergoing cystectomy for persistent disease after induction chemoradiation in bladder-sparing protocol The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/17.
16. Komai Y, Numao N, Yoshida S, Sakura M, Okada Y, Ishii C, Koga F, Saito K, Masuda H, Fujii Y, Kawakami S, Kihara K. High diagnostic ability of multi-parametric magnetic resonance imaging in detecting prostate cancers missed by transrectal 12-core biopsy The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/18-22.
17. Komai Y, Numao N, Yoshida S, Kawakami S, Ishii C, Sakura M, Okada Y, Koga F, Saito K, Masuda H, Fujii Y, Kihara K. Multi-parametric magnetic resonance imaging can detect prostate cancers missed by transrectal 12-core biopsy with high accuracy The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/14-19.

18. Masuda H, Kawakami S, Sakura M, Fujii Y, Koga F, Saito K, Numao N, Yoshida S, Komai Y, Okada Y, Ito M, Yonese J, Fukui I, Kihara K. Performance of free PSA better than total PSA for estimation of prostate volume in elderly men without prostate cancer The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/18-22.
19. Numao N, Kawakami S, Sakura M, Komai Y, Yokoyama M, Okada Y, Koga F, Saito K, Masuda H, Fujii Y, Yamamoto S, Yonese J, Ishikawa Y, Fukui I, Kihara K. Patient selection for hemiablative focal therapy of prostate cancer based on extended 14- or 26-core biopsy The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/18-22.
20. Numao N, Kawakami S, Sakura M, Komai Y, Yokoyama M, Okada Y, Koga F, Saito K, Masuda H, Fujii Y, Yamamoto S, Yonese J, Ishikawa Y, Fukui I, Kihara K. Negative result in unilateral 13-core biopsy can predict the absence of significant cancer on the ipsilateral lobe with a high accuracy. Implications for hemiablative focal therapy. The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/14-19.
21. Numao N, Saito K, Masuda H, Kijima T, Tatokoro M, Sakura M, Yokoyama M, Ishioka J, Matsuoka Y, Koga F, Fujii Y, Hayashi K, Shibuya H , Kawakami S, Kihara K. Candidate selection criteria for hemiablative focal therapy of prostate cancer and initial experience of hemiablative focal brachytherapy based on the criteria. The 4th International Symposium on Focal Therapy and Imaging in Prostate and Kidney Cancer. Noordwijk Amsterdam, the Netherlands, May 25-27, 2011.
22. Okada Y, Masuda H, Saito K, Iimura Y, Yokoyama M, Komai Y, Numao N, Koga F, Fujii Y, Kihara K. Surgical outcomes of gasless single port retroperitoneal radical nephrectomy for dialysis patients: A comparative analysis with non-dialysis patients. The 2011 Genitourinary Cancers Symposium, Orland, USA, 2011/2/17-19.
23. Saito K, Ito M, Kijima T, Numao N, Koga F, Masuda H, Fujii Y, Kawakami S, Urakami S, Yuasa T, Yamamoto S, Yonese J, Fukui I, Kihara K. Impact of C-reactive protein kinetics on survival of castration-resistant prostate cancer patients treated with docetaxel. The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/21.
24. Saito K, Kihara K, Numao N, Masuda H, Kijima T, Tatokoro M, Koga F, Fujii Y, Hayashi K, Shibuya H. Initial experience of focal therapy for prostate cancer using I-125 seed implantation: Unilateral ablation for patients selected by extended biopsy and MRI findings. The 2011 Genitourinary Cancers Symposium, Orland, USA, 2011/2/17. (J Clin Oncol 29: 2011 (suppl 7; abstr 99)).
25. Sakura M, Kawakami S, Ishioka J, Fujii Y, Yamamoto S, Iwai A, Numao N, Saito K, Koga F, Masuda H, Kumagai J, Yonese J, Fukui I, Kihara K. A novel repeat biopsy nomogram based on three-dimensional extended biopsy The 2011 Genitourinary Cancers Symposium, Orland, USA, 2011/2/17-19.
26. Takazawa R, Kitayama S, Tsujii T. Flexible ureteroscopy for renal stone larger than 2 cm. 29th World Congress of Endourology and SWL. Kyoto, Japan, 2011/12/2.
27. Takazawa R, Kitayama S, Tsujii T. Flexible ureteroscopy for renal stone larger than 2 cm. 8th Annual Meeting of the East Asian Society of Endourology. Kyoto, Japan, 2011/11/29.
28. Tanaka H, Yoshida S, Fujii Y, Ishii C, Koga F, Saito K, Masuda H, Kawakami S, Kihara K. Diffusion-Weighted Magnetic Resonance Imaging in Differentiation of Angiomyolipoma with Minimal Fat from Clear Cell Renal Cell Carcinoma The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/14-19.
29. Tatokoro M, Saito K, Fujii Y, Komai Y, Koga F, Masuda H, Kawakami S, Kihara K C-reactive protein kinetics superior to radiographic response as a surrogate endpoint for survival in patients with advanced renal cell carcinoma. The 2011 Genitourinary Cancers Symposium, Orland, USA, 2011/2/17-19.
30. Tatokoro M, Fujii Y, Kawakami S, Saito K, Koga F, Masuda H, Kihara K. Phase-II trial of combination treatment of interferon-alfa, cimetidine, cyclooxygenase-2 inhibitor and renin-angiotensin-system inhibitor (I-CCA) for metastatic renal cell carcinoma. The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/18-22.
31. Yasuda Y, Saito K, Sukegawa G, Ito M, Kubo Y, Yano A, Kitsukawa S, Yuasa T, Urakami S, Yamamoto S, Yonese J, Takahashi S, Fukui I. Prognostic impact of pretreatment C-reactive protein for patients with metastatic renal cell carcinoma treated with tyrosine kinase inhibitors The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/14-19.
32. Yokoyama M, Fujii Y, Iimura Y, Saito K, Koga F, Masuda H, Kihara K. Significant recovery of renal function following radical nephrectomy in Japanese patients: A retrospective longitudinal study The 26th Annual Congress of the European Association of Urology, Vienna, Austria, 2011/3/18-22.
33. Yokoyama M, Fujii Y, Iimura Y, Saito K, Koga F, Masuda H, Kihara K. A nomogram for predicting the development

of chronic kidney disease within 2 years after radical nephrectomy in patients with renal cortical tumor The 105th annual meeting of the American Urological Association, Washington DC, USA, 2011/5/19.

34. Yoshida S, Kawakami S, Ishii C, Tanaka H, Komai Y, Sakura M, Numao N, Saito K, Koga F, Masuda H, Fujii Y, Kihara K. Diagnostic Performance and Optimal Sequence of MRI in Detecting Prostate Cancer. AUA 2011 Annual Meeting, Washington DC, USA, 2011/5/16.
35. Yoshida S, Koga F, Tatokoro M, Kawakami S, Fujii Y, Kumagai J, Neckers L, Kihara K. Hsp90 inhibitors potentially overcome overcome chemoradiotherapy resistance associated with HER2 and NFκB overexpression in MIBC AUA 2011 Annual Meeting, Washington DC, USA, 2011/5/16.

Invited Lecture and International Symposium

1. Yukio Kageyama. Visiting Professor, Division of Urologic Surgery, Washington University in Saint Louis (Lectures to residents). Saint Louis, Missouri, U.S.A., 2011/5/20.
2. Saito K. Focal brachytherapy for prostate cancer The 1st Metropolitan Urology Summer Seminar, Tokyo, 2011/8/27.

Stem Cell Regulation

1. Staffs and Students

Professor	Tetsuya TAGA
Associate Professor	Tetsushi KAGAWA
Associate Professor	Ikuo NOBUHISA
Project Assistant Professor	Taichi KASHIWAGI (-September 2011)
JSPS Research Fellow	Kouichi TABU
Administrative Assistant	Mako FUSHIMI
Technical Assistant	Rie TAGUCHI (-October 2011)
Technical Assistant	Yuko OHNISHI (October 2011-)
Technical Assistant	Hiroko SUZUKI (October 2011-)
Graduate Student	Norihisa BIZEN
Graduate Student	Maha ANANI
Graduate Student	Yasuhiro KOKUBU
Graduate Student	Rieko NOMURA
Graduate Student	Suguru KINOSHITA
Graduate Student	Yuuki TAKAZAWA
Graduate Student	Nozomi MURAMATSU (April 2011-)

2. Purpose of Education

Our education has been conducted through the research on elucidation of mechanisms by which multicellular organs, in particular the central nervous and hematopoietic systems, are developed. We have specially focused on molecular regulation of neural stem cells, hematopoietic stem cells, and cancer stem cells in view of cell-external cues such as cytokines as well as cell-intrinsic programs including chromatin modification. These projects have been performed, for instance, by elucidation of stem cell characteristics, analysis of transcriptional regulatory signaling pathways, and identification of niche signals.

3. Research Subjects

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) Epigenetic regulation of neural development

4. Publications

Original Article

1. Yamasaki S, Nobuhisa I, Ramadan A, and Taga T: Identification of a yolk sac cell population with hematopoietic activity in view of CD45/c-Kit expression. Develop. Growth Differ. 53:870-877, 2011.
2. Nobuhisa I, Yamasaki S, Ramadan A and Taga T: $CD45^{low}$c-Kit^{high} cells have hematopoietic properties in the mouse aorta-gonad-mesonephros region. Exp. Cell Res. In press

Review Article

1. Tabu K, Taga T and Tanaka S. “Glioma Stem Cells” Molecular Targets of CNS Tumors, Miklos Garami (Ed.) (Intech) 151-176, 2011.
2. Tabu K, Taga T and Tanaka S. “Tumor Stem Cells: CD133 Gene Regulation and Tumor Stemness” Stem Cells and Cancer Stem Cells, Volume 2, Part 2 (Springer) 145-153, 2011.

Molecular Pharmacology

1. Staffs and Students

Professor:	Masaki Noda, M.D., Ph.D.	
Associate Professor:	Yoichi Ezura, M.D., Ph.D.	
Assistant Professor:	Tadayoshi Hayata, Ph.D.	
GCOE Research Instructor:	Takuya Notomi, Ph.D.	
GCOE International Coordinator:	Tetsuya Nakamoto, M.D., Ph.D.	
Secretary:	Naoko Ogawa	
GCOE Secretary:	Yuko Oshie,	Kumiko Tomita
Graduate Students:	Daisuke Miyajima,	Takafumi Suzuki,
	Smriti Aryal,	Chiho Watanabe,
	Makiri Kawasaki,	Junpei Shirakawa,
	Shuichi Moriya	

2. Purpose of Education

Osteoporosis is one of the serious diseases in aging societies in the world. Osteoporosis increases risk of fracture that results in loss of quality of life and threatens life of aged people. Therefore, it is crucial to understand how bone mass is regulated by specific factors to establish the therapy and prevention for osteoporosis. Graduate students will study bone metabolism through journal presentation and investigate bone metabolism using mice and tissue culture system by advanced molecular and cellular biological approaches.

3. Research Subjects

1) Molecular mechanisms of osteoblast and chondrocyte differentiation.
2) Mechanism of regulation of bone mass by nervous system.
3) Regulation of bone metabolism by mechanical stress.
4) Regulation of gene expression by hormones.
5) Molecular biology of function and formation of osteoclasts.

4. Publications

Original articles

1. Nagao M, Feinstein TN, Ezura Y, Hayata T, Notomi T, Saita Y, Hanyu R, Hemmi H, Izu Y, Takeda S, Wang K, Rittling S, Nakamoto T, Kaneko K, Kurosawa H, Karsenty G, Denhardt DT, Vilardaga JP, Noda M. Sympathetic control of bone mass regulated by osteopontin. ***Proc Natl Acad Sci U S A*** 108:17767-72, 2011.
2. Kamolratanakul P, Hayata T, Ezura Y, Kawamata A, Hayashi C, Yamamoto Y, Hemmi H, Nagao M, Hanyu R, Notomi T, Nakamoto T, Amagasa T, Akiyoshi K, Noda M. Nanogel-based scaffold delivery of prostaglandin E(2) receptor-specific agonist in combination with a low dose of growth factor heals critical-size bone defects in mice. ***Arthritis Rheum*** 63:1021-33, 2011.
3. Hemmi H, Zaidi N, Wang B, Matos I, Fiorese C, Lubkin A, Zbytnuik L, Suda K, Zhang K, Noda M, Kaisho T, Steinman RM, Idoyaga J. Treml4, an Ig Superfamily Member, Mediates Presentation of Several Antigens to T Cells In Vivo, Including Protective Immunity to HER2 Protein. *J Immunol* 188:1147-55, 2012.
4. Sakuma T, Nakamoto T, Hemmi H, Kitazawa S, Kitazawa R, Notomi T, Hayata T, Ezura Y, Amagasa T, Noda M. CIZ/NMP4 is expressed in B16 melanoma and forms a positive feedback loop with RANKL to promote migration of the melanoma cells. ***J Cell Physiol*** (2012 in press).
5. Izu Y, Ezura Y, Mizoguchi F, Kawamata A, Nakamoto T, Nakashima K, Hayata T, Hemmi H, Bonaldo P, Noda M. Type VI collagen deficiency induces osteopenia with distortion of osteoblastic cell morphology. ***Tissue Cell*** 44:1-6, 2012.
6. Kondo H, Ezura Y, Nakamoto T, Hayata T, Notomi T, Sorimachi H, Takeda S, Noda M. MURF1 deficiency suppresses unloading-induced effects on osteoblasts and osteoclasts to lead to bone loss. ***J Cell Biochem*** 112:3525-30, 2011.
7. Ono N, Nakashima K, Schipani E, Hayata T, Ezura Y, Soma K, Kronenberg HM, Noda M. Constitutively active PTH/PTHrP receptor specifically expressed in osteoblasts enhances bone formation induced by bone marrow ablation. ***J Cell Physiol*** 227:408-15, 2012.

8. Seo S, Nakamoto T, Takeshita M, Lu J, Sato T, Suzuki T, Kamikubo Y, Ichikawa M, Noda M, Ogawa S, Honda H, Oda H, Kurokawa M. Crk-associated substrate lymphocyte type regulates myeloid cell motility and suppresses the progression of leukemia induced by p210Bcr/Abl. ***Cancer Sci*** 102:2109-17, 2011.
9. Kawamata A, Inoue A, Miyajima D, Hemmi H, Mashima R, Hayata T, Ezura Y, Amagasa T, Yamanashi Y, Noda M. Dok-1 and Dok-2 deficiency induces osteopenia via activation of osteoclasts. ***J Cell Physiol*** 226:3087-93, 2011.
10. Morishita M, Ono N, Miyai K, Nakagawa T, Hanyu R, Nagao M, Kamolratanakul P, Notomi T, Rittling SR, Denhardt DT, Kronenberg HM, Ezura Y, Hayata T, Nakamoto T, Noda M. Osteopontin deficiency enhances parathyroid hormone/ parathyroid hormone related peptide receptor (PPR) signaling-induced alteration in tooth formation and odontoblastic morphology. ***Tissue Cell*** 43:196-200, 2011.
11. Hanyu R, Hayata T, Nagao M, Saita Y, Hemmi H, Notomi T, Nakamoto T, Schipani E, Knonenbery H, Kaneko K, Kurosawa H, Ezura Y, Noda M. Per-1 is a specific clock gene regulated by parathyroid hormone (PTH) signaling in osteoblasts and is functional for the transcriptional events induced by PTH. ***J Cell Biochem*** 112:433-8, 2011.
12. Nagao M, Saita Y, Hanyu R, Hemmi H, Notomi T, Hayata T, Nakamoto T, Nakashima K, Kaneko K, Kurosawa H, Ishii S, Ezura Y, Noda M. Schnurri-2 deficiency counteracts against bone loss induced by ovariectomy. ***J Cell Physiol*** 226:573-8, 2011.

Molecular Cell Biology

1. Staffs and Students

Professor	Hiroshi Shibuya
Associate Professor	Toshiyasu Goto
Assistant Professor	Atsushi Sato
Graduate Students	Kayo Kogure

2. Purpose of Education

Various signaling molecules inducing the cell-growth and differentiation regulate morphogenesis and organogenesis of the vertebrate. The failure of these signal molecules has also been caused with induction of the diseases. Therefore, the elucidation of signal transduction network regulating generation and differentiation is important upon clarifying the mechanism of morphogenesis, organogenesis and diseases. Our research aim is to clarify the signal transduction network regulating the mechanisms of morphogenesis and organogenesis in developmental process. We serve these research and following education to provide graduate students who will become senior scientists in life sciences.

3. Research Subjects

1) WNK protein kinases, the causative genes of pseudohypoaldosteronism type II (PHAII) disease
2) Roles of IQGAP1 on the canonical Wnt signaling.

5. Publications

1. Hanafusa, H., Ishikawa, K., Kedashiro, S., Saigo, T., Iemura, S., Natsume, T., Komada, M., Shibuya, H., Nara, A. and Matsumoto, K. (2011). Leucine-rich repeat kinase LRRK1 regulates endosomal trafficking of the EGF receptor. **Nat. Commun**. 2, 158.
2. Goto T., Asashima M. (2011). Chemokine ligand *Xenopus CXCLC (XCXCLC)* regulates cell movements during early morphogenesis. **Dev. Growth Differ**. 53, 971-981.

Epigenetics

1. Staffs and Students (April 2011)

Professor	Fumitoshi ISHINO	
Associate Professor	Takashi KOHDA	
GCOE Lecturer	Jiyoung LEE	
MTT Lecturer	Shin KOBAYASHI,	
Assistant Professor	Ryuichi ONO,	
Tokunin Assistant Professor	Mie NARUSE	
Secretary	Ikuko MAEDA	
Graduate students	Kazuya Matumoto,	Masayuki ISHII,
	Sawa IWASAKI,	Yuki YAMAGUCHI,
	Mami OIKAWA,	Saori TAKAHASHI,
	Miki SOMA,	Moe KITAZAWA,
	Ayaka OSHIMOTO	

2. Purpose of Education

"Epigenetics" coupled with "Genetics" enables us to elucidate several 'genomic functions' in inheritance, development and evolution of organisms including our human beings. Genomic imprinting is one of the mammalian specific gene regulation mechanisms that gives rise to functional differences between paternally- and maternally-derived genomes in development, behavior and growth. Somatic cloned animals give us unique chances to examine 'genetically identical but epigenetically diverged animals'. These studies show us how Epigenetics is important in mammalian biology. Our department focuses these mammalian specific genomic functions to elucidate how these genomic functions work and how new genomic functions have been evolved during evolution. Our final goal is to contribute to the 21th's medicine and human biology by novel understanding of genomic functions.

3. Research Subjects

1) Genomic imprinting in human and mammalian development.
2) Placenta function and its evolution in mammals.
3) Somatic cloning: its epigenetic effects and application to regenerative medicine.
4) Assisted reproductive technology: its epigenetic effects and safer application.
5) Role of retrotransposon-derived genes in mammalian specific genomic functions.

4. Publications

Original Article

1. Ono, R., Kuroki, Y., Naruse, M., Ishii, M., Iwasaki, S., Toyoda, A., Fujiyama, A., Shaw, G., Renfree, M. B., Kaneko-Ishino, T. and Ishino, F. Identification of *SIRH12*, a retrotransposon-derived gene specific to marsupial mammals. DNA Res **18**(4), 211-219 (2011).
2. Kohda, T., Ogonuki, N., Inoue, K., Furuse, T., Kaneda, H., Suzuki, T., Kaneko-Ishino, T., Wakayama, T., Wakana, S., Ogura, A. and Ishino, F. Intracytoplasmic sperm injection induces transcriptome perturbation without any transgenerational effect. Biochem Biophys Res Commun **410**(2), 282-288 (2011).
3. Suzuki, S., Shaw, G., Kaneko-Ishino, T., Ishino, F. and Renfree, M. B. Characterisation of marsupial *PHLDA2* reveals eutherian specific acquisition of imprinting. BMC Evol Biol **11**(1), 244 (2011).
4. Matoba, S., Inoue, K., Kohda, T., Sugimioto, M., Mizutani, E., Ogonuki, N., Nakamura, T., Abe, K., Nakano, T., Ishino, F. and Ogura, A. RNAi-mediated knockdown of *Xist* can rescue the impaired postimplantation development of cloned mouse embryos. Proc Natl Acad Sci U. S. A. **108**(51), 20621-20626.
5. Suzuki, S., Shaw, G., Kaneko-Ishino, T., Ishino, F. and Renfree, M. B. The evolution of mammalian genomic imprinting was accompanied by the acquisition of novel CpG islands. Genome Biol Evol **3**, 1276-1283 (2011).

Developmental and Regenerative Biology

1. Staffs and Students (April, 2011)

Professor	Hiroshi NISHINA	
Associate Professor	Jun HIRAYAMA	
Assistant Professor	Yoichi ASAOKA	
Project Assistant Professor	Tokiwa YAMASAKI, Mamiko IWATSUKI	Shoji HATA,
Graduate Students	Makoto YAMAMOTO, Tadanori SHIMOMURA	Eiichiro NODA,

2. Purpose of Education

Our goal is to define the molecular basis for the mechanism of organ formation and regeneration using knockout mice and mutant fishes. To accomplish this goal, we have focused on defining signaling molecules and pathways that regulate liver formation and stress responses. Moreover, we are trying to establish a cell therapy for intractable diseases such as liver failures using self-bone marrow cells. Our study will provide new insights into understanding the precise molecular mechanisms that underlie organ failures found in human disease and will lead to the development of new rational therapy for the diseases.

3. Research Subjects

1) Studies on the stress-activated protein kinase (SAPK/JNK) signaling pathway
2) Studies on the Hippo signaling pathway
3) Studies on the cell differentiation of mouse ES cells
4) Studies on liver formation using a small fish, Medaka, Oryzias Latipes
5) Studies on liver regeneration using mice
6) Studies on circadian clock using zebrafish and mice

4. Publications

Original Article

1. Tokiwa Yamasaki, Hiroshi Kawasaki, Satoko Arakawa, Kimiko Shimizu, Shigeomi Shimizu, Orly Reiner, Hideyuki Okano, Sachiko Nishina, Noriyuki Azuma, Josef M. Penninger, Toshiaki Katada and Hiroshi Nishina (2011) Stress-activated protein kinase MKK7 regulates axon elongation in the developing cerebral cortex. ***J. Neurosci.*** 31, 16872-16883.
2. Norio Miyamura[1], Takashi Nakamura[1], Naoko Goto-Inoue, Nobuhiro Zaima, Takahiro Hayasaka, Tokiwa Yamasaki, Shuji Terai, Isao Sakaida, Mitsutoshi Setou and Hiroshi Nishina (2011) Imaging mass spectrometry reveals characteristic changes in triglyceride and phospholipid species in regenerating mouse liver. ***Biochem. Biophys. Res. Commun.*** 408, 120-125. ([1]Contributed equally)
3. Tomomi Osaki, Yoshimi Uchida, Jun Hirayama, and Hiroshi Nishina (2011) Diphenyleneiodonium chloride, an inhibitor of NADPH oxidase, suppresses light-dependent induction of clock and DNA repair genes in zebrafish. ***Biol. Pharm. Bull.*** 34, 1343-1347.
4. Shinya Takahashi, Arisa Ebihara, Hiroaki Kajiho, Kenji Kontani, Hiroshi Nishina, and Toshiaki Katada (2011) RASSF7 negatively regulates pro-apoptotic JNK signaling by inhibiting the activity of phospholylated-MKK7. ***Cell Death Differ.*** 18, 645-655.
5. Shinya Takahashi, Kyoko Sakurai, Arisa Ebihara, Hiroaki Kajiho, Kota Saito, Kenji Kontani, Hiroshi Nishina, and Toshiaki Katada (2011) RhoA activation participates in rearrangement of processing bodies and release of nucleated AU-rich mRNAs. ***Nucleic Acids Res.*** 39, 3446-3457.
6. Hiroshi Yukiura, Kotaro Hama, Keita Nakanaga, Masayuki Tanaka, Yoichi Asaoka, Shinichi Okudaira, Naoaki Arima, Asuka Inoue, Takafumi Hashimoto, Hiroyuki Arai, Atsuo Kawahara, Hiroshi Nishina, and Junken Aoki (2011) Autotaxin regulates vascular development via multiple lysophosphatidic acid (LPA) receptors in zebrafish. ***J. Biol. Chem.*** 286, 43972-43983.
7. Takuro Hisanaga, Shuji Terai, Takuya Iwamoto, Taro Takami, Naoki Yamamoto, Tomoaki Murata, Toshifumi Matsuyama, Hiroshi Nishina, Isao Sakaida (2011) TNFR1 mediated signaling is important to induce the improvement of liver fibrosis by bone marrow cell infusion. ***Cell Tissue Res.*** 346, 79-88.

8. Shinya Kuwashiro, Shuji Terai, Toshiyuki Oishi, Fujisawa Koichi, Toshihiko Matsumoto, Hiroshi Nishina, Isao Sakaida (2011) Telmisartan improves nonalcoholic steatohepatitis in medaka (Oryzias latipes) by reducing macrophage infiltration and fat accumulation. ***Cell Tissue Res.*** 344, 125-134.
9. Yijun Bao, Kentaro Nakagawa, Zeyu Yang, Mitsunobu Ikeda, KanchanamalaWithanage, Mari Ishigami-Yuasa, Yukiko Okuno, Shoji Hata, Hiroshi Nishina, and Yutaka Hata (2011) A cell-based assay to screen stimulators of the Hippo pathway reveals the inhibitory effect of dobutamine on the YAP-dependent gene transcription. ***J. Biochem.*** 150, 199-208.

Molecular Oncology

1. Staffs and Students (April, 2011)

Professor	Yasuhito YUASA	
Lecturer	Yoshimitsu AKIYAMA,	Hiroshi FUKAMACHI
Assistant Professor	Shu SHIMADA	
Secretary	Yoshiko Abe	
JSPS Research Fellow	Yutaka HASHIMOTO,	Rika TSUCHIDA
Graduate Student	Pichayanoot ROTKRUA,	Shogo KOJIMA,
	Ayuna SAKAMOTO,	Taketo NISHIKAWAJI
Visiting Professor	Masabumi SHIBUYA	
Tokunin Assistant Professor	Feng WANG	

2. Purpose of Education

・Undergraduate course:

Hygiene is our charge. The undergraduate curriculum of hygiene includes lectures, small-group seminars, 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.

・Graduate course:

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.

3. Research Subjects

1) Cellular and molecular analyses of cancer-related genes, such as oncogenes and tumor suppressor genes, in gastroenterological cancers
2) Molecular mechanism of cell growth, differentiation and apoptosis
3) Involvement of differentiation-related genes in gastroenterological diseases
4) Cancer stem cells
5) DNA methylation and cancer
6) Transcription factors and cancer
7) Mouse model of gastric cancer
8) Effect of environmental factors on gene expression and DNA methylation
9) Involvement of microRNA in gastric carcinogenesis
10) Involvement of VEGF receptors in tumor growth and metastasis
11) Mechanism of tumor resistance to anti-angiogenesis therapy

4. Publications

Original Article

1. Otsubo T, Akiyama Y, Hashimoto Y, Shimada S, Goto K, Yuasa Y: MicroRNA-126 inhibits SOX2 expression and contributes to gastric carcinogenesis. PLoS One 2011: 6: e16617.
2. Rotkrua P, Akiyama Y, Hashimoto Y, Otsubo T, Yuasa Y: MiR-9 down-regulates CDX2 expression in gastric cancer cells. Int. J. Cancer 2011: 129: 2611-2620.
3. Mimata A, Fukamachi H, Eishi Y, Yuasa Y: Loss of E-cadherin in mouse gastric epithelial cells induces signet ring-like cells, a possible precursor lesion of diffuse gastric cancer. Cancer Sci. 2011:102:942-950.
4. Fukamachi H, Shimada S, Ito K, Ito Y, Yuasa Y. CD133 is a marker of gland-forming cells in gastric tumors and Sox17 is involved in its regulation. Cancer Sci. 2011:102:1313-1321.
5. Wang F, Osawa T, Tsuchida R, Yuasa Y, Shibuya M. Downregulation of receptor for activated C-kinase 1 (RACK1)

suppresses tumor growth by inhibiting tumor cell proliferation and tumor-associated angiogenesis. Cancer Sci. 2011:102:2007-2013.

6. Ito K, Chuang L. S. H, Ito T, Chang TL, Fukamachi H, Salto–Tellez M, Ito Y. Loss of Runx3 is a key event in inducing precancerous state of the stomach. Gastroenterology 2011:140:1536-1546.
7. Dhondt J, Peeraer E, Verheyen A, Nuydens R, Buysschaert I, Poesen K, Van Geyte K, Beerens M, Shibuya M, Haigh JJ, Meert T, Carmeliet P, Lambrechts D. Neuronal FLT1 receptor and its selective ligand VEGF-B protect against retrograde degeneration of sensory neurons. FASEB J 25:1461-1473, 2011.
8. Kato T, Ito Y, Hosono K, Suzsuki T, Tamaki H, Minamino T, Kato S, Sakagami H, Shibuya M, Majima M. Vascular endothelial growth factor receptor-1 signaling promotes liver repair through restoration of liver microvasculature after acetaminophen hepatotoxicity. Toxicol Sci. 120:218-229, 2011.
9. Wang F, Yamauchi M, Muramatsu M, Osawa T, Tsuchida R, Shibuya M. RACK1 regulates VEGF/Flt1-mediated cell migration via activation of a PI3K/Akt pathway. J Biol Chem. 286:9097-9106, 2011.
10. Osawa T, Tsuchida R, Muramatsu M, Yuasa Y, Shibuya M. Human glioblastoma cells exposed to long-term hypoxia and nutrient starvation stimulated induction of secondary T cell leukemia in mice. Blood Cancer J, 1, e6, 2011.
11. Lu Y, Xiong Y, Huo Y, Han J, Yang X, Zhang R, Zhu DS, Klein-Heßling S, Li J, Zhang X, Han X, Li Y, Shen B, He Y, Shibuya M, Feng GS, Luo J. Grb-2-associated binder 1 (Gab1) regulates postnatal ischemic and VEGF-induced angiogenesis through the protein kinase A-endothelial NOS pathway. Proc Natl Acad Sci U S A. 108:2957-2962, 2011.
12. Kubota Y, Takubo K, Hirashima M, Nagoshi N, Kishi K, Okuno Y, Nakamura-Ishizu A, Sano K, Murakami M, Ema M, Omatsu Y, Takahashi S, Nagasawa T, Shibuya M, Okano H, Suda T. Isolation and function of tissue resident vascular precursors marked by myelin protein zero. J Exp Med. 208:949-960, 2011.
13. Brave SR, Ratcliffe K, Wilson Z, James N, Ashton SE, Wainwright A, Kendrew J, Dudley P, Broadbent N, Sproat G, Taylor S, Barnes C, Silva JC, Farnsworth CL, Hennequin L, Ogilvie DJ, Jürgensmeier JM, Shibuya M, Wedge SR, Barry ST. Assessing the Activity of Cediranib, a VEGFR-2/-3 tyrosine kinase inhibitor, against VEGFR-1 and members of the structurally related PDGFR-family. Mol Cancer Ther. 10:861-873, 2011.
14. Laurent J, Faes-Van't Hull E, Touvrey C, Kuonen F, Lan Q, Lorusso G, Doucey MA, Ciarloni L, Imaizumi N, Alghisi GC, Fagiani E, Zaman K, Stupp R, Shibuya M, Delaloye JF, Christofori G, Ruegg C. Proangiogenic programming of CD11b+ myelomonocytes in breast cancer by PlGF during hematopoietic progenitors differentiation. Cancer Res. 71:3781-3791, 2011.
15. Yao J, Wu X, Zhuang G, Kasman IM, Vogt T, Phan V, Shibuya M, Ferrara N, Bais C. Expression of a functional VEGFR-1 in tumor cells is a major determinant of anti-PlGF antibodies efficacy. Proc Natl Acad Sci U S A. 108:11590-11595, 2011.
16. Wang F, Osawa T, Tsuchida R, Yuasa Y, Shibuya M. Down-regulation of RACK1 suppresses tumor growth by inhibiting tumor cell proliferation and tumor-associated angiogenesis. Cancer Sci. 102:2007-2013, 2011.
17. Bhardwaj S, Roy H, Babu M, Shibuya M, Yla-Herttuala S. Adventitial gene transfer of VEGFR-2 specific VEGF-E chimera induces MCP-1 expression in vascular smooth muscle cells and enhances neointimal formation. Atherosclerosis. 219: 84-91, 2011.
18. Han J, Lee JE, Jin J, Lim JS, Oh N, Kim K, Chang SI, Shibuya M, Kim H, Koh GY. The spatiotemporal development of adipose tissue. Development. 138:5027-5037, 2011.
19. Osawa T, Muramatsu M, Wang F, Tsuchida R, Kodama T, Minami T, Shibuya M. Increased expression of histone demethylase JHDM1D under nutrient starvation suppresses tumor growth via downregulating angiogenesis. Proc Natl Acad Sci U S A. 108:20725-20729, 2011.

Hematology

1. Staffs and Students

Professor	Osamu MIURA	
Junior Associate Professor	Ayako ARAI	
Assistant Professor	Tetsuya FUKUDA,	Tetsuya KUROSU,
	Masahide YAMAMOTO,	Toshikage NAGAO
Hospital Staff	Gaku OSHIKAWA,	Shinya ISHIDA
	Yosuke NAKAMURA,	Daisuke WATANABE
Hospital Staff/Graduate Student	Shihoko WAKABAYASHI	
Graduate Student	Minako JINTA,	Ken WATANABE,
	Ayako HIROTA,	Ayako NOGAMI,
	Nan WU,	Lu Dan Wang

2. Purpose of Education

The major objective of the course is to understand the pathophysiology of blood cells, blood cell-forming organs, and hemostasis to provide a basis for rational diagnosis and treatment of their disorders. We offer the lectures of basic knowledge of hematological diseases for the 4th grade medical students, and we provide the opportunity to study process of diagnosis and management of hematological disorder for the 5th and 6th grade medical students as clinical clerkship, CC1 and CC3.

In our clinical residency the junior resident can have the opportunity to obtain knowledge and skills for dissolving hematological, oncological and infectious problem.

The senior residents are making profound efforts in their clinical experience to be hematological experts.

3. Research Subjects

1) Cell signaling for the hematopoiesis and hematological oncogenesis
2) Molecular mechanism of lymphomagenesis
3) Regulation of hematopoetic cell death after chemotherapeutic reagents
4) Mechanism of resistance against tyrosine kinase inhibitors
5) Mechanism of EB virus associated disease

4. Clinical Services

We provide the highest quality of patient care for a wide spectrum of blood diseases and cancer.

5. Publications

1. Oshikawa G, Nagao T, Wu N, Kurosu T, Miura O: c-Cbl and Cbl-b ligases mediate 17-allylaminodemethoxygeldanamycin-induced degradation of autophosphorylated Flt3 kinase with internal tandem duplication through the ubiquitin proteasome pathway. *J Biol Chem* 286:30263-30273, 2011.
2. Nagao T, Oshikawa G, Wu N, Kurosu T, Miura O: DNA damage stress and inhibition of Jak2-V617F cause its degradation and synergistically induce apoptosis through activation of GSK3β. *PLoS ONE* 6:e27397, 2011.
3. Arai A, Imadome K, Watanabe Y, Yoshimori M, Koyama T, Kawaguchi T, Nakaseko C, Fujiwara S, Miura O: Clinical features of adult-onset chronic active Epstein-Barr virus infection: a retrospective analysis. *Int J Hematol* 93:602-609, 2011.
4. Imadome K, Yajima M, Arai A, Nakazawa A, Kawano F, Ichikawa S, Shimizu N, Yamamoto N, Morio T, Ohga S, Nakamura H, Ito M, Miura O, Komano J, Fujiwara S: Novel mouse xenograft models reveal a critical role of CD4+ T cells in the proliferation of EBV-infected T and NK cells. *PLoS Pathog* 7:e1002326, 2011.
5. Nakamae H, Shibayama H, Kurokawa M, Fukuda T, Nakaseko C, Kanda Y, Nagai T, Ohnishi K, Maeda Y, Matsuda A, Amagasaki T, Yanada M: Nilotinib as frontline therapy for patients with newly diagnosed Ph+ chronic myeloid leukemia in chronic phase: results from the Japanese subgroup of ENESTnd. *Int J Hematol* 93:624-632, 2011.
6. Ravella PM, Liu D, Kojima K, Weisberger J, Miura O, Kuyama J, Au W, Seiter K: Acute promyelocytic leukemia with tetraploid karyotype: first report in the Western hemisphere and update of previous reports. *Leuk Res* 35:e93-95, 2011.
7. Nakagawa Y, Suzuki K, Hirose T, Chou T, Fujisawa S, Kida M, Usuki K, Ishida Y, Taniguchi S, Kouzai Y, Tomoyasu

S, Miyazaki K, Higashihara M, Ando K, Aoki S, Arai A, Akiyama N, Hatake K, Okamoto S, Dan K, Ohyashiki K, Urabe A: Clinical efficacy and safety of biapenem for febrile neutropenia in patients with underlying hematopoietic diseases: a multi-institutional study. *J Infect Chemother* 17:58-67, 2011.7.

8. Nakamae H, Shibayama H, Kurokawa M, Fukuda T, Nakaseko C, Kanda Y, Nagai T, Ohnishi K, Maeda Y, Matsuda A, Amagasaki T, Yanada M: Nilotinib as frontline therapy for patients with newly diagnosed Ph+ chronic myeloid leukemia in chronic phase: results from the Japanese subgroup of ENESTnd. *Int J Hematol* 93(5):624-32, 2011

Molecular Endocrinology and Metabolism

1. Staffs and Students (2011)

Professor	Yoshihiro Ogawa	
Junior Associate Professor	Isao Uchimura	
	Hajime Izumiyama	
Assistant Professor	Takanobu Yoshimoto,	Masatomo Mihara,
Project Junior Associate Professor	Toru Sugiyama	
Resident	Junichiro Adachi,	Takuya Ohashi,
	Yuichiro Nishio,	Tadao Iburi,
	Chikara Komiya,	Rie Hatakeyama,
	Mizuki Sawai	
Graduate Students	Michiya Kida,	Eri Hayakawa
	Tae Nakano,	Masako Kato,
	Yuko Tateishi,	Takako Asano,
	Kenji Ikeda	

2. 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 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・scitentist' in the field of endocrinology and metabolism.

3. Research Subjects

1) Physiological and pathophysiological role(s) of vasoacitve hormones
2) Mechanism of endothelial dysfunction in diabetes, endocrine and metabolic diseases
3) Mechanism of pathogenesis in endocrine tumors
4) Development of novel diagnostic and therapeutic tools in endocrine and metabolic diseases

4. Clinical Services

Comprehensive inpatient and outpatient services in the area of endocrine and metabolic disorders, including:

- diseases of the thyroid, pituitary and adrenal glands.
- diabetes mellitus, diabetic complications, metabolic syndrome, and obesity
- primary and secondary hypertension
- disorders of calcium metabolism

5. Publications

1) Peer-reviewed Journal

1. Akaza I, Yoshimoto T, Iwashima F, Nakayama C, Doi M, Izumiyama H, Hirata Y: Clinical outcome of subclinical Cushing's syndrome after surgical and conservative treatment. Hypertens Res 2011;34:1111-1115
2. Hayakawa E, Yoshimoto T, Hiraishi K, Kato M, Izumiyama H, Sasano H, Hirata Y: A rare case of ACTH-independent macronodular adrenal hyperplasia associated with aldosterone-producing adenoma. Intern Med 2011;50:227-232
3. Hayakawa E, Yoshimoto T, Sekizawa N, Sugiyama T, Hirata Y: Overexpression of receptor for advanced glycation end products induces monocyte chemoattractant protein-1 expression in rat vascular smooth muscle cell line. J Atheroscler Thromb 2011(Epub ahead of print)
4. Hiraishi K, Yoshimoto T, Tsuchiya K, Minami I, Doi M, Izumiyama H, Sasano H, Hirata Y: Clinicopathological features of primary aldosteronism associated withsubclinical Cushing's syndrome. Endocr J 2011;58:543-551
5. Kato M, Inoshita N, Sugiyama T, Tani Y, Shichiri M, Sano T, Yamada S, Hirata Y: Differential expression of genes related to drug responsiveness between sparsely and densely granulated somatotroph adenomas. Endocr J 2011(Epub ahead of print)

6. Kouyama R, Hiraishi K, Sugiyama T, Izumiyama H, Yoshimoto T, Akashi T, Kihara K, Homma K, Shibata H, Hirata Y: Clinicopathological features, biochemical and molecular markers in 5 patients with adrenocortical carcinoma. Endocr J 2011;58:527-534
7. Sekizawa N, Yoshimoto T, Hayakawa E, Suzuki N, Sugiyama T, Hirata Y: Transcriptome analysis of aldosterone-regulated genes in human vascular endothelial cell lines stably expressing mineralocorticoid receptor. Mol Cell Endocrinol 2011;341:78-88
8. Suzuki N, Shichiri M, Tateno T, Sato K, Hirata Y: Distinct systemic distribution of salusin-α and salusin-β in the rat. Peptides 2011;32:805-810
9. TaniY, Sugiyaka T, Izumiyama H, Yoshimoto T, Yamada S, Hirata Y: Differential gene expression profiles of POMC-related enzymes, transcription factors and receptors between non-pituitary and pituitary ACTH-secreting tumors. Endocr J 2011;58:297-303
10. Bharti P, Katagiri S, Nitta H, Nagasawa T, Kobayashi H, Takeuchi Y, Izumiyama H, Uchimura I, Inoue S, Izumi Y: Periodontal treatment with topical antibiotics improves glycemic control in association with elevated serum adiponectin in patients with type 2 diabetes mellitus. Obes Res Clin Prac 2011 (Epub ahead of print)

2) International Meeting

1. Kida M, Sugiyama T, Yoshimoto T, Hirata Y: Hydrogen sulfide increases nitric oxide production with calcium-dependent activation of endothelial nitric oxide synthase. American Heart Association, Scientific Sessions 2011 Orlando, USA (2011.11)
2. Uchimura I, Hayashi Y, Kaibara M: Thrombosis risk assessment of diabetes by dielectric spectroscopy. American Diabetes Association 71st Scientific Sessions San Diego, USA (2011.6)

Human Gene Sciences Center (Signal Gene Regulation)

1. Staff and Student

Professor	Masataka NAKAMURA (Director)	
Junior Associate Professor	Noriko FUNATO	
Assistant Professor	Toshifumi HARA (～July)	
Foreign Reseacher	Hussein Abdelaziz Abdalla (June～)	
Postdoctral Fellow	Mariko MIZUGUCHI	
Graduate Student	Terumi MIZUKOSHI,	Ryutaro OHBA,
	Yating WANG,	Shigeru HASUNUMA,
	Lindsay Preston (October～)	

2. Purpose of Education

The aim of Human Gene Sciences Center is to provide laboratory equipment, room and information for researches in advanced molecular and cellular biology. In educational objectives in the graduate school, our Center gives lecture, seminar, training course and individual assistance in research fields of molecular genetics, immunology and virology.

3. Research Subject

1) Molecular mechanism of tumorigenesis by human T-cell leukemia virus type I (HTLV-I).
2) Roles of transcription factors in cell differetiation.
3) Implication of prostaglandin D2 receptor (CRTH2) in allergy reactions.

5. Publications

Original Article

1. Oba R, Orihara K, Kumagai T, Hirai H, Nagata K, Hamasaki S, Tei C, Masataka N. Reevaluation of quantitative flow cytometric analysis for TLR2 on monocytes using F(ab')2 fragments of monoclonal antibodies. Cytometry A., 79: 247-255, 2011.
2. Kogiso M, Nishiyama A, Shinohara T, Nakamura M, Mizoguchi E, Misawa Y, Guinet E, Nouri-Shirazi M, Dorey C K, Henriksen R A, Shibata Y. Size-dependent induction of eosinophilia and alternative macrophage activation by chitin. J. Leuckocyte Biol., 90: 167-176, 2011.
3. Yamamoto Y, Satoh T, Otan S, Aritake K, Urade Y, Narumiya S, Nakamura M, Yokozeki H. Reciprocal functions of prostaglandin D in contact hypersensitivity through DP and CRTH2. Amer. J. Pathol., 179: 302-314, 2011.
4. Ishii M, Asano K, Namkoong H, Mizoguchi K, Kamata H, Kimizuka Y, Fujiwara H, Funatsu Y, Kagawa S, Miyata J, Ishii K, Nakamura M, Hirai H, Nagata K, Tasaka S, Kunkel S L, Ishizaka A. CRTH-2 is critical regulator for neutrophil migration and resistance to polymicrobial sepsis. Am. J. Crit. Care Med., 180: 541-549, 2011.
5. Matsushima Y, Satoh T, Yamamoto Y, Nakamura M, Yokozeki H. Distinct roles of prostaglandin D2 receptors in chronic skin inflammation. Mol. Immunol., 49: 304-310, 2011.

Drug Design Chemistry (Molecular Design)

1. Staffs and Students (April 2011)

Associate Professor	Tomoya Hirano	
Assistant Professor	Shigeru Ito	
Research Promotion Technician	Akiko Sugimoto	
Graduate Student	Shusakui Kobayashi,	Shotaro Iihama,
	Akihito Naka	

2. Purpose of Education

Drug Design Chemistry covers several aspects of organic chemistry, analytical chemistry, medicinal chemistry and chemical biology. Through this course, students are expected to understand and train the experimental techniques related to those scientific fields.

Our laboratory is working on the developments of functional molecules, which can "modulate" or "sense" the physiological functions, such as enzyme inhibitors and fluorescent sensors for elucidating intracellular or extracellular signal transduction pathway. In addition, we also focus on the development of novel drug and diagnostic tools for various diseases.

3. Research Subject

1) Construction of a facile method to develop various fluorescent sensors for elucidating physiological functions

We construct a facile method to develop various fluorescent sensors, which can sense the change of the concentration or activity of each biologically important analyte.

2) Development of histone methyltransferase inhibitors

Post-translational modification of histone proteins plays an important role in the regulation of gene expression, and can be controlled by histone modifying enzymes, such as histone methyltransferase (HMT). We are developing some inhibitors against these HMTs.

3) Development of fluorescent sensors by modulating the complex formation of fluorophores

The control of intermolecular or intramolecular complex formation between two fluorophores or between a fluorophore and another molecular species has been utilized for the development of fluorescent sensors for some post-translational modifications of tyrosine residues or the visualization of some receptor proteins.

4) Studies of anti-tumor substances in the spores of *Ganoderma lucidum* (Reishi Houshi)

During our isolation of biologically active substances from the spores of *Ganoderma lucidum* (Reishi Houshi) guided by the inhibitory activity on HL-60 cell proliferation, NMR and Mass data indicate the substances contain several fatty acids. In particular, the fatty acids having odd carbon number show potent inhibitory activity. We are now identifying the responsible structures for the activity.

4. Publications

Original articles

1. Fujii S, Masuno H, Taoda Y, Kano A, Wongmayura A, Nakabayashi M, Ito N, Shimizu M, Kawachi E, Hirano T, Endo Y, Tanatani A, Kagechika H: Boron Cluster-based Development of Potent Nonsecosteroidal Vitamin D Receptor Ligands: Direct Observation of Hydrophobic Interaction between Protein Surface and Carborane. J Am Chem Soc. 133: 20933-20941, 2011.
2. Sakai H, Hirano T, Mori S, Fujii S, Masuno H, Kinoshita M, Kagechika H, Tanatani A: 6-Arylcoumarins as Novel Non-steroidal Type Progesterone Antagonists: an Example with Receptor Binding-dependent Fluorescence. J Med Chem. 54: 7055-7065, 2011.
3. Iwashita M, Fujii S, Ito S, Hirano T, Kagechika H: Efficient and Diversity-Oriented Total Synthesis of Riccardin C and Applicaton to Develop Novel Macrolactam Derivatives. Tetrahedron 67: 6073–6082, 2011.
4. Takechi S, Ito S, Kashige N, Ishida T, Yamaguchi T: Glutathion depression by dihydropyrazine derivative. J Toxicol Sci. 36: 231-235, 2011.

Medicinal-Chemical Biology (Medicinal Chemistry)

1. Staffs and Students (April, 2011)

Professor	Hirokazu TAMAMURA	
Assistant Professor	Wataru NOMURA,	Tetsuo NARUMI,
	Haruo AIKAWA	
Technical Staff	Toru AOKI	
Research Staff	Kyoko ITOTANI	
Secretary	Rika NARUMI	
Postdoctoral Fellow	Nami OHASHI,	Tomohiro TANAKA,
Graduate Student	Shintaro SUZUKI,	Yosuke NONAKA,
	Chie HASHIMOTO,	Akemi MASUDA,
	Arisa URABE,	Mika SHISHIDO,
	Shunsuke SEIKE,	Ryota SEIKE,
	Akira SOHMA,	Atsumi MORI,
	Hiroshi ARAI,	Taro OZAKI,
	Chiaki KAMBE,	Takaharu SUZUKI,
	Mamiko KANEKO,	Kohta KOIDE,
	Makoto KONNO,	Natsuki MINATO

2. Purpose of Education

Our department teaches chemical biology targeted to elucidation and regulation of biological phenomena based on organic chemistry and adavanced synthetic chemistry, medicinal chemistry and advanced drug discovery of a post-genomena era. Our department performs periodically journal clubs and research progress meetings.

3. Research Subjects

1) Development of conformational-constrained templates for drug discovery.
2) Development of bio-probes, bio-sensing, medicinal chemistry towards chemical biology.
3) Structural analysis of the interactions between receptors/enzymes and their ligands.
4) Development of applications of zinc finger protein for gene therapy and nano technology.

4. Publications

Original Article

1) Narumi T, Arai H, Yoshimura K, Harada S, Nomura W, Matsushita S, Tamamura H. Small Molecular CD4 Mimics as HIV Entry Inhibitors. Bioorg Med Chem 19 : 6735-6742, 2011.
2) Nomura W, Narumi T, Ohashi N, Serizawa Y, Lewin NE, Blumberg PM, Furuta T, Tamamura H. Synthetic Caged DAG-lactones for Photochemically-controlled Activation of Protein Kinase C. ChemBioChem 12: 535–539, 2011.
3) Ohashi N, Nomura W, Narumi T, Lewin NE, Itotani K, Blumberg PM, Tamamura H. Fluorescent-responsive Synthetic C1b Domains of Protein Kinase Cδ as Reporters of Specific High Affinity Ligand Binding. Bioconjugate Chem 22: 82–87, 2011.
4) Tsutsumi H, Abe S, Mino T, Nomura W, Tamamura H. Intense Blue Fluorescence in a Leucine Zipper Assembly. ChemBioChem 12: 691–694, 2011.
5) Tanaka T, Narumi T, Ozaki T, Sohma A, Ohashi N, Hashimoto C, Itotani K, Nomura W, Murakami T, Yamamoto N, Tamamura H. Azamacrocyclic-metal Complexes as CXCR4 Antagonists. ChemMedChem 6: 834–839, 2011.
6) Nomura W, Ohashi N, Okuda Y, Narumi T, Ikura T, Ito N, Tamamura H. Fluorescence-Quenching Screening of Protein Kinase C Ligands with an Environmentally Sensitive Fluorophore. Bioconjugate Chem 22: 923-930, 2011.
7) Hashimoto C, Tanaka T, Narumi T, Nomura W, Tamamura H. The Success and Failures of HIV Drug Discovery. Expert Opin Drug Discovery 6: 1067-1090, 2011.
8) Xu C, Liu J, Chen L, Liang S, Fujii N, Tamamura H, Xiong H. HIV-1 gp120 Enhances Outward Potassium Current via CXCR4 and cAMP-Dependent Protein Kinase a Signaling in Cultured Rat Microglia. Glia 59: 997-1007, 2011.
9) Yamada M, Kubo H, Kobayashi S, Ishizawa K, He M, Suzuki T, Fujino N, Kunishima H, Hatta M, Nishimaki K, Aoyagi T, Tokuda K, Kitagawa M, Yano H, Tamamura H, Fujii N, Kaku M. The Increase in Surface CXCR4 Expression on Lung Extravascular Neutrophils and its Effects on Neutrophils During Endotoxin-Induced Lung

Injury. Cell Mol Immunol 8: 305-314, 2011.
10) Narumi T, Bode JW. α, α-Dichloroisoxazolidinones for the Synthesis and Chemoselective Peptide Ligation of α-Peptide α-Ketoacids. Heterocycles 82: 1515-1525, 2011.
11) Yamamoto K, Sugiura H, Amemiya R, Aikawa H, An Z, Yamaguchi M, Mizukami M, Kurihara K. Formation of Double Helix Self-Assembled Monolayers of Ethynylhelicene Oligomer Disulfides on Gold Surfaces. Tetrahedron 67 (33): 5972-5978, 2011.
12) Aikawa H, Kaneko T, Asao N, Yamamoto Y. Gold-Catalyzed Alkylation of Silyl Enol Ethers with Ortho-Alkynylbenzoic Acid Esters. Beilstein J Org Chem 7: 648-652, 2011.
13) Aikawa H, Takahira Y, Yamaguchi M. Synthesis of 1,8-Di(1-adamantyl)naphthalenes as Single Enantiomers Stable at Ambient Temperatures. Chem Commun 47: 1479-1481, 2011.

Genetic Regulation

1. Staffs and Students (in 2011)

Professor	Akinori KIMURA	
Associate Professor (Graduate School of Biomedical Science)		
	Toshiaki NAKAJIMA	
Assistant Professor	Takuro ARIMURA	
Research Associate	Taeko NARUSE	
Graduate Student	Taisuke ISHIKAWA,	Junji IIZUKA
Graduate Student (Biomedical Science PhD program)		
	Makiko KONISHI,	Jianbo AN
	Tomonori KANAZAWA,	Yu TANAKA
	Kei KATSURAGI,	Chika KADOTA
	Takayuki NAKAMOTO	
Visiting Graduate Student	Marika TAKAHASHI,	Shinya KOIZUMI
Visiting Student (Faculty of Dentistry)		
	Naomi TSURU	

2. Purpose of Education

Genetic factors, i.e. structural and/or functional diversity of human genome, are involved in the etiology and pathogenesis of human diseases. Main objective of Genetic Regulation is to identify the gene mutations or polymorphisms and to decipher the molecular mechanisms involved in the etiology and pathogenesis of intractable diseases, in order to develop new strategies for diagnosis, treatment and/or prevention of the diseases. Current research is focused on the cardiovascular diseases (e.g. idiopathic cardiomyopathy, idiopathic arrhythmia, and coronary heart disease), autoimmune diseases (e.g. Burger disease, Graves disease, and rheumatoid arthritis) and infectious diseases (e.g. HIV/AIDS). In addition, genome diversity in immune-related genes is investigated from the view-point of primate evolution.

3. Research Subjects

1) Identification and functional analysis of disease-related genes for cardiovascular diseases
2) Identification and functional analysis of disease-related genes for autoimmune diseases
3) Identification and functional analysis of disease-related genes for infectious diseases
4) Structural, functional and evolutional analyses of MHC and immune-related genes

4. Publications

Original Article

1. Yanagimachi M, Miyamae T, Naruto T, Hara T, Kikuchi M, Hara R, Imagawa T, Mori M. Kaneko T, Goto H, Morita S, Mizuki N, Kimura A, Yokota S. Association of HLA-A*02:06 and DRB1*09:01 with clinical subtypes of juvenile idiopathic arthritis. J Hum Genet. 2011; 56(3): 196-199.
2. Ohtani H, Nakajima T, Akari H, Ishida T, Kimura A. Molecular evolution of immunoglobulin superfamily genes in primates. Immunogenetics. 2011; 63(7): 417-428.
3. Chen Z, Nakajima T, Inoue Y, Kudo T, Jibiki M, Iwai T, Kimura A. A single nucleotide polymorphism in the 3' -untranslated region of MyD88 gene is associated with Buerger disease but not with Takayasu arteritis in Japanese. J Hum Genet. 2011; 56(7): 545-547.
4. Takahara Y, Matsuoka S, Kuwano T, Tsukamoto T, Yamamoto H, Ishii H, Nakasone T, Takeda A, Inoue M, Iida A, Hara H, Shu T, Hasegawa M, Sakawaki H, Horiike M, Miura T, Igarashi T, Naruse TK, Kimura A, Matano T. Dominant induction of vaccine antigen-specific cytotoxic T lymphocyte responses after simian immunodeficiency virus challenge. Biochem Biophys Res Commun. 2011; 408(4): 615-619.
5. Naruse TK, Okuda Y, Mori K, Akari H, Matano T, Kimura A. ULBP4/RAET1E is highly polymorphic in the Old World monkey. Immunogenetics. 2011; 63(8): 501-509.
6. Kubo T, Kitaoka H, Okawa M, Baba Y, Hirota T, Hayato K, Yamasaki N, Matsumura Y, Otsuka H, Arimura T, Kimura A, Doi YL. Genetic screening and double mutation in Japanese patients with hypertrophic cardiomyopathy. Circ J. 2011; 75(11): 2654-2659.
7. Nakamura M, Takahara Y, Ishii H, Sakawaki H, Horiike M, Miura T, Igarashi T, Naruse TK, Kimura A, Matano T,

Matsuoka S. Major histocompatibility complex class I-restricted cytotoxic T lymphocyte responses during primary simian immunodeficiency virus infection in Burmese rhesus macaques. Microbiol Immunol. 2011; 55(11):768-773.
8. Arimura T, Ishikawa T, Nunoda S, Kawai S, Kimura A. Dilated cardiomyopathy-associated BAG3 mutations impair the Z-disc assembly and enhance the sensitivity to apoptosis in cardiomyocytes. Hum Mutat. 2011; 32(12): 1481-1491.
9. Takahashi M, Chen Z, Watanabe K, Kobayashi H, Nakajima T, Kimura A, Izumi Y. Toll-like receptor 2 gene polymorphisms associated with aggressive periodontitis in Japanese. Open Dent J. 2011; 5: 190-194.
10. Watanabe H, Nogami A, Ohkubo K, Kawata H, Hayashi Y, Ishikawa T, Nagao S, Yagihara N, Takehara N, Kawamura Y, Sato A, Okamura K, Sato M, Hosaka Y, Fukae S, Chinushi M, Oda H, Okabe H, Kimura A, Maemura K, Watanabe I, Kamakura S, Aizawa Y, Shimizu W, Makita N. Electrocardiographic characteristics and SCN5A mutations in idiopathic ventricular fibrillation associated with early repolarization. Circ Arrhythm Electrophysiol. 2011; 4(6): 874-881.

Review Article

1. Kimura A. Contribution of genetic factors to the pathogenesis of dilated cardiomyopathy: the cause of dilated cardiomyopathy: genetic or acquired? (genetic-side). Circ J. 2011; 75(7): 1756-1765.

Bioinformatics

1. Staffs and Students

Professor:	Hiroshi Tanaka	
Associate Professor:	Yoshihito Niimura	
Assistant Professor:	Soichi Ogishima	
Visiting Assistant Professor:	Yasen Mahmut	
Project Associate Professor:	Fengrong Ren,	Takako Takai,
	Jun Nakaya	
Project Lecturer:	Kanae Oda	
Project Assistant Professor:	Kaei Hiroi,	Takeshi Hase,
	Kaoru Mogushi,	Naoki Hasegawa,
	Kumiko Iijima	
Technical Staff:	Ken Miyaguchi	
Graduate Students:	Isao Okada,	Takayuki Ohnishi,
	Yuki Katayama, S	hun-ya Takahashi,
	Hironobu Yamaguchi,	Yoshiyuki Kaneko,
	Ryosuke Ishiwata,	Hideaki Takata,
	Arihito Endo,	Hiromi Matsumae,
	Ken Miyaguchi,	Kyaw Tun,
	Satoru Suzuki,	Eiichi Ueno,
	Tadashi Urashima,	Syed Ali Zaidi,
	Sakiko Ohta,	Masataka Kikuchi,
	Yasuha Tanaka,	Hajime Sawai,
	Asami Suzuki,	Taro Kishimoto,
	Chikako Shimizu,	Afsaneh Eslami,
	Shoko Nukaya,	Hiroaki Hasegawa,
	Aw Wanping,	Noriaki Koizumi,
	Akihiko Hoshi,	Tadaaki Katsuta,
	Reiko Yamaguchi,	Moegi Maeda,
	Kotaro Oda,	Sophia Subat,
	Norio Tanaka,	Tadashi Miyamoto,
	Saho Kawamoto,	Teruaki Tsuji,
	Asiya Hapaer	

2. Purpose of Education

Prof. Tanaka is charged with education of interdisciplinary medical informatics and bioinformatics. For undergraduate classes he educates “Clinical Informatics”, “Statistics for Health Science”, “Practice in Clinical Informatics II”, “Project Research”, and “Basics of Clinical Informatics”. For graduate classes he educates “Computational Biology”, “Bioinformatics Computation”, “Systems Pathology”, “Statistical Genetics and Medical Statistics”, “English Debate”, “Integrated Bioinformatics”, and “Integrated Translational Research”. He supervises 23 students of PhD course and 3 students in Master course in Graduate School of Medical and Dental Sciences and 5 students of PhD course and 5 students in Master course in Biomedical Science PhD Program. He is also a co-principle investigator of “New Joint-education of Multi-disciplinary Students with Leading-edge Computer Technologies for OMICS Medicine” granted by JSPS Program for Enhancing Systemic Education in Graduate School. This is a joint program of Tokyo Institute of Technology (TITECH) and TMDU. This program provided an educational course for the newly emerging “Translational Informatics” in collaboration with TiTech and Harvard Medical School. Both students of TMDU and TiTech jointly participated in this course.

3. Research Subjects

Our mission is “system-level understanding of biological systems” in molecular biology and evolution (systems evolution) and medicine (omics-based medicine,systems pathology). Recently, the whole genome sequences of diverse organisms have become available. Moreover, various “omics” information such as a proteome, transcriptome, and metabolome are

currently accumulating. Our goal is to establish a grand-theory of biological sciences from the viewpoint of "evolving networks composed of biological molecules" by integrating omics information. Genomic and omics data are also utilized in the field of medicine. It has been revealed that most diseases are caused by the interaction among abnormalities of multiple genes, those at the tissue level, and environments. It is therefore possible to consider diseases as a system. From this standpoint, we try to establish the omics-based medicine and systems pathology.

1. Oxidative stress pathways in noncancerous human liver tissue to predict hepatocellular carcinoma recurrence: a prospective, multicenter study

Hepatocellular carcinoma (HCC) is one of the most common cancers worldwide and is caused by chronic hepatitis and liver cirrhosis due to infection of hepatitis B virus, hepatitis C virus, alcoholic liver disease, non-alcoholic steatohepatitis (NASH) and so on. Because HCC is associated with a high incidence of recurrence, biomarkers for prediction of recurrence have been urgently needed. To address this problem, we have been conducting a joint research with Department of Hepato-Biliary-Pancreatic Surgery since 2005. In order to identify predictive factors for HCC recurrence in patients with early HCC, we analyzed comprehensive gene expression profiles of cancer and non-cancerous tissues obtained from 78 patients, as well as clinicopathological factors. Downregulation of cytochrome P450 1A2 (CYP1A2) in non-cancerous tissues was the only factor that was significantly associated with HCC recurrence after statistical variable selection. Furthermore, we verified that lower protein expression of CYP1A2 was significantly associated with HCC recurrence by examining non-cancerous tissues obtained from more than 200 patients in a multicenter study. CYP1A2 is known as one of the major hepatic enzymes, and our analysis revealed that expression of CYP1A2 in non-cancerous tissues was strongly correlated with gene sets associated with peroxisome function using Gene Set Enrichment Analysis (GSEA). This suggests that recurrence in early HCC patients is mainly due to accumulation of DNA damage by oxidative stress in non-cancerous tissue, rather than molecular or clinicopathological characteristics of cancerous tissue. CYP1A2 may also be used for screening test of high-risk group of HCC for chronic hepatitis and liver cirrhosis patients.

2. i2b2: a novel technology of clinical databases as an infrastructure of translational informatics

Translational informatics is an emerging research field of computational technology for facilitating translation of genome information into the clinical application. It targets collection and computation of clinical and genomic information on the basis of mathematical models for diseases. It is a part of promoted researches after the completion of human genome sequencing, which includes industry and academia partnership in drug development and patient-centered translational research. Among the ongoing projects, the i2b2 provides an ontology-based object-oriented database system for integration of clinical information dispersed in different laboratories and different hospitals. Due to its highly flexible data-schema, the i2b2 enables persons without expert knowledge of database to collect clinical information into a database. We constructed i2b2 database with 392 clinical patients' data collected in the university hospital of Tokyo Medical and Dental University. The patients' data includes biomedical and clinicopathological information extracted from carcinoma and non-carcinoma specimens of cancer patients recorded in 'Integrated Clinical Omics Database' (iCOD). We transferred 8,580 English and 54,579 Japanese descriptions into i2b2. We employed Japanese NLP technologies in order to extract clinical terms from doctors' comments in Japanese free texts. We built a pipeline for extraction of clinical terms and translation of the extracted terms into English computationally.

3. Analysis of protein-interaction networks and their applications to drug-target discovery

Since proteins exert their functions though interaction to other proteins, networks of protein-protein interactions are inevitable for understanding mechanisms of diseases and discovering novel drug targets for disease cure. To discover novel target genes, it is of use to understand topological and statistical characteristics of protein-protein interaction networks (PINs), and how the targets are distributed over the networks. In this study, to uncover the topological features of PINs, we developed a novel algorithm to decompose a large complex network into several small sub-networks. By using the network-decomposition algorithm, we decomposed the human PIN into several small simple sub-networks and then mapped drug-target genes on to the sub-networks. We found that a sub-network contains majority of drug targets. For example, the sub-network contains almost 60% and 45% of target-genes of small molecule drugs for cancer cure (e.g., kinase inhibitor and monoclonal antibody drugs) and anti-Parkinson drugs, respectively. The listing of proteins and interactions in the sub-networks may help drug companies to search more efficiently for novel drug target genes.

4. Systems pathology analyses on disease progression of cancer, metastasis (EMT), and Alzheimer's disease

Our mission is systems pathology studies on cancer, metastasis (epithelial-mesenchymal transition: EMT), and neurodegenerative disease (Alzheimer's disease) using large-scale molecular biology data, so-called omics data. We inferred transcriptional, gene regulatory and protein interaction networks of disease pathogenesis and progression, and then explored master regulator, that is key molecule in their networks. Moreover, we estimated an attractor for each cellular state based on gene regulatory network for disease pathogenesis and progression, cellular transformation (EMT), and

cellular differentiation (iPSC/ESC) processes. We then analyzed transition of attractors along with these processes. For omics data analyses conducted in our systems pathology studies, data integration is necessary. We also worked on integration of incurable diseases data using Linked Data technology.

5. Change of Positive Selection Pressure on HIV-1 Envelope Gene Inferred by Early and Recent Samples

HIV-1 infection has been on the rise in Japan recently, and the main transmission route has changed from blood transmission in the 1980s to homo- and/or hetero-sexual transmission in the 2000s. The lack of early viral samples with clinical information made it difficult to investigate the possible virological changes over time. In this study, we sequenced 142 full-length env genes collected from 16 Japanese subjects infected with HIV-1 in the 1980s and in the 2000s. We examined the diversity change in sequences and potential adaptive evolution of the virus to the host population. We also inferred positive selection operating on the virus. The result showed that the selection pressure was weaker in the 2000s than in the 1980s, indicating that it might have become easier for the HIV to infect a new host and to develop into AIDS now than 20 years ago and that the HIV may be becoming more virulent in the Japanese population.

4. Publications

Original Papers

1. Takata H, Nagata H, Nogawa H, Tanaka H: The current shortage and future surplus of doctors: a projection of the future growth of the Japanese medical workforce, Human Resources for Health, 27:9-14, 2011
2. Miyaguchi K, Fukuoka Y, Mizushima H, Yasen M, Nemoto S, Ishikawa T, Uetake H, Tanaka S, Sugihara K, Arii S, Tanaka H: Genome-wide integrative analysis revealed a correlation between lengths of copy number segments and corresponding gene expression profile, Bioinformation, 7:280-4, 2011
3. Todd A Johnson, Yoshihito Niimura, Hiroshi Tanaka, Yusuke Nakamura, Tatsuhiko Tsunoda: hzAnalyzer: detection, quantification, and visualization of contiguous homozygosity in high-density genotyping datasets. Genome Biol. 12: R21, 2011
4. Sekiya I, Ojima M, Sizuki S, Yamaga M, Horie M, Koga H, Tsuji K, Miyaguchi K, Ogishima S, Tanaka H, Muneta T: Human mesenchymal stem cells in synovial fluid increase in the knee with degenerated cartilage and osteoarthritis, Journal of Orthopaedic Research, Doi:10.1002/jor.22029, 2011
5. Tanaka Y, Nakamura A, Morioka S M, Inoue S, Tamamori-Adachi M, Yamada K, Taketani K, Kawauchi J, Tanaka-Okamoto M, Miyoshi J, Tanaka H, Kitajima S: Systems analysis of ATF3 in stress response and cancer reveals opposing effects on proapoptotic genes in p53 pathway, PLoS ONE, 6:e26848, 2011
6. Hatano A, Chiba H, Moesa HA, Taniguchi T, Nagaie S, Yamanegi K, Takai-Igarashi T, Tanaka H, Fujibuchi W: CELLPEDIA: a repository for human cell information for cell studies and differentiation analyse, Database, Doi:10.1093/database/bar046, 2011
7. Okamoto E, Miyamoto M, Hara K, Yoshida J, Muto M, Hirai A, Tatsumi H, Mizuno M, Nagata H, Yamakata D, Tanaka H: Integrated care through disease-oriented clinical care pathways: experience from Japan`s regional health planning initiatives, International Journal of Integrated Care, 11:1-12, 2011
8. Tanaka S, Mogushi K, Yasen M, Ban D, Noguchi N, Irie T, Kudo A, Nakamura N, Tanaka H, Yamamoto M, Kokudo N, Takayama T, Kawasaki S, Sakamoto M, Arii S: Oxidative stress pathways in non-cancerous liver tissue to predict hepatocellular carcinoma recurrence; a prospective multicenter study, Hepatology, 54:1273-81, 2011
9. Shimada S, Mimata A, Sekine M, Mogushi K, Akiyama Y, Fukamachi H, Jonkers J, Tanaka H, Eishi Y, Yuasa Y: Synergistic tumour suppressor activity of E-cadherin and p53 in a conditional mouse model for metastatic diffuse-type gastric cancer, Gut, Doi:10.1136/gutjnl-2011-300050, 2011
10. Muto T, Taniguchi H, Kushima R, Tsuda H, Yonemori H, Chen C, Sugihara Y, Sakamoto K, Kobori Y, Palmer H, Nakamura Y, Tomonaga T, Tanaka H, Mizushima H, Fujita S, Kondo T: Global expression study in colorectal cancer on proteins with alkaline isoele point by two-dimensional difference gel electrophoresis, Journal of Proteomics, 74:858-73, 2011
11. Yoshida I, Sugiura W, Shibata J, Ren F, Yang Z, Tanaka H: Change of positive selection pressure on HIV-1 envelope gene inferred by early and recent samples, PLoS ONE, 6:e18630, 2011
12. Ohashi K, Kurihara Y, Watanabe K, Ohno-Machado L, Tanaka H: Feasibility Evaluation of Smart Stretcher to Improve Patient Safety during Transfers, Methods Information in Medicine, 49:253-64, 2011
13. Shibata J, Sugiura W, Ode H, Iwatani Y, Sato H, Tsang H, Matsuda M, Hasegawa N, Ren F, Tanaka H: Within-host co-evolution of Gag P453L and protease D30N/N88D demonstrates virological advantage in a highly protease inhibitor-exposed HIV-1 case, Antiviral Research, 9: 33-41, 2011
14. Naruo Y, Nagashima T, Ushikoshi-Nakayama R, Saeki Y, Nakakuki T, Naka T, Tanaka H, Tsai S.F, Okada-

Hatakeyama M: Epidermal growth factor receptor mutation in combination with expression of MIG6 alters gefitinib sensitivity, BMC Systems Biology, 5:29, 2011
15. Kishimoto T, Kondo J, Takai-Igarashi T, Tanaka H: Accurate mass comparison coupled with two endopeptidases enables identification of protein termini, Proteomics, 11:485-9, 2011
16. Tsukamoto S, Ishikawa T, Iida S, Ishiguro M, Mogushi K, Mizushima H, Uetake H, Tanaka H, Sugihara K: Clinical significance of osteoprotegerin expression in human colorectal cancer, Clinical Cancer Research, 17:2444-50, 2011
17. Yoshitake K, Tanaka S, Mogushi K, Aihara A, Murakata A, Matsumura S, Mitsunori Y, Yasen M, Ban D, Noguchi N, Irie T, Kudo A, Nakamura N, Tanaka H, Arii S: Importin-α1 as a novel prognostic target for hepatocellular carcinoma, Annals of Surgical Oncology, 18:2093-103, 2011
18. Murakata A, Tanka S, Mogushi K, Noguchi N, Irie T, Kudo A, Nakamura N, Tanaka H, Arii S: Gene expression signature of the gross morphology in hepatocellular carcinoma, Annals of Surgery, 253:94-100, 2011
19. Umemura H, Togawa A, Sogawa K, Satoh M, Mogushi K, Nishimura M, Matsushita K, Tanaka H, Takizawa H, Kodera Y, Nomura F: Identification of a high molecular weight kininogen fragment as a marker for early gastric cancer by serum proteome analysis, Journal of Gastroenterology, 46:577-85, 2011
20. Kurihara Y, Watanabe K, Nakamura T, Tanaka H: Unconstrained Estimation Method of Delta-Wave Percentage Included in EEG of Sleeping Subjects, IEEE Transactions on Biomedical Engineering, 58:607-15, 2011
21. Tun K, Menghini M, D'Andrea L, Dhar P, Tanaka H, Giuliani A: Why so few drug targets: a mathematical explanation, Current Computer-Aided Drug Design, 7:206-13, 2011
22. Takai-igarash T, Akasaka R, Maruyama T, Inoue K, Suzuki K, Eguchi M, Yoshida M, Bando M, Takasaki M, Sakota M, Furukawa T, Maejima T, Konagaya A, Matsuura H, Suzumura T, Tanaka H: On experiences of i2b2 (Informatics for Integrating Biology and the Bedside) database with Japanese Clinical Patients' data, Bioinformation, 6:86-90, 2011
23. Hanada K, Hase T, Toyoda T, Shinozaki K, Okamoto M: Origin and evolution of genes related to ABA metabolism and its signaling pathways, Journal of Plant Research, 124: 455-65, 2011
24. Sugita S, Kamei Y, Akaike F, Suganami T, Kanai S, Hattori M, Manabe Y, Fujii N, Takai-Igarashi T, Tadaishi M, Oka J, Aburatani H, Yamada T, Katagiri H, Kakehi S, Tamura Y, Kubo H, Nishida K, Miura S, Ezaki O, Ogawa Y: Increased systemic glucose tolerance with increased muscle glucose uptake in transgenic mice overexpressing RXRγ in skeletal muscle, PLoS One, 6, e20467, 2011

Books

1. (Editors) Tuan D. Pham, Xiaobo Zhou, Tanaka H, …. Xiuping jia: 2011 International Symposium on Computational Models for Life Sciences (CMLS-11), Toyama City, Japan, 11-13 October 2011, American Institute of Physics
2. Tanaka H, Ogishima S: Omics-Based Identification of Pathophysiological Processes Bernd Mayer (ed.), Bioinformatics for Omics Data: Methods and Protocols, Methods in Molecular Biology, Springer Science+Business Media, LLC, 719:499-509, 2011
3. Yuki Tanaka, Hiroki Nogawa, Hiroshi Tanaka: Music Therapy for Dementia Patients: Tuned for Culture Difference, Early Detection and Rehabilitation Technologies for Dementia: Neuroscience and Biomedical Applications, IGI Global 2011 ISBN:9781609605599

Prizes

1. Best Poster Award in Asia Pacific Bioinformatics Conference 2011 (Incheon, Korea): Inference of the master regulators in the gene regulatory network of Alzheimer's disease progression. Soichi Ogishima
2. BioMedLib TOP 10 ARTICLES PUBLISHED IN THE SAME DOMAIN SINCE YOUR PUBLICATION (March 10, 2011) : A unique amino acid substitution, T126I, in human genotype C of hepatitis B virus S gene and its possible influence on antigenic structural change. Ren F, Tsubota A, Hirokawa T, Kumada H, Yang Z, Tanaka H

Conference Organization

1. Yoshihito Niimura: Young Researchers Conference on Evolutionary Genomics. Aug 1-2, 2011, Tokyo

Applied Genetics (Molecular Genetics)

1. Staffs and Students (April, 2011)

Professor	Yoshio MIKI	
Associate Professor	Kiyotsugu YOSHIDA	
Project Associate Professor	Akira NAKANISHI	
Assistant professor	Katsuya TAKENAKA	
Graduate Student	Miho TAKAOKA,	Nadila WALI,
	Sadiya MARIKU,	Nurmaa DASHZEVEG,
	Ikumi OKU,	Yuya KAGAMI,
	TianTian GUO,	Kazuho SUZUKI,
	Hitomi KIMURA,	Ryoko TAKIZAWA,
	Kazuya NAKAZAWA,	Takenori YAMAMOTO,
	Shota WADA	

2. Purpose of Education

Our research is directed at understanding the molecular mechanism of carcinogenesis, based on basic molecular cell biology and molecular genetics. We have applied new findings and information obtained by basic research to develop the new diagnosis, treatment, and prevention of cancer. Our objective in the graduate course is to provide students opportunity to study basic science and applied genome science for cancer research.

3. Research Subject

1) Functional analysis of the BRCA2 gene.
   ① ATPase activity of non-muscle myosin IIC is regulated by BRCA2 in the midbody ring
   ② Identification of a cleavage product of BRCA2 in cancer cell lines
   ③ Identification of novel BRCA2-associated proteins and analyses of functions of their association in numerical integrity of centrosomes.
2) Regulatory mechanisms of tumor cells in the apoptotic response to DNA damage
   ① PKCdelta regulates Mdm2 independently negative regulator of p53 in the apoptotic response to DNA damage.
   ② Identification of Evi-1 as a novel effector of PKCdelta in the apoptotic response to DNA damage.
3) Analyses of molecular domains of translesion DNA polymerases by introducing a point mutation by homologous recombination in vertebrates.

4. Publication

Original Article

1. Kimura J, Kudoh T, Miki Y, Yoshida K. Identification of dihydropyrimidinase-related protein 4 as a novel target of the p53 tumor suppressor in the apoptotic response to DNA damage. ***Int. J. Cancer*** 128:1524-1531 (2011)
2. Hew HC, Liu H, Miki Y, Yoshida K. PKCdelta regulates Mdm2 independently of p53 in the apoptotic response to DNA damage. ***Mol. Carcinog.*** 50:719-731 (2011)
3. Hew HC, Liu H, Lu-Z-G, Kimura J, Miki Y, Yoshida K. Identification of Evi-1 as a novel effector of PKCdelta in the apoptotic response to DNA damage. ***Biochim. Biophys. Acta*** 1803:285-294 (2011)
4. Sakamoto K, Aragaki T, Morita K, Kawachi H, Kayamori K, Nakanishi S, Omura K, Miki Y, Okada N, Katsube K, Takizawa T, Yamaguchi A. Down-regulation of keratin 4 and keratin 13 expression in oral squamous cell carcinoma and epithelial dysplasia: a clue for histopathogenesis. ***Histopathology.*** 58:531-542, 2011.
5. Wang HF, Takenaka K, Nakanishi A, Miki Y. BRCA2 and nucleophosmin coregulate centrosome amplification and form a complex with the Rho effector kinase ROCK2. ***Cancer Res.*** 71:68-77, 2011.
6. Ito Y, Nagasaki K, Miki Y, Iwase T, Akiyama F, Matsuura M, Horii R, Makita M, Tokudome N, Ushijima M, Yoshimoto M, Takahashi S, Noda T, Hatake K. Prospective randomized phase II study determines the clinical usefulness of genetic biomarkers for sensitivity to primary chemotherapy with paclitaxel in breast cancer. ***Cancer Sci.*** 102(1):130-6, 2011.

Molecular Cytogenetics

1. Staffs and Students (April, 2011)

Professor	Johji Inazawa M.D., Ph.D.	
Associate Professor	Ken-ichi Kozaki D.D.S., Ph.D.	
Assistant Professor	Jun Inoue Ph.D.	
Tokunin Lecturer	Shin Hayashi M.D., Ph.D.	
Research Assistant	Ayako Takahashi,	Rumi Mori
Secretary	Yoriko Fukukawa,	Yuko Shinozaki
Advanced I Super Student	Tomoki Muramatsu,	Mayuko Furuta
Graduate Student	Mitsuyo Naganawa,	Hiroko Sakamoto
Special Research Student	Hiroaki Nagata,	Reiko Iwadate
Research Student	Daniela Tiaki Uehara,	Nuylan Michelle Loyola

2. Purpose of Education

The principal aim of Department of Molecular Cytogenetics is to understand the molecular mechanism underlying intractable diseases, such as cancers and uncharacterized genetic diseases. Main objective of Department of Molecular Cytogenetics in the graduate course is to provide students opportunity to study molecular cytogenetic approach for intractable diseases, identify genes responsible for those diseases, and develop innovative techniques/practically useful tools for detection of genomic and epigenomic aberrations in those diseases. It is our goal to bridge the gap between basic and clinical research for the benefit of each of the patients.

3. Research Subjects

1. Identification of genes responsible for intractable diseases including cancer and genomic disorders through integrative genomics and epigenomics.
2. Discovery of molecular mechanisms of cancer-related genes, including microRNAs, in the multistep processes of carcinogenesis and cancer progression, such as cancer stem cell, epithelial-mesenchymal transition (EMT), invasion and metastasis using systems biology.
3. Development of innovative techniques for genomics and epigenomics in medical science.
4. Development of practically useful tools for molecular diagnosis of intractable diseases.

4. Publications

Original Article

1. Ooi A, Inokuchi M, Harada S, Inazawa J, Tajiri R, Sawada-Kitamura S, Ikeda H, Kawashima H, Dobashi Y: Gene amplification of ESR1 in breast cancers-Fact or fiction? A fluorescence in situ hybridization and multiplex ligation-dependent probe amplification study. J Pathol. 2011 [Epub ahead of print]
2. Ishihara T, Inoue J, Kozaki K, Imoto I, Inazawa J: The HECT-type ubiquitin ligase ITCH targets lysosomal-associated protein multispanning transmembrane 5 (LAPTM5) and prevents LAPTM5-mediated cell death. J Biol Chem. 286:44086-94. 2011
3. Kurasawa Y, Kozaki K, Pimkhaokham A, Muramatsu T, Ono H, Ishihara T, Uzawa N, Imoto I, Amagasa T, Inazawa J: Stabilization of phenotypic plasticity through mesenchymal-specific DNA hypermethylation in cancer cells. Oncogene. 31:1963-74. 2012
4. Tsuruta T, Kozaki K, Uesugi A, Furuta M, Hirasawa A, Imoto I, Susumu N, Aoki D, Inazawa J: miR-152 is a tumor suppressor microRNA that is silenced by DNA hypermethylation in endometrial cancer. Cancer Res. 71:6450-62. 2011
5. Niihori T, Aoki Y, Okamoto N, Kurosawa K, Ohashi H, Mizuno S, Kawame H, Inazawa J, Ohura T, Arai H, Nabatame S, Kikuchi K, Kuroki Y, MiuraM, Tanaka T, Ohtake A, Omori I, Ihara K, Mabe H, Watanabe K, Niijima S, Okano E, Numabe H, Matsubara Y: HRAS mutants identified in Costello syndrome patients can induce cellular senescence: possible implications for the pathogenesis of Costello syndrome. J Hum Genet. 56:707-15. 2011
6. Miyake K, Hirasawa T, Soutome M, Itoh M, Goto YI, Endoh K, Takahashi K, Kudo S, Nakagawa T, Yokoi S, Taira T, Inazawa J, Kubota T: The protocadherins, PCDHB1 and PCDH7, are regulated by MeCP2 in neuronal cells and brain tissues: Implication for the pathogenesis of Rett syndrome. BMC Neurosci. 12:81.2011
7. Uesugi A, Kozaki K, Tsuruta T, Furuta M, Morita K, Imoto I, Omura K, Inazawa J: The tumor suppressive

microRNA miR-218 targets the mTOR component Rictor and inhibits AKT phosphorylation in oral cancer. Cancer Res. 71:5765-78. 2011

8. Hayashi S, Okamoto N, Chinen Y, Takanashi J, Makita Y, Hata A, Imoto I, Inazawa J: Novel intragenic duplications and mutations of CASK in patients with mental retardation and microcephaly with pontine and cerebellar hypoplasia (MICPCH). Hum Genet. 131:99-110. 2012
9. Matsui T, Miyamoto K, Kubo A, Kawasaki H, Ebihara T, Hata K, Tanahashi S, Ichinose S, Imoto I, Inazawa J, Kudoh J, Amagai M: SASPase regulates stratum corneum hydration through profilaggrin-to-filaggrin processing. EMBO Mol Med. 3:320-33. 2011
10. Arai E, Wakai-Ushijima S, Fujimoto H, Hosoda F, Shibata T, Kondo T, Yokoi S, Imoto I, Inazawa J, Hirohashi S, Kanai Y: Genome-wide DNA methylation profiles in renal tumors of various histological subtypes and non-tumorous renal tissues. Pathobiology. 78:1-9.2011
11. Gotoh M, Arai E, Wakai-Ushijima S, Hiraoka N, Kosuge T, Hosoda F, Shibata T, Kondo T, Yokoi S, Imoto I, Inazawa J, Kanai Y: Diagnosis and prognostication of ductal adenocarcinomas of the pancreas based on genome-wide DNA methylation profiling by bacterial artificial chromosome array-based methylated CpG island amplification. J Biomed Biotechnol. 2011:780836. 2011
12. Nishiyama N, Arai E, Nagashio R, Fujimoto H, Hosoda F, Shibata T, Tsukamoto T, Yokoi S, Imoto I, Inazawa J, Kanai Y: Copy number alterations in urothelial carcinomas: Their clinicopathological significance and correlation with DNA methylation alterations. Carcinogenesis. 32:462-9.2011

Biochemical Genetics

1. Staffs and Students (April, 2011)

Professor	Shigetaka Kitajima MD, PhD	
Associate Professor	Yujiro Tanaka MD, PhD	
Assistant Professor	Junya Kawauchi MD, PhD	
Secretary	Kuniko Takayanagi	
Graduate Student	Kenji Taketani,	Manami Kodaka,
	Jun Mitamura,	Saori Ooya,
	Daiki Miyamoto,	Makoto Inoue,
	Manabu Hirata,	Chika Miyagi
Research Student	Hiroto Goshima	

2. Purpose of Education

Transcriptional regulation is one of the most important processes by which genome information is expressed from DNA to mRNA to protein. The faithful synthesis of mRNA is achieved by transcriptional machinery comprised of RNA polymerase II, basal factors and many other protein factors, whose dysfunction is implicated in various human diseases. Our research interest is focused on the basic mechanism of transcription cycle and implication of early response transcription factors in determining cell fate in stress response. We are also studying on the mechanism of cell cycle arrest of terminally differentiated cardiac cells and its re-activation to provide novel regeneration therapy.

Key words

- To provide novel paradigm of transcriptional regulation
- To understand role of transcription factor in cell fate determination

3. Research Subjects

1) Transcription
   - Elongin A plays dual roles in stress response
   - Crosstalk between nucleoplasm and nucleoli
2) Cell fate determination by activating transcription factor (ATF) 3
   - Pro-apoptotic role of ATF3 and its implication in anti-cancer therapy
   - Genome-wide screen of the role of ATF3 in stress response and human cancer
   - ATF3 complex; transcriptional repressor or activator
   - ATF3 transcriptionally regulates microRNA
3) H3K36-sepcific histone methyltransferase ASH1.

4. Clinical Services

none

5. Publications

Original Article

1. Cabianca DS, Casa V, Bodega B, Carvalho C, Ginelli E, Tanaka Y, Carmo-Fonceca M, Gabellini D. A ncRNA regulating a Polycomb/Trithorax epigenetic switch in muscular dystrophy. Cell in press, 2012
2. Tanaka Y, Nakamura A, Morioka M, Inoue S, Tamamori-Adachi M, Yamada M, Taketani K, Kawauchi J, Tanaka-Okamoto M, Miyoshi J, Tanaka H, Kitajima S. Systems analysis of ATF3 in stress response and cancer reveals opposing effects on proapoptotic genes in p53 pathway. PLoS ONE 6(10):e26848, 2011
3. Taketani K, Kawauchi J, Tanaka-Okamoto M, Ishizaki H, Tanaka Y, Sakai T, Miyoshi J, Y Maehara Y, Kitajima. Key role of ATF3 in p53 dependent DR5 induction upon DNA damage of human colon cancer cells. Oncogene in press
4. Gurzov EN, Barthson J, Marhfour I, Ortis F, Naamane N, Estevel I, Gysemans C, Mathieu C, Kitajima S, Marchetti P, Orntoft T, Bakiri L, Wagner EF, Eiziril DL. Pancreatic b-cells activate a JunB/ATF3-dependent survival pathway during inflammation. Oncogene in press
5. Tanaka Y, Kawahashi K, Katagiri Z, Nakayama Y, Mahajan M, Kioussis D. Dual Function of Histone H3 Lysine 36

Methyltransferase ASH1 in Regulation of Hox Gene Expression. PLos ONE 6(11):e28171, 2011
6. Yamada K, Tamamori-Adachi M, Goto I, iizuka M, Yasukawa T, Aso T, Okazaki T, Kitajima S. Degradation of p21Cip1 through anaphase-promoting complex/cyclosome and its activator Cdc20 (APC/CCdc20) ubiquitin ligase complex mediated ubiquitylation is inhibited by cyclin dependent kinase 2 in cardiomyocytes. J Biol Chem 286:44057-44066, 2011
7. Braglia P, Kawauchi J, and Proudfoot NJ. Co-transcriptional RNA cleavage provides a failsafe termination mechanism for yeast RNA polymerase I. Nucleic Acid Research 39:1439-1448, 2011

Experimental Animal Model for Human Disease

1. Staffs (April, 2011)

Professor	Masami Kanai-Azuma
Assistant Professor	Mami Uemura（～Aug.）
	Miyuri Kawasumi（Sep.～）

2. Research Subject

1) ***Sox17*** function for the foregut endoderm development.
（Etiology – Mouse Hepatitis）
2) The functional analysis of ***SoxF*** group
3) Mechanisms of bile duct development

3. Publications

Original Articles

1. **Cyclical and patch-like GDNF distribution along the basal surface of Sertoli cells in mouse and hamster testes.**
Sato T, Aiyama Y, Ishii-Inagaki M, Hara K, Tsunekawa N, Harikae K, Uemura-Kamata M, Shinomura M, Zhu XB, Maeda S, Kuwahara-Otani S, Kudo A, Kawakami H, Kanai-Azuma M, Fujiwara M, Miyamae Y, Yoshida S, Seki M, Kurohmaru M, Kanai Y., PLoS One. 2011;6(12):e28367. Epub, 2011 Dec 9.
2. **Sox17-dependent gene expression and early heart and gut development in Sox17-deficient mouse embryos.**
Pfister S, Jones VJ, Power M, Truisi GL, Khoo PL, Steiner KA, Kanai-Azuma M, Kanai Y, Tam PP, Loebel DA., Int J Dev Biol.,55, 45-58, 2011.
3. **Proteomic analysis of two types of exosomes in human whole saliva.**
Ogawa Y, Miura Y, Harazono A, Kanai-Azuma M, Akimoto Y, Kawakami H, Yamaguchi T, Toda T, Endo T, Tsubuki M, Yanoshita R., Biol Pharm Bull., :13-23, 2011.

Books

1. Masami Kanai-Azuma (Translation), 『Junqueira's Histology third edition』, Section6, Tokyo, Maruzen, pp.117-122, 2011 January

Conference Paper Index

1. Ikuo Nobuhisa*[1,2], Yuko Kishikawa*[2], Mami Uemura*[3], Maha Anani*[1], Gomaa Ahmed*[1,2], Masami Kanai-Azuma*[3], Yoshiakira Kanai*[4], Tetsuya Taga*[1,2]. ([1]Dept. of Stem Cell Regulation, Medical Research Institute, Tokyo Medical and Dental Univ., [2]Dept. of Cell Fate Modulation, IMEG, Kumamoto Univ., [3]Dept. of Experimental Animal Model for Human Disease, Center for Experimental Animal, Tokyo Medical and Dental University, [4]Dept. of Veterinary Anatomy, Graduate School of Agricultural and Life Science, The Univ. of Tokyo*[4]): Role of SoxF family proteins in the maintenance of immature phenotype of hematopoietic progenitors in the aorta-gonad-mesonephros region. The 9th Stem Cell Research Symposium, Tokyo, May 13-14, 2011.
2. Masami Kanai-Azuma, (Dept. of Experimental Animal Model for Human Disease, Center for Experimental Animal, Tokyo Medical and Dental University), Sox proteins in neural stem cells and progenitors（Chair）, Sox17 in endoderm : The Third International Sox Meeting, Germany, Sep. 11-14, 2011.
3. Ikuo Nobuhisa*[1,2], Yoko Kishikawa*[2], Mami Uemura, Maha Anani*[1], Masami Kanai-Azuma*[3], Yoshiakira Kanai*[4], and Tetsuya Taga*[1,2]. (*[1]Dept. of Stem Cell Regulation, Medical Research Institute, Tokyo Medical and Dental Univ., *[2]Dept. of Cell Fate Modulation, IMEG, Kumamoto Univ., *[3]Dept. of Experimental Animal Model for Human Disease, Center for Experimental Animal, Tokyo Medical and Dental University, *[4]Dept. of Veterinary Anatomy, Graduate School of Agricultural and Life Science, The Univ. of Tokyo*): Maintenance of immature phenotype of the hematopoietic cell clusters in the aorta-gonad-mesonephros region by SoxF family proteins. The 34th Annual Meeting of the Molecular Biology Society of Japan, Pacifico Yokohama, Dec13-16, 2011.

Hepato-Biliary-Pancreatic Surgery

1. Staffs and Students (2011)

Professor	Shigeki Arii	
Associate Professor	Shinji Tanaka	
Assistant Professor	Noriaki Nakamura,	Atsushi Kudo,
	Takumi Irie,	Norio Noguchi,
	Takenori Ochiai,	Daisuke Ban
	Arihiro Aihara	
Tokunin Assistant Professor	Yasen Mahmut	
Graduate Student	Yusuke Mitsunori,	Satoshi Matsumura,
	Rama Adikrisna,	Kenichiro Yoshitake,
	Syunsuke Muramatsu,	Chisato Okajima,
	Kouta Sato,	Kousuke Ogawa,
	Yuichiro Watanabe,	Toshiro Ogura,
	Tomoya Miura,	Hiroko Matsunaga,
	Takaki Furuyama,	Eriko Katsuta,
	Hiromitsu Ito,	Keisuke Nakao,
	Xirali Mamat,	Maynur Abdurahman

2. Educational Vision

Medical School Education: Our mission is to educate students and transform them into high quality surgeons. Leading edge training, from basic to advanced, is provided through one-on-one interaction with advisers. Furthermore, students, as medical professionals, learn how to interact with patients, and establish strong ethics and morals. Especially, in regard to breaking bad news, students learn by dealing with real cases. While students mainly acquire surgical techniques during post-graduate clinical internships , their interest in surgery is nurtured through medical education.

Post-graduate Education: Our mission is to cultivate the capability of students as surgeons and physicians, in order to provide the highest quality patient care. Each student is expected to obtain a specialization in surgery within 5 or 6 years after graduation from medical school. During post-graduate education, we provide incentives for students to become excellent surgeons, conduct original medical research, and allow them to demonstrate their capability in the real world.

3. Research

We are making researches in the important issues which are remained to be resolved in the hepato-biliary-pancreatic surgery and diseases. The research subjects are as follows;

1) Research in the molecular mechanisms on the progression of hepato-biliary -pancreatic malignancies
2) Research in development of the molecular-targeting therapy for hepato-biliary -pancreatic malignancies.
3) Research in the extended indication of the hepatic resection for hepato-biliary malignancies.
4) Research in the transporter for bile metabolism
5) Research in the improvement of liver preservation
6) Research in the microcirculation of the liver
7) Research in immunological torelance for organ transplantation
8) Research in technical improvement of laparoscopic surgery

4. Clinical practice

The major diseases we treat are those of liver, biliary tract including gallbaladder, pancreas, and spleen, particularly malignant diseases of those organs. Especially, our mission is to treat advanced cancers with multidisciplinary strategy although our mainstay is surgical method. Living liver transplantation is also undertaken for end -stage liver diseases. Laparoscopic surgery is applied to neoplastic diseases as well as benign diseases from the viewpoint of less invasive surgery. The malignant cases we resected was 180 on 2012, which was ranked among high volume centers of our country.

5. Publications

Original Article

1. Murakata. A, Tanaka S, Mogushi K, Yasen M, Noguchi N, Irie T, Kudo A, Nakamura N, Tanaka H, Arii S. Gene expression signature of the gross morphology in hepatocellular carcinoma Ann Surg. 253:94-100, 2011
2. Yoshitake K, Tanaka S, Mogushi K, Aihara A, Murakata A, Matsumura S, Mitsunori Y, Yasen M, Ban D, Noguchi N, Irie T, Kudo A, Nakamura N, Tanaka H, Arii S. Importin-α1 as a novel prognostic target for hepatocellular carcinoma. Ann Surg Oncol 18:2093-2103, 2011
3. Eguchi S, Kanematsu T., Arii S, Omata M, Kudo M, Sakamoto M, Takayasu K, Makuuchi M, Matsuyama Y, Monden M, for the Liver Cancer Study Group of Japan Recurrence –free survival more thyan 10 years after liver resection for hepatocellular carcinoma Brit J Surg 98:552-557, 2011
4. Yasui K, Hashimoto E, Komorizono Y, Koike K, Arii S, Imai Y, Shima T, Kanbara Y, Saibara T, Mori T, Kawata S, Uto H, Takami S, Sumida Y, Takamura T, Kawanaka M, Okanoue T; Japan NASH Study Group, Ministry of Health, Labour, and Welfare of Japan. Characteristics of patients with nonalcoholic steatohepatitis who develop hepatocellular carcinoma. ClinGastroenterol Hepatol 9:428-433, 2011
5. Tanaka S, Mogushi K, Yasen M, Ban D, Noguchi N, Kudo A, Nakamura N, Tanaka H, Yamamoto M, Kokudo N, Takayama T, Kawasaki S, Sakamoto M, Arii S. Oxidative stress pathways in non-cancerous human liver tissue to predict hepatocellular carcinoma recurrence; a prospective multi-center study. *Hepatology*, 54:1273-1281, 2011.
6. Miyaguchi K, Fukuoka Y, Mizushima H, Yasen M, Nemoto S, Ishikawa T, Uetake H, Tanaka S, Sugihara K, Arii S, Tanaka H. Genome-wide integrative analysis revealed a correlation between lengths of copy number segments and corresponding gene expression profile. *Bioinformation* 7: 280-284, 2011.
7. Ochiai T, Igari K, Yagi M, Ito H, Kumagai Y, Iida M, Matsumoto A, Kumada Y, Shinohara K, Yamazaki S. Treatment strategy for blunt hepatic trauma: analysis of 183 consecutive cases. Hepatogastroenterology 2011; 58(109):1372-6.
8. Kumagai Y, Yagi M, Aida J, Ishida H, Suzuki S, Hashimoto T, Amanuma Y, Kusano M, Mukai S, Yamazaki S, Iida M, Ochiai T, Matsuura M, Iwakiri K, Kawano T, Hoshihara Y, Takubo K. Detailed features of palisade vessels as a marker of the esophageal mucosa revealed by magnifying endoscopy with narrow band imaging. Dis Esophagus. 2011; Nov 18. doi: 10.1111/j. 1442-2050.2011.01283.x. [Epub ahead of print]
9. Yamada Y, Boskovic S, Aoyama A, Murakami T, Putheti P, Smith RN, Ochiai T, Nadazdin O, Koyama I, Boenisch O, Najafian N, Bhasin MK, Colvin RB, Madsen JC, Strom TB, Sachs DH, Benichou G, Cosimi AB, Kawai T.Overcoming Memory T-Cell Responses for Induction of Delayed Tolerance in Nonhuman Primates. Am J Transplant. 2011 Nov 4. doi: 10.1111/j. 1600-6143.2011.03795.x. [Epub ahead of print]
10. Kuwabara H, Goseki N, Nakamura H, Tamai S, Baba H, Nakajima K. Patients with gastrointestinal tract disorders receiving parenteral nutrition need a higher dose of vitamin C. Hepatogastroenterology 58: 31-35, 2011
11. Kuwabara H, Goseki N, Nakamura H, Tamai S, Baba H, Nakajima K. Adequacy of vitamin C supplementation in patients with gastrointestinal disorders receiving parenteral nutrition: A randomized trial. European e-Journal of Clinical Nutrition and Metabolism 6(3): e148-e152, 2011
12. Yasen M, Obulhasim G, Kajino K, Mogushi K, Mizushima H, Tanaka S, Tanaka H, Hino O, Ari S. DNA binding protein A expression and methylation status in hepatocellular carcinoma and the adjacent tissue. *International Journal of Oncology*, in press
13. Sakai S, Inamoto K, Liu Y, Tanaka S, Arii S, Taya M. Multicellular tumor spheroid formation in duplex microcapsules for analysis of chemosensitivity. *Cancer Science*, in press
14. Kudo A, Igari T, Kumagai J, Tanaka S, Ban D, Noguchi N, Irie T, Nakamura N, and Arii S. A simple index to predict liver functional reserve after hepatectomy. Hepatogastroenterology. in press

Review Article

1. Tanaka S, Arii S. Molecular targeted therapy for hepatocellular carcinoma in the current and potential next strategies. *Journal of Gastroenterology*, 46:289-96, 2011.

A case report

1. Nakamura N, Irie T, Ochiai T, Kudo A, Itoh K, Tanaka S, Teramoto K, Arii S. Pancreatoduodenectomy after coronary artery bypass grafting using the right gastroepiploic artery: a case report. *Hepatogastroenterology*. 58:1137-1141, 2011.
2. Ochiai T, Masuda T, Nishizawa M, Ito H, Igari K, Aihara A, Kumagai Y, Iida M, Odajima H, Arii S, Yamazaki S.Curative Resection of a Huge Malignant Pancreatic Endocrine Tumor by Pancreatoduodenectomy with Portal and

Superior Mesenteric Vein Resection and Reconstruction Using the Right Ovarian Vein: Report of a Case. Surg Today. 2011 Sep;41(9):1260-5.

3. Kumagai Y, Miura K, Nishida T, Igari K, Ochiai T, Iida M, Yamazaki S, Odajima H, Kawano T, Takubo K.Simultaneous resection of metastatic melanoma in the esophagus and primary cutaneous melanoma showing partial regression: report of a case. Surg Today. 2011 Dec 20. [Epub ahead of print]

International Presentation

1. Tanaka S, Arii S. Microenvironment and stemness potentials in hepatocellular carcinoma.The 3rd JCA-AACR Special Joint Conference, March 3, 2011, Maihara, Chiba, Japan
2. Tanaka S, Mogushi K, Yasen M, Noguchi N, Irie T, Kudo A, Nakamura N, Inazawa J, Tanaka H, Arii S. Gene expression signature of the non-cancerous liver tissue associated with the early recurrence of hepatocellular carcinoma. 102nd Annual Meeting of the American Association for Cancer Research, April 3, 2011, Orlando, FL, USA
3. Ban D, Shimada K, Konishi M, Uesaka K, Saiura A, Hashimoto M. Staple and Non-Staple Closure of Pancreatic Remnant After Distal Pancreatectomy:A Multicenter Retrospective Analysis of 388 Patients. DDW,Chicago,2011.5.9..
4. Ochiai T, Iida M, Yamazaki S. A Case Report of Successful Treatments in Combination with Chemotherapy and Radical hepatectomy for Ascending Colon Carcinoma with Pulmonary and More Than 40 Hepatic Metastases. International Surgical Week, Yokohama. 2011.8. 29.
5. Ochiai T, Iida M, Yamazaki S. Nonoperative Management for Blunt Hepatic Trauma. International Surgical Week, Yokohama. 2011.8. 29.
6. Ochiai T, Iida M, Yamazaki S. Prognostic factors for ampullary carcinoma: analysis of 31 cases resected by pancreatoduodenectomy or pylorus preserving pancreatoduodenectomy. International Surgical Week, Yokohama. 2011.8. 31.
7. Ochiai T, Iida M, Yamazaki S. A Case Report of Recurrent "Icteric Type of Hepatoma" Controlled by Anatomical Hepatic Resection and Hepatic Arterial Chemotherapy. International Surgical Week, Yokohama. 2011.8. 31.
8. Kumagai Y, Ochiai T, Yamazaki S. Simultaneous resection of metastatic melanoma in the esophagus and primary cutaneous melanoma showing partial regression: report of a case. International Surgical Week, Yokohama. 2011.8. 31.
9. Adikrisna R et al. Analogy between sphere forming ability and stemness of hepatocellular carcinoma cells. ISMRC2011,Oosaka, 2011.9.21. (Poster Prezentation)
10. Takamatsu S, Nagano H, Ootsukasa S, Kawachi Y, Maruyama H. A ruptured solid pseudopapillary neoplasm of the pancreas resected by the laparoscopic surgery - A case report-. 3rd Biennial Congress Asian-Pacific Hepato-Pancreatic-Biliary Association, Melbourne,2011.9.29.
11. Baba H, Sanada T, Goseki N. Preoperative malnutrition is associated with prognosis of pancreatic cancer. 2011 Asian-Pacigfic HPBA 3rd Biennial Congress, 2011.9, Melbourne, Australia
12. Sanada T, Baba H, Goseki N. Clinical trial for better postoperative course of pancreaticoduodenectomy. 2011 Asian-Pacific HPBA 3rdBiennial Congress, 2011.9, Melbourne, Australia
13. Ochiai T. Surgical results of pancreatic neuroendocrine tumor. Asian Pacific Digestive Week (APDW) 2011,Singapore, 2011.10.2
14. Ochiai T. A case report of difficult differential diagnosis between malignant tumor and inflammatory pseudotumor of the liver. Asian Pacific Digestive Week (APDW) 2011,Singapore, 2011.10.2
15. Ochiai T. A case report of extraheaptic portal vine aneurysm. Asian Pacific Digestive Week (APDW) 2011,Singapore, 2011.10.2
16. Ochiai T. Signal results of colorectal liver metastases: consecutive 91 cases from single institute in Japan. Asian Pacific Digestive Week (APDW) 2011,Singapore, 2011.10.2
17. Ochiai T. Retrospective analysis of resected mucinous cystic neoplasm of the pancreas. Asian Pacific Digestive Week (APDW) 2011,Singapore, 2011.10.2
18. Ochiai T. A case report of successful treatments in combination with tow stage liver resection and chemotherapy for sigmoid colon cancer with multiple liver metastases. Asian Pacific Digestive Week (APDW) 2011,Singapore, 2011.10.3
19. Tanaka S, Murakata A, Mogushi K, Ogawa K, Muramatsu S, Adikrisna R, Aihara A, Ban D, Ochiai T, Irie T, Kudo A, Nakamura N, Yasen M, Tanaka H, Arii S. Gene expression signature and the specific role of EpCAM stem cell marker in gross morphology of hepatocellular carcinoma. 21st IASGO 2011, Tokyo, 2011.11.10

20. Ochiai T, Nishizawa M, Igari K, Yagi M, Kasai R, Kumgai Y, Iida M, Yamazaki S. A case report of successful right lobectomy for severe blunt hepatic trauma: based on experience of 183 consecutive hepatic trauma cases. IASGO 2011, Tokyo, 2011.11.10.
21. Irie T. Aplenectomy Improves Liver Function After Hepatectomy for Hepatocellular Carcinoma with Liver Cirrhosis. 21st IASGO 2011, Tokyo, 2011.11.10.
22. Nakamura N. Resuult of surgical treatment for peritoneal dissemination of hepatocellular cartonoma. 21st IASGO 2011, Tokyo, 2011.11.10.
23. Ban D. Efficacy of the bioabsorbable sheet plus fibrin-glue wrapping of the pancreatic stump after distal pancreatectomy. IASGO 2011, Tokyo, 2011.11.10.
24. Mitsunori Y, Aihara A, Ban D, Ochiai T, Irie T, Kudo A, Nakamura N, Tanaka S, Arii S. Contrast Enhanced Intraoperative Ultrasound is useful for Glisson's pedicle processing in liver resection. 21st IASGO 2011, Tokyo, 2011.11.10.
25. Ochiai T, Ito H, Mitsunori M, Noguchi N, Aihara A, Kumagai Y, Iida M, Tanaka S, Arii S, Yamazaki S. Complications of post-pancreatduodenectomy classified by primary diseases. 21st IASGO 2011, Tokyo, 2011.11.10.
26. Kumagai Y, Aida J, Yamasaki S, Ochiai T, Iwakiri K, Kawano T, Hoshihara H, Takubo K. Detailed features of palisade vessels as a marker of the esophageal mucosa revealed by magnifying endoscopy. 21st IASGO 2011, Tokyo, 2011.11.10.
27. Kumagai Y, Kawada K, Yamazaki S, Ochiai T, Kawano T, Takubo K . Prospective replacement of magnifying endoscopy by the newly developed endocytoscope, GIF-Y0002. 21st IASGO 2011, Tokyo, 2011.11.10.
28. Arii S. Surgical strategies for hepatocellular with apecial reference to anatomical hepatic resection and intraoperative contrast-enhanccced ultrasonography. 21st IASGO 2011, Tokyo, 2011.11.11.
29. Ochiai T, Igari K, Yagi M, Kumagai Y, Iida M, Yamazaki S, Tanaka S, Arii S. New surgical stratery for obstructive obturator hernia. 21st IASGO 2011, Tokyo, 2011.11.11.
30. Ochiai T, Ito H, Igari K, Furuyama T, Aihara A, Kumagai Y, Iida M, Tanaka S, Arii S, Yamazaki S. Resection of retroperitoneal soft tissue sarcomas. 21st IASGO 2011, Tokyo, 2011.11.11.
31. Aihara A. The selective Aurora B kinease inhibitor as a novel treatment for hepatocellular carcinoma. 21st IASGO 2011, Tokyo, 2011.11.11.
32. Ochiai T. Neoadjuvant chemotherapy and following simultaneous resection of primary bowel tumor and unresectable liver metastases for an asymptomatic colorectal cancer patient: report of a case. IASGO 2011, 21st Tokyo, 2011.11.12.

Orthopaedic and spinal surgery

1. Staffs and Students (April, 2011)

Professor	Atsushi OKAWA	
Junior Associate Professor	Yoshiaki Wakabayashi,	Shigenori Kawabata
Assistant Professor	Tsuyoshi Kato,	Daisuke Koga,
	Shoji Tomizawa,	Toshitaka Yoshii,
	Chigusa Sawamura	
(Development Division of Advanced Orthopaedic Therapeutics)		
Associate Professor	Shinichi Sotome	
Junior Associate Professor:	Mitsuhiro Enomoto,	Yoshinori Aso,
	Ayako Kimura	
Graduate Student	Hirotaka Koyanagi,	Koji Fujita,
	Kyohei Sakaki,	Takashi Hirai,
	Masato Yuasa,	Dai Ukegawa,
	Madoka Ukegawa,	Tsuyoshi Yamada,
	Takashi Taniyama,	Yoto Oh,
	Jo Sei, Xu Ren, Pack, Hyrat, Ma,	
	Gaku Koyano,	Yuki Yamauchi

2. Activities

As a department of Orthopaedic surgery, we execute medical treatment, research, and education in cooperation with section of Orthopaedic Joint Surgery. Orthopaedics deals with musculoskeletal systems such as bone, cartilage, joint, tendon, and muscle and with nervous systems such as spine and peripheral nerve and treats their various disorders by trauma, degeneration, neoplasm, and systemic disease. Thus our research should be extended wide area of basic and clinical fields. Now our research projects include reconstruction of motor function, clinical application of regenerative medicine, development of biomaterials and artificial joints, and pain control.

(1) Research Subjects

1) Development and evaluation of a novel artificial bone – porous hydroxyapatite / collagen composite
2) Reconstruction of bone defects using bone marrow stromal cells and artificial bone substitutes
3) Reconstruction of bone defects using bone morphogenetic proteins and artificial bone substitutes
4) Analysis of the mechanisms of musculoskeletal aging and its prevention
5) Genom-wide analysis for bone and soft tissue tumor.
6) Clinical applications of spinal cord evoked potentials
7) Development of novel diagnostic method for spinal cord function using magnetic field
8) Development of cell therapy to repair injured spinal cord
9) Development of multidisciplinary therapy for musculoskeletal malignant neoplasm

(2) Clinical Services

By popularity of sports and aging society, the need for orthopaedic medicine is growing rapidly. We carry out not only treatment of the disease but also repair of functional disability for the improvement of QOL by advancing therapeutic strategy.

In spinal operation, instrumentation, microsurgery and spinal cord monitoring yield safety and secure decompression and fusion, resulting in early postoperative ambulation and satisfactory outcome.

Hand and upper limb surgery unit has applied microsurgical technique for atraumatic operation and micro-vascular anastomosis. Today, microsurgery is indispensable for re-implantation, nerve repair and transfer, and vascularized tissue transfer. Arthroscopic surgery in upper limb is also available, and provides less-invasive operation.

In musculoskeletal tumor surgery, limb-salvaging surgery is the first choice based on the concept of safety surgical margin from the systematic evaluation of surgical specimens. And also functional reconstruction of the affected limb after tumor surgery is exerted by plastic and microsurgery technique and application of regenerative medicine.

Examples of advanced treatments for adult hip diseases are one-stage bilateral total hip arthroplasty, less-invasive technique for adult hip reconstruction, and accelerated rehabilitation after hip arthroplasty.

(3) Education

Lab

Goals/Outline:

Molecular biologically and using physiological procedure we analyze motor of joints, spine, intervertebral disc, spinal cord, peripheral nerve disorders, aging, injury, tumorigenesis mechanism and definite how to treat these disorders. And also we would do tissue reconstruction or develop an artificial tissue.

Available program:

Participation in a research group; Everyday as occasion demands

Surgical Pathology

1. Staff and Students

Professor	Yoshinobu EISHI	
Associate Professor	Takumi AKASHI	
Assistant Professor	Eisaku ITO,	Tetsuo YAMADA,
	Shinichi HIROOKA,	Tomonari AMANO
Hospital Staff Doctor	Keiko MIURA	
Secretary	Chizuko OSADA	

2. Purpose of education

Main object of surgical pathology in the course of graduate school is to provide medical students opportunity to study 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.

3. Research Subjects

1) Improvement of diagnostic methods of gastrointestinal, liver, renal and respiratory diseases by anatomical, immunohistochemical, microbiological and molecular technologies.
2) Analysis of the pathophysiology of the disease, especially invasion mechanism of lung and gastrointestinal cancers by molecular biological technology.

4. Clinical Services

In cooperation with departments of human pathology and comprehensive pathology, department of surgical pathology provides autopsy services (100 case in a year), cytopathology services (12,000 cases in a year) and surgical pathology (10,000 cases in a year) for the clinicians of the affiliated hospital. Diagnosis is mostly done by the organ-subspecilized staffs. Clinico-pathological conferences are held more than one hundred times in a year.

5. Publications

Original Article

1. Izumikawa K, Motoi N, Takaya H, Miyamoto A, Eishi Y, Yoshimura K, Kishi K. A case of concurrent sarcoidosis, aortitis syndrome and Crohn's disease. Intern Med 50(23):2915-7, 2011
2. Nemoto Y, Kanai T, Shinohara T, Ito T, Nakamura T, Okamoto R, Tsuchiya K, Lipp M, Eishi Y, Watanabe M. Luminal $CD4^+$ T cells penetrate gut epithelial monolayers and egress from lamina propria to blood circulation. Gastroenterology 141(6): 2130 -2139,2011
3. Tanabe T, Yamaguchi N, Matsuda K, Yamazaki K, Takahashi S, Tojo A, Onizuka M, Eishi Y, Akiyama H, Ishikawa J, Mori T, Hara M, Koike K, Kawa K, Kawase T, Morishima Y, Amano H, Kobayashi-Miura M, Kakamu T, Nakamura Y, Asano S, Fujita Y. Association analysis of the NOD2 gene with susceptibility to graft-versus-host disease in a Japanese population. Int J Hematol 93(6):771-8,2011
4. Munari F, Lonardi S, Cassatella MA, Doglioni C, Cangi MG, Amedei A, Facchetti F, Eishi Y, Rugge M, Fassan M, de Bernard M, D'Elios MM, Vermi W. Tumor-associated macrophages as major source of APRIL in gastric MALT lymphoma. Blood 16;117(24):6612-6,2011
5. Takamura A, Komatsu M, Hara T, Sakamoto A, Kishi C, Waguri S, Eishi Y, Hino O, Tanaka K, Mizushima N. Autophagy-deficient mice develop multiple liver tumors. Genes Dev 15;25(8):795-800,2011
6. Hirooka S, Akashi T, Ando N, Suzuki Y, Ishida N, Kurata M, Takizawa T, Kayamori K, Sakamoto K, Fujiwara N, Kojima M, Eishi Y. Localization of the invadopodia-related proteins actinin-1 and cortactin to matrix-contact-side cytoplasm of cancer cells in surgically resected lung adenocarcinomas. Pathobiology 78(1):10-23,2011
7. Namiki T, Tanemura A, Valencia JC, Coelho SG, Passeron T, Kawaguchi M, Vieira WD, Ishikawa M, Nishijima W, Izumo T, Kaneko Y, Katayama I, Yamaguchi Y, Yin L, Polley EC, Liu H, Kawakami Y, Eishi Y, Takahashi E, Yokozeki H, Hearing VJ. AMP kinase-related kinase NUAK2 affects tumor growth, migration, and clinical outcome of human melanoma. Proc Natl Acad Sci U S A 19;108(16):6597-602,2011
8. Mimata A, Fukamachi H, Eishi Y, Yuasa Y. Loss of E-cadherin in mouse gastric epithelial cells induces signet ring-like cells, a possible precursor lesion of diffuse gastric cancer. Cancer Sci 102(5):942-50. doi: 10.1111/j.1349-7006,2011

9. Iwasaki M, Tsuchiya K, Okamoto R, Zheng X, Kano Y, Okamoto E, Okada E, Araki A, Suzuki S, Sakamoto N, Kitagaki K, Akashi T, Eishi Y, Nakamura T, Watanabe M. Longitudinal cell formation in the entire human small intestine is correlated with the localization of Hath1 and Klf4. J Gastroenterol 46(2):191-202,2011
10. Kuramochi J, Inase N, Miyazaki Y, Kawachi H, Takemura T, Yoshizawa Y. Lung cancer in chronic hypersensitivity neumonitis. Respiration 82:263-267, 2011
11. Ueno H, Mochizuki H, Shirouzu K, Kusumi T, Yamada K, Ikegami M, Kawachi H, Kameoka S, Ohkura Y, Masaki T, Kushima R, Takahashi K, Ajioka Y, Hase K, Ochiai A, Wada R, Iwaya K, Nakamura T, Sugihara K. Actual status of distribution and prognostic impact of extramural discontinuous cancer spread in colorectal cancer. J Clin Oncol 29:2550-2556, 2011
12. Sakamoto K, Aragaki T, Morita K, Kawachi H, Kayamori K, Nakanishi S, Omura K, Miki Y, Okada N, Katsube K, Takizawa T, Yamaguchi A. Down-regulation of keratin 3 and keratin 13 expression in oral squamous cell carcinoma and epithelial dysplasia: a clue for histopathogenesis. Histopathology 58:531-542, 2011
13. Suzuki S, Kurata M, Abe S, Miyazawa R, Murayama T, Hidaka M, Yamamoto K, Kitagawa M. Overexpression of MCM2 in myelodysplastic syndromes association with bone marrow cell apoptosis and peripheral cytopenia. Exp Mol Pathol 92(1):160-166, 2011
14. Kitagawa M, Kurata M, Yamamoto K, Abe S, Suzuki S, Umeda S. Molecular pathology of myelodysplastic syndromes: biology of medullary stromal and hematopoietic cells (review). Mol Med Report 4(4):591-6, 2011
15. Okada Y, Kamata S, Akashi T, Kurata M, Nakamura T, Kihara K. Primitive neuroectodermal tumor/Ewing's sarcoma of the urinary bladder: a case report and its molecular diagnosis. Int J Clin Oncol 16(4):435-8, 2011
16. Kurata M, Abe S, Suzuki S, Li N, Ohnishi I, Hasegawa M, Yamamoto M, Kitagawa M. DNA damage-induced apoptosis and genetic background of the host: Hostspecific signaling enhancers of apoptosis. J Med Dent Sci 58:85-88, 2011
17. Takeuchi K, Soda M, Togashi Y, Sugawara E, Hatano S, Asaka R, Okumura S, Nakagawa K, Mano H, Ishikawa Y. Pulmonary inflammatory myofibroblastic tumor expressing a novel fusion, PPFIBP1-ALK: reappraisal of anti-ALK immunohistochemistry as a tool for novel ALK fusion identification. Clin Cancer Res 17(10):3341-8, 2011
18. Kurata M, Yamazaki Y, Kanno Y, Ishibashi S, Takahara T, Kitagawa M, Nakamura T. Anti-apoptotic function of Xbp1 as an IL-3 signaling molecule in hematopoietic cells. Cell Death Dis 2:e118, 2011
19. Yamanami-Irioka A, Uchihara T, Endo T, Irioka T, Watanabe M, Kitagawa M, Mizusawa H. Amnesia in frontotemporal dementia with amyotrophic lateral sclerosis, masquerading Alzheimer disease. Case Reports in Neurology 3:242-247, 2011
20. Honne K, Kohsaka H, Kaneko H, Komano Y, Nakanishi S, Kitagawa M, Miyasaka N. A Behçet's disease with widespread perforating enteric ulcers preceded by a long history of peripheral gangrenes. Modern Rheumatology 21:651-654, 2011.
21. Asano S, Takemura T, Katoh K, Taneda M, Kitagawa M. Epithelial regeneration after diffuse alveolar damage in relation to underlying disease and treatment: an autopsy study. J Med Dent Sci 58:113-121, 2011
22. Tateishi T, Ohtani Y, Takemura T, Akashi T, Miyazaki Y, Inase N, Yoshizawa Y. Serial high-resolution computed tomography findings of acute and chronic hypersensitivity pneumonitis induced by avian antigen. J Comput Assist Tomogr 35(2):272-9,2011
23. Saito T, Hanai S, Takashima S, Nakagawa E, Okazaki S, Inoue T, Miyata R, Hoshino K, Akashi T, Sasaki M, Goto Y, Hayashi M, Itoh M. Neocortical layer formation of human developing brains and lissencephalies: consideration of layer-specific marker expression.Cereb Cortex 21(3):588-96,2011

Advanced Science and Technology for Biomedical Sensors (Biomedical Devices and Instrumentation)

1. Staffs and Students (April 2011)

Professor	Kohji MITSUBAYASHI	
Junior Associate Professor	Hiroyuki KUDO	
Assistant Professor	Takahiro ARAKAWA	
Lecturer (part-time)	Norihisa MIKI	
Engineer Official	Kumiko MIYAJIMA	
Research Staff	Mika HAYASHI	
Post-Doctoral Researcher	Xin WANG	
Graduate Student	Tomoko GESSEI,	Elito KAZAWA,
	Munkhjargal MUNKHBAYAR,	
	Ming YE,	Shunsuke HAGA,
	Koudai HATAYAMA,	Toshifumi YAMASHITA

2. Education

We provide opportunity to study advanced biomedical devices and instrumentation. Students in our laboratory are working on the research projects as follows.

3. Research Subjects

1) Soft contact-lens biosensor

Based on advanced polymer microelectromechanical systems (MEMS) techniques, a soft contact-lens biosensor have been developed. The biosensor provides novel biomonitoring such as glucose monitoring in tear fluids.

2) Biological odor measurement and smell communication

High selective gas-sensors "Bio-sniffers" have been constructed with molecular recognition of enzyme in human liver. Potential applications of the bio-sniffer and –nose includes halitosis analysis, breath alcohol & aldehyde measurement, environmental volatile organic compounds (VOC) monitoring, etc.

3) Spatiotemporal gas visualization system for imaging of 'odor' information

A visualization system for spatial distribution of volatile chemicals have been developed. The visualization system is expected to be used in future medical screening or dental health.

4) 'Organic engine' based on chemo-mechanical energy conversion

A novel chemo-mechanical energy conversion system (organic engine) that utilizes enzyme reactions and active transport of chemicals have been constructed. Biomedical applications (chemical pumps, drug release systems, etc.) are also investigated.

4. Publications

Original Article

1. Chu MX, Miyajima K, Takahashi D, Arakawa T, Sano K, Sawada S, Kudo H, Iwasaki Y, Akiyoshi K, Mochizuki M, Mitsubayashi K. Biomedical soft contact-lens sensor for in situ ocular biomonitoring of tear contents, Biomedical Microdevices, 13, 603–611, 2011.
2. Wang X, Ando E, Takahashi D, Arakawa T, Kudo H, Saito H, Mitsubayashi K. Non-invasive spatial visualization system of exhaled ethanol for real-time analysis of ALDH2 related alcohol metabolism, Analyst, 136(18), 3680-3685, 2011.
3. Arakawa T, Koshida T, Gessei T, Takahashi D, Kudo H, Yano K, Mitsubayashi K. Biosensor for L-phenylalanine based on the optical detection of NADH using a UV light emitting diode, Microchimica Acta, 173(1-2), 199-205, 2011.
4. Chu MX, Miyajima K, Takahashi D, Arakawa T, Sano K, Sawada S, Kudo H, Iwasaki Y, Akiyoshi K, Mochizuki M, Mitsubayashi K. "Soft contact lens biosensor for in situ monitoring of tear glucose as non-invasive blood sugar assessment", Talanta 83, 960–965, 2011.
5. Miyajima K, Itabashi G, Koshida T, Tamari K, Takahashi D, Arakawa T, Kudo H, Saito H, Yano K, Shiba K, Mitsubayashi K. Fluorescence immunoassay using an optical fiber for determination of Dermatophagoides farinae (Der f 1), Environmental Monitoring and Assessment, 182(1-4), 233-41, 2011.
6. Nishi Y, Kawazu H, Takei H, Iwata K, Kudo H, Mitsubayashi K, Effects of electron beam irradiation on peeling

resistance of laminated sheet of high strength polypropylene (PP) and bio-adaptable polydimethylsiloxane (PDMS), Materials Transactions, 52(10), 1943-1948, 2011.
7. Kudo H, Wang X, Suzuki Y, Ye M, Yamashita T, Gessei T, Miyajima K, Arakawa T, Mitsubayashi K. Fiber-optic biochemical gas sensor (bio-sniffer) for sub-ppb monitoring of formaldehyde vapor, Sensors and Actuators B, Volume 161, Issuel, 3, 486-492, 2012.
8. Arakawa T, Wang X, Ando E, Endo H, Takahashi D, Kudo H, Saito H, Mitsubayashi K. A highly sensitive and temporal visualization system for gaseous ethanol with chemiluminescence enhancer, Luminescence, in press.

Medical Instrument (Biomedical Information)

1. Staffs and Students (April, 2011)

Professor	Kenji YASUDA	
Associate Professor	Tomoyuki KANEKO	
Assistant Professor	Fumimasa NOMURA	
Project Assistant Professor	Tomoyo HAYASHI,	Lopez REDOND FERNAND
Graduate Student	Tetsuo KITAMURA,	Hiroyuki HIRATSUKA

2. Purpose of Education

Medical instrument (Biomedical information) is a branch of institute of biomaterials and bioengineering which deals with the measurement of epigenetic information and memorization stored in living system such as brain (neural network system), immune system, and cardio systems caused by environmental hysteresis. Main objective of medical instrument in the graduate course is to provide students opportunity to study fusion of latest technologies of nano- and bio-tech, and to develop artificial organ model on chip for drug discovery and toxicology use.

3. Research Subjects

1) Studies on Epigenetic Information Stored Living System.
2) Constructing “On-chip Organ Model” using Nano-Bio Technology.
3) Bio-computing using “Real Neural Network on Chip”.
4) New Drug Discovery Technology applying Single Molecule Measurement.

4. Publications

Original Articles

1. Kim H, Negishi T, Kudo M, Takei H, Yasuda K. Backscattered Electron Contrast Imaging of Scanning Electron Microscopy for Identifying Double Layered Nano-Scale Elements. J Surface Analysis, 17(3), 341-345, 2011.
2. Kaneko T, Nomura F, Yasuda K. On-chip Constructive Cell-Network Study (I): Contribution of Cardiac Fibroblasts to Cardiomyocyte Beating Synchronization and Community Effect. J Nanobiotech, 9, 21, 2011.
3. Hayashi M, Hattori A, Kim H, Terazono H, Kaneko T, Yasuda K. Fully Automated On-Chip Imaging Flow Cytometry System with Disposable Contamination-Free Plastic Re-Cultivation Chip. Int J Mol Sci, 12(6), 3618-3634, 2011.
4. Kim H, Hayashi M, Terazono H, Takei H, Yasuda K. Production of Double-Layered Metal Nanocups for Artificial Nanospace of Biomolecular Reaction. Jpn J Appl Phys, 50, 06GJ03, 2011.
5. Hayashi M, Kaneko T, Yasuda K. Continuous Concentration and Separation of Microparticles Using Dielectrophoretic Force in a V-Shaped Electrode Array. Jpn J Appl Phys, 50, 06GL03, 2011.
6. Hattori A, Kaneko T, Yasuda K. Improvement of Particle Alignment Control and Precise Image Acquisition for On-Chip High-Speed Imaging Cell Sorter. Jpn J Appl Phys, 50, 06GL06, 2011.
7. Terazono H, Hayashi M, Kim H, Hattori A, Kaneko T, Yasuda K. Image-Based Identification of Single Neurons for Noninvasive Imaging Purification. Jpn J Appl Phys, 50, 06GL07, 2011.
8. Kaneko T, Nomura F, Yasuda K. Quasi-in vivo heart electrocardiogram measurement of ST period using convolution of cell network extracellular field potential propagation in lined-up cardiomyocyte cell-network circuit. Jpn J Appl Phys, 50, 70213, 2011.
9. Kaneko T, Nomura F, Yasuda K. Orientation and Community Size Dependences of Pulsatile Electrical Field Stimulation on Lined-Up and Rod-Shaped Single Cardiomyocytes. Jpn J Appl Phys, 50, 80220, 2011.
10. Nomura F, Kaneko T, Hattori, Yasuda K. On-chip constructive cell-network study (II): On-chip quasi-in vivo cardiac toxicity assay for ventricular tachycardia/fibrillation measurement using ring-shaped closed circuit microelectrode with lined-up cardiomyocyte cell network. J Nanobiotech, 9, 39, 2011.

Invited Talks

1. Kenji Yasuda. Nanotechnology for On-chip Cellomics Screening. Pittcon Conference & EXPO 2011, Atlanta, USA, March 2011.
2. Kenji Yasuda, Tomoyuki Kaneko, Fumimasa Nomura, Hyonchol Kim, Hideyuki Terazono, Masahito Hayashi. On-Chip Cellomics Technology for Constructive Understanding of Deterministic Mechanisms in Higher Complexity

of Living Systems. 44th Annual Meeting for the Japanese Society of Developmental Biologists (cosponsor: the Asia-Pacific Developmental Biology Network), Ginowan, Japan, March 2011.
3. Kenji Yasuda, Atsushi Sanbuissho. Human iPS/ES Cell Technology and its Application to Toxicology Testing, Especially Focusing on in vitro Cardiac Function Toxicity. 2011 HESI Annual Meeting, Alexandria, USA, June 2011.
4. Kenji Yasuda. Constrictive On-Chip Cellomics Technologies for in vitro Cell-Network Drug-Screening System Exploiting Human iPS Cells and Other Pluripotent Stem Cells. Japan Science and Technology Agency (JST), Agency for Science, Technology and Research (A*STAR), Japan-Singapore Joint Workshop on Bioelectronics, Kyoto, Japan, Aug. 2011.
5. Kenji Yasuda. Algebraic and Geometric Understanding of Cells, Epigenetic Inheritance of Phenotypes Between Generations Using On-chip Single Cell Cultivation System. 5th International Conference on Analysis of Microbial Cells at the Single Cell Level, Carry-Le-Route, France, Nov. 2011.
6. Kenji Yasuda. On-chip Cellomics for Quasi-in vivo Drug Discovery Technology . The 11th US-Japan Symposium on Drug Delivery Systems Conference, Maui, USA, Dec. 2011.
7. Kenji Yasuda. Constructive Understanding of Multicellular Network using On-chip Cellomics Technology. 9th International Colloquium on Scanning Probe Microscopy (ICSPM-19), Toya-ko, Japan, Dec. 2011.

Meetings

1. Fumimasa Nomura, Tomoyuki Kaneko, Kenji Yasuda. Spatiotemporal Poincare Plotting for Torsades de Pointes Prediction in vitro Drug-screening System Exploiting Human iPS Cells and Other Pluripotent Stem Cells. Biophysical Society 55th Annual Meeting, Baltimore, USA, March 2011.
2. Hyonchol Kim, Hiroyuki Takei, Masahito Hayashi, Hideyuki Terazono, Kenji Yasuda. Fabrication and Application of Size-controlled Metal Nano-cups for Indentification of Genome/Proteome Expression Profiles. Particles2011, Berlin, Germany, July 2011.
3. Fumimasa Nomura, Tomoyuki Kaneko, Kenji Yasuda. Quasi-in Vivo Heart Electrocardiogram Measurement using Convolution of Field Potential Propagation in Cardiomyocytes Network Circuit. 24th International Microprocesses and Nanotechnology Conference, Kyoto, Japan, Oct. 2011.
4. Tomoyuki Kaneko, Fumimasa Nomura, Kenji Yasuda. Minimization of Artifacts in Electrical Stimulation with Extracellular Potential Measurement. 24th International Microprocesses and Nanotechnology Conference, Kyoto, Japan, Oct. 2011.
5. Tomoyo Hamada, Fumimasa Nomura, Tomoyuki Kaneko, Kenji Yasuda. Development of a Constitutive Cell-chip Measurement with Human Cardiomyocytes by using on-chip Cell Multi Electrode Assay. 24th International Microprocesses and Nanotechnology Conference, Kyoto, Japan, Oct. 2011.
6. Hyonchol Kim, Hideyuki Terazono, Masahito Hayashi, Hiroyuki Takei, Kenji Yasuda. Highly Sensitive Detection of Target Biomolecules on a Cell Surface using Metal Nano-particles Conjugated with Aptamer probes. 24th International Microprocesses and Nanotechnology Conference, Kyoto, Japan, Oct. 2011.
7. Akihiro Hattori, Masahito Hayashi, Kenji Yasuda. Imaging Optical System expanded Depth of Field for Direct Observation of Cells in Microfluidics. 24th International Microprocesses and Nanotechnology Conference, Kyoto, Japan, Oct. 2011.
8. Masahito Hayashi, Hyonchol Kim, Hideyuki Terazono, Akihiro Hattori, Kenji Yasuda. Comparison of Micromanipulation Systems using Electrophoresis and Dielectrophoresis by the Upper Limit of Traveling Rate of Microparticles or Cells in Various Solutions. 24th International Microprocesses and Nanotechnology Conference, Kyoto, Japan, Oct. 2011.
9. Hideyuki Terazono, Hyonchol Kim, Masahito Hayashi, Akihiro Hattori, Hiroyuki Takei, Kenji Yasuda. Construction and Analysis of an Artificial Neuronal Network Using a Neuron-Collecting, Micro-Patterning Method Based on a Multi-Electrode Array System. International Conference on Neural Computation Theory and Applications, NCTA2011, Paris, France, Oct. 2011.
10. Hideyuki Terazono, Akihiro Hattori, Hiroyuki Takei, Hyonchol Kim, Masahito Hayashi, Kenji Yasuda. Development of 1480 nm Photothermal High-Speed Real-Time Polymerase Chain Reaction System for Single Cell Recognition. 5th International Conference on Analysis of Cells at the Single Cell Level, Carry-Le-Route, France, France, Nov. 2011.
11. Tomoyuki Kaneko, Fumimasa Nomura, Kenji Yasuda. Influence of Fibroblasts on the Synchronization of Cardiomyocyte Beating and Community Effect. The American Society for Cell Biology 51st Annual Meeting, Denver, USA, Dec. 2011.
12. Hyonchol Kim, Hideyuki Terazono, Masahito Hayashi, Hiroyuki Takei, Kenji Yasuda. Quantitative in situ

Measurement of Target Biomolecules by Metal Nano-Particle Label Sets and “Adaptive SEM” Technology. The American Society for Cell Biology 51st Annual Meeting, Denver, USA, Dec. 2011.

13. Hyonchol Kim, Terazono Hideyuki, Masahito Hayashi, Hiroyuki Takei, Kenji Yasuda. Identification of Nano-Particle Labels Fabricated with Various Elements by “Adaptive SEM” Technology. The 6th International Symposium on Surface Science, Tokyo, Japan, Dec. 2011.

Department of Pharmacovigilance

1. Staffs and Students (April, 2011)

Professor	Masayoshi Harigai	
Associate Professor	Ryuji Koike,	Toshihiro Nanki
Assistant Professor	Michi Tanaka,	Kaori Watanabe
Graduate Student	Ryoko Sakai,	Hayato Yamazaki
Research Pharmacist	Marie Yajima	
Secretary	Tomoko Takahashi	

2. Purpose of Education

Department of Pharmacovigilance has established since 2005 and dedicated to pharmacovigilance activity in the field of rheumatology. Main objective of Department of Pharmacovigilance in the graduate course is to provide students opportunity to study basics of pharmacoepidemiology including clinical statistics and to implement epidemiological studies in pharmacovigilance using some databases which have been maintained by this department.

3. Research Subjects

1. Registry of Japanese rheumatoid arthritis patients on biologics for long-term safety (REAL study)
2. Safety of biologics in clinical use in Japanese patients with rheumatoid arthritis in long-term (SECURE study)
3. Pulmonary infections in patietns receiving immunosuppressive treatment for rheumatic diseases (PREVENT)
4. Retrospective study of pulmonary complications in patients with rheumatic diseases
5. Identification of susceptibility genes associated with anti-neutrophil cytoplasm antibody-associated vasculitis in Japanese
6. Effectiveness and safety in clinical practice of abatacept in Japanese patients with rheumatoid arthritis
7. A prospective cohort study of early arthritis in clinical practice evaluating development of rheumatoid arthritis (PRECEDE)
8. Clinical characteristics and risk factors for *Pneumocystis jirovecii* pneumonia in patients with rheumatoid arthritis receiving adalimumab
9. Evaluation of co-morbidities in rheumatoid arthritis (COMORA study)
10. Clinical epidemiological study of treat-to-target strategy in rheumatoid arthritis patients with moderate to high disease activity
11. Efficacy and safety of programmed intensive treatment with methotrexate in patients with active rheumatoid arthritis
12. Analysis of pulmonary images on thoracic computed tomography in patients with microscopic polyangiitis
13. Biologics-free remission after stopping adalimumab in Japanese patients with rheumatoid arthritis study (BRIGHT study)
14. A retrospective study of serum KL-6 levels during treatment with biological disease-modifying antirheumatic drugs in rheumatoid arthritis patients

4. Clinical Service

All Members of Department of Pharmacovigilance are rheumatologists and engaged in clinical services in the field of rheumatology as specialists.

5. Publications

Original Article

1. Koike T, Harigai M, Inokuma S, Ishiguro N, Ryu J, Takeuchi T, Tanaka Y, Yamanaka H, Fujii K, Yoshinaga T, Freundlich B, Suzukawa M. Postmarketing surveillance of safety and effectiveness of etanercept in Japanese patients with rheumatoid arthritis. Mod Rheumatol. 21: 343-351, 2011.
2. Yamazaki H, Nanki T, Miyasaka N, Harigai, M. Methotrexate and trimethoprim-sulfamethoxazole use for PCP prophylaxis. J Rheumatol. 38: 777, 2011.
3. Sakai R, Komano Y, Tanaka M, Nanki T, Koike R, Nakajima A, Atsumi T, Yasuda S, Tanaka Y, Saito K, Tohma S, Fujii T, Ihata A, Tamura N, Kawakami A, Sugihara T, Ito S, Miyasaka N, Harigai M, for the REAL Study Group. The REAL database reveals no significant risk for serious infection during treatment with methotrexate over 8

mg/week in patients with rheumatoid arthritis. Mod Rheumatol. 21: 444-448, 2011.
4. Koike R, Tanaka M, Komano Y, Sakai F, Sugiyama H, Nanki T, Ide H, Jodo S, Katayama K, Matsushima H, Miwa Y, Morita K, Nakashima H, Nakamura H, Natsumeda M, Sato Y, Semba S, Tateishi M, Miyasaka N, Harigai M. Tacrolimus-induced Pulmonary Injury in Rheumatoid Arthritis Patients. Pulm Pharamacol Ther. 24: 401-406, 2011.
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6. Koike T, Harigai M, Inokuma S, Ishiguro N, Ryu J, Takeuchi T, Tanaka Y, Yamanaka H, Fujii K, Yoshinaga T, Freundlich B, Suzukawa M. Postmarketing surveillance of safety and effectiveness of etanercept in Japanese patients with rheumatoid arthritis. Mod Rheumatol. 21: 343-351, 2011.
7. Koike T, Harigai M, Inokuma S, Ishiguro N, Ryu J, Takeuchi T, Takei S, Tanaka Y, Ito K, Yamanaka H.Postmarketing surveillance of tocilizumab for rheumatoid arthritis in Japan: interim analysis of 3881 patients. Ann Rheum Dis. 70: 2148-2151, 2011.
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10. Yamazaki H, Miyabe Y, Tomoishi J, Kawai S, Ito E, Nagasaka K. Microscopic polyangitis with renal mass-like lesion: a case report. Jpn J Clin Immunol. 34: 162-167, 2011.

Advanced GI Therapeutics

1. Staffs and Students (2011)

Associate Professor	Ryuichi OKAMOTO	
Junior Associate Professor	Tetsuya NAKAMURA,	Makoto NAGANUMA
Assistant Professor	Shigeru OSHIMA	
Medical Fellow	Shiro YUI	
Graduate Student	Tomohiro MIZUTANI,	Hiromichi SHIMIZU,
	Tatsuro MURANO,	Naoto TSUGE,
	Masayoshi FUKUDA,	Yu MATSUZAWA,
	Kengo NOZAKI,	Yuki YAMAUCHI

2. Education Principles

The fundamental concept of the department is "Establishment of novel and challenging therapeutic strategies that can be spread worldwide from Japan". Our main interest is set to analysis and treatment of inflammatory bowel diseases, and thus has organized inflammatory bowel disease-oriented researchers, supported by a number of companies from different areas. We have first established this department on April 2007, and since then, we have succeeded to gain a number of outstanding scientific achievements, including publishment of high-quality papers. In addition, in the clinilcal field, we have directed and played a major role in nation-wide survey and multi-center researches of inflammatory bowel diseases, which was funded by the Japanese Ministry of Health, Labor and Welfare (Chief researcher; Prof. Mamoru Watanabe).

Main principle of our department upon graduate school education is to promote students to become unique and outstanding clinician-researcher, especially engaged in conquering refractory inflammatory bowel diseases. We share the basic research concepts with Department of Gastroenterology and Hepatology, and collaborate to persue "clinical science", a research started form, and always coming back to, clinical findings and problems. Also we strongly promote interchange of ideas and personnel between labs, institutes and foreign countries, and thereby facilitate students and researchers to become cross-sectional, distinguished leaders in the field of inflammatory bowel disease research.

3. Basic Research Projects

- Elucidating pathophysiology of inflammatory bowel diseases, and establishment of novel treatments by disease-specific immune-regulation.
- Research and development of regenerative medicine in gastrointestinal diseases.
- Identification of the molecular mechanism promoting regeneration of inflamed mucosa, and application of molecular-targeted mucosal regeneration therapy in inflammatory bowel diseases.
- Establishment of cell- or tissue-transplantation therapy for refractory GI ulcers.
- Analysis of crosstalk between epithelial cells and micro-organisms, and establishment of novel immunomodulating therapy for inflammatory bowel diseases.

4. Expert Areas in Clinical Practice

- Immunomodulating treatment of inflammatory bowel diseases.
- Establishing improved treatment protocol of immunomodulators by pharmacokinetic analysis.
- 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.

5. Publications

1. Asahina Y, Tsuchiya K, Muraoka M, Tanaka K, Suzuki Y, Tamaki N, Hoshioka Y, Yasui Y, Katoh T, Hosokawa T, Ueda K, Nakanishi H, Itakura J, Takahashi Y, Kurosaki M, Enomoto N, Nitta S, Sakamoto N, Izumi N: Association of gene expression involving innate immunity and genetic variation in IL28B with antiviral response. **Hepatology.** 55:20-29, 2011
2. Funaoka Y, Sakamoto N, Nakagawa M, Kakinuma S, Suda G, Watanabe T, Nitta S, Kitazume A, Kiyohashi K, Murakawa M, Azuma S, Tsuchiya K, Watanabe M: Analysis of interferon signaling by infectious hepatitis C virus clones with substitutions of core amino acids 70 and 91. **Journal of Virology.** 85: 5986- 5994, 2011
3. Hibi T, Sakuraba A, Watanabe M, Motoya S, Ito H, Motegi K, Kinouchi Y, Takazoe M, Suzuki Y, Matsumoto T, Kawakami K, Matsumoto T, Hirata I, Tanaka S, Ashida T, Matsui T: Retrieval of serum infliximab level by

shortening the maintenance infusion interval is correlated with clinical efficacy in Crohn's disease. (Epub ahead of print) **Inflamm Bowel Dis.** 2011

4. Hiramatsu N, Kurosaki M, Sakamoto N, Iwasaki M, Sakamoto M, Suzuki Y, Sugauchi F, Tamori A, Kakinuma S, Matsuura K, Izumi N: Pretreatment prediction of anemia progression by pegylated interferon alpha-2b plus ribavirin combination therapy in chronic hepatitis C infection: decision-tree analysis. **J Gastroenterol.** 46:1111-1119, 2011
5. Hyun SB, Kitazume Y, Nagahori M, Toriihara A, Fujii T, Tsuchiya K, Suzuki S, Okada E, Araki A, Naganuma M, Watanabe M: Magnetic resonance enterocolonography is useful for simultaneous evaluation of small and large intestinal lesions in Crohn's disease. **Inflamm Bowel Dis.** 17: 1063- 1072, 2011
6. Iwasaki M, Tsuchiya K, Okamoto R, Zheng X, Kano Y, Okamoto E, Okada E, Araki A, Suzuki S, Sakamoto N, Kitagaki K, Akashi T, Eishi Y, Nakamura T, Watanabe M: Longitudinal cell formation in the entire human small intestine is correlated with the localization of Hath1 and Klf4. **J Gastroenterol.** 46: 191- 202, 2011
7. Kadokura M, Maekawa S, Sueki R, Miura M, Komase K, Shindo H, Amemiya F, Uetake T, Inoue T, Sakamoto M, Nakagawa M, Sakamoto N, Watanabe M, Enomoto N: Analysis of the complete open reading frame of hepatitis C virus in genotype 2a infection reveals critical sites influencing the response to peginterferon and ribavirin therapy. **Hepatol Int.** 5:789-799, 2011
8. Kusano-Kitazume A, Sakamoto N, Okuno Y, Sekine-Osajima Y, Nakagawa M, Kakinuma S, Kiyohashi K, Nitta S, Murakawa M, Azuma S, Nishimura-Sakurai Y, Hagiwara M, Watanabe M: Identification of novel N-(morpholine-4-carbonyloxy) amidine compounds as potent inhibitors against hepatitis C virus replication. **Antimicrob Agents Chemother.** 56: 1315-1323, 2012
9. Kurosaki M, Sakamoto N, Iwasaki M, Sakamoto M, Suzuki Y, Hiramatsu N, Sugauchi F, Yatsuhashi H, Izumi N. Pretreatment prediction of response to peginterferon plus ribavirin therapy in genotype 1 chronic hepatitis C using data mining analysis. **J Gastroenterol.** 46: 401- 409, 2011
10. Kurosaki M, Hiramatsu N, Sakamoto M, Suzuki Y, Iwasaki M, Tamori A, Matsuura K, Kakinuma S, Sugauchi F, Sakamoto N, Nakagawa M, Izumi N: Data mining model using simple and readily available factors could identify patients at high risk for hepatocellular carcinoma in chronic hepatitis C. (Epub ahead of print) **J Hepatol.** 2011
11. Kurosaki M, Hiramatsu N, Sakamoto M, Suzuki Y, Iwasaki M, Tamori A, Matsuura K, Kakinuma S, Sugauchi F, Sakamoto N, Nakagawa M, Yatsuhashi H, Izumi N: Age and total ribavirin dose are independent predictors of relapse after interferon therapy in chronic hepatitis C revealed by data mining analysis. **Antivir Ther.** 17:35-43, 2011
12. Kurosaki M, Sakamoto N, Iwasaki M, Sakamoto M, Suzuki Y, Hiramatsu N, Sugauchi F, Tamori A, Nakagawa M, Izumi N: Sequences in the interferon sensitivity-determining region and core region of hepatitis C virus impact pretreatment prediction of response to PEG-interferon plus ribavirin. **J Med Virol.** 83: 445- 452, 2011
13. Kurosaki M, Tanaka Y, Nishida N, Sakamoto N, Enomoto N, Honda M, Sugiyama M, Matsuura K, Sugauchi F, Asahina Y, Nakagawa M, Watanabe M, Sakamoto M, Maekawa S, Sakai A, Kaneko S, Ito K, Masaki N, Tokunaga K, Izumi N, Mizokami M: Pre-treatment prediction of response to pegylated-interferon plus ribavirin for chronic hepatitis C using genetic polymorphism in IL28B and viral factors. **J Hepatol.** 54: 439- 448, 2011
14. Mizutani T, Nakamura T, Morikawa R, Fukuda M, Mochizuki W, Yamauchi Y, Nozaki K, Yui S, Nemoto Y, Nagaishi T, Okamoto R, Tsuchiya K, Watanabe M: Real-time analysis of P-glycoprotein-mediated drug transport across primary intestinal epithelium three-dimensionally cultured in vitro. **Biochem Biophys Res Commun.** 419: 238-243, 2012.
15. Nakagawa M, Sakamoto N, Watanabe T, Nishimura-Sakurai Y, Onozuka I, Azuma S, Kakinuma S, Nitta S, Kiyohashi K, Kusano-Kitazume A, Murakawa M, Yoshino K, Itsui Y, Tanaka Y, Mizokami M, Watanabe M, Ochanomizu Liver Conference Study Group: Association of ITPA gene variant and serum ribavirin concentration with blood cells decline in pegylated interferon-alfa plus ribavirin therapy for chronic hepatitis C. **Hepatol Int.** (in press), 2012.
16. Naganuma M, Kunisaki R, Yoshimura N, Nagahori M, Yamamoto H, Kimura H, Sako M, Kawaguchi T, Takazoe M, Yamamoto S, Matsui T, Hibi T, Watanabe M: Conception and pregnancy outcome in women with inflammatory bowel disease: A multicentre study from Japan. **J Crohns Colitis.** 5: 317- 323, 2011
17. Naganuma M, Watanabe M, Hibi T: The use of traditional and newer calcineurin inhibitors in inflammatory bowel disease. **J Gastroenterol.** 46: 129- 137, 2011
18. Naganuma M, Watanabe M, Hibi T: Safety and usefulness of balloon endoscopy in Crohn's disease patients with postoperative ileal lesions. **J Crohns Colitis.** 5: 73- 74, 2011
19. Nemoto Y, Kanai T, Shinohara T, Ito T, Nakamura T, Okamoto R, Tsuchiya K, Lipp M, Eishi Y, Watanabe M: Luminal CD4+ T cells penetrate gut epithelial monolayers and egress from lamina propria to blood circulation. **Gastroenterology.** 141:2130-2139, 2011
20. Onozuka I, Kainuma S, Kamiya A, Miyoshi M, Sakamoto N, Kiyohashi K, Watanabe T, Funaoka Y, Ueyama M,

Nakagawa M, Koshikawa N, Seiki M, Nakauchi H, Watanabe M: Cholestatic liver fibrosis and toxin-induced fibrosis are exacerbated in matrix metalloproteinase-2 deficient mice. **Biochem Biophys Res Commun.** 406: 134- 140, 2011

21. Sakamoto N, Nakagawa M, Tanaka Y, Sekine-Osajima Y, Ueyama M, Kurosaki M, Nishida N, Tamori A, Yuki NS, Itsui Y, Azuma S, Kakinuma S, Hige S, Itoh Y, Tanaka E, Hiasa Y, Izumi N, Tokunaga K, Mizokami M, Watanabe M: Association of IL28B variants with response to pegylated-interferon alpha plus ribavirin combination therapy reveals intersubgenotypic differences between genotypes 2a and 2b. **J Med Virol.** 83: 871- 878, 2011
22. Takaya D, Yamashita A, Kamijo K, Gomi J, Ito M, Maekawa S, Enomoto N, Sakamoto N, Watanabe Y, Arai R, Ueyama H, Honma T, Matsumoto T, Yokoyama S: A new method for induced fit docking (GENIUS) and its application to virtual screening of novel HCV NS3-4A proteas inhibitors. **Bioorg Med Chem.** 19:6892-6905, 2011
23. Tanaka Y, Kurosaki M, Nishida N, Sugiyama M, Matsuura K, Sakamoto N, Enomoto N, Yatsuhashi H, Nishiguchi S, Hino K, Hige S, Itoh Y, Tanaka E, Mochida S, Honda M, Hiasa Y, Koike A, Sugauchi F, Kaneko S, Izumi N, Tokunaga K, Mizokami M: Genome-wide association study identified ITPA/DDRGK1 variants reflecting thrombocytopenia in pegylated interferon and ribavirin therapy for chronic hepatitis C. **Hum Mol Genet.** 20:3507-3516, 2011
24. Toyoda M, Kitaoka A, Machida K, Nishinakagawa T, Yada R, Kohjima M, Kato M, Kotoh K, Sakamoto N, Shioda G, Nakamuta M, Nakashima M, Enjoji M: Association between lipid accumulation nd the cannabinoid system in Huh7 cells expressing HCV genes. **Int J Mol Med.** 27: 619- 624, 2011
25. Ueyama M, Nakagawa M, Sakamoto N, Onozuka I, Funaoka Y, Watanabe T, Nitta S, Kiyohashi K, Kitazume A, Murakawa M, Nishimura-Sakurai Y, Sekine-Osajima Y, Itsui Y, Azuma S, Kainuma S, Watanabe M, and the Ochanomizu-Liver Conference Study Group: Serum interleukin-6 levels correlate with resistance to treatment of chronic hepatitis C infection with pegylated-interferon-α 2b plus ribavirin. **Antivir Ther.** 16: 1081- 1091, 2011
26. Watanabe M, Hibi T, Lomax KG, Paulson SK, Chao J, Alam M.S, Camez AC: Adalimumab for the Induction and Maintenance of Clinical Remission in Japanese Patients With Crohn's Disease. **J Crohns Colitis.** 6:160-173, 2012.
27. Watanabe T, Ajioka Y, Matsumoto T, Tomotsugu N, Takebayashi T, Inoue E, Iizuka B, Igarashi M, Iwao Y, Ohtsuka K, Kudo SE, Kobayashi K, Sada M, Matsumoto T, Hirata I, Murakami K, Nagahori M, Watanabe K, Hida N, Ueno F, Tanaka S, Watanabe M, Hibi T: Target biopsy or step biopsy? Optimal surveillance for ulcerative colitis: a Japanese nationwide randomized controlled trial. **J Gastroenterol.** 46: 11- 16, 2011
28. Watanabe T, Kobunai T, Ikeuchi H, Yamamoto Y, Matsuda K, Ishihara S, Nozawa K, Iinuma H, Kanazawa T, Tanaka T, Yokoyama T, Konishi T, Eshima K, Ajioka Y, Hibi T, Watanabe M, Muto T, Nagawa H: RUNX3 copy number predicts the development of UC-associated colorectal cancer. **Int J Oncol.** 38: 201- 207, 2011
29. Watanabe T, Kobunai T, Yamamoto Y, Ikeuchi H, Matsuda K, Ishihara S, Nozawa K, Iinuma H, Kanazawa T, Tanaka T, Yokoyama T, Konishi T, Eshima K, Ajioka Y, Hibi T, Watanabe M, Muto T, Nagawa H: Predicting ulcerative colotis-associated colorectal cancer using reverse-transcription polymerase chain reaction analysis. **Clin Colorectal Cancer.** 10: 134- 141, 2011
30. Watanabe T, Sakamoto N, Nakagawa M, Kakinuma S, Itsui Y, Nishimura-Sakurai Y, Ueyama M, Funaoka Y, Kitazume A, Nitta S, Kiyohashi K, Murakawa M, Azuma S, Tsuchiya K, Oooka S, Watanabe M: Inhibitory effect of a triterpenoid compound, with or without interferon,on Hepatitis C virus infection. **Antimicrob Agent Chemother.** 55: 2537- 2545, 2011
31. Watanabe T, Sasaki I, Sugita A, Fukushima K, Futami K, Hibi T, Watanabe M: Interval of less than 5 years between the first and second operation is a risk factor for a third operation for Crohn's disease. **Inflamm Bowel Dis.** 18:17-24, 2011
32. Yamaji O, Nagaishi T, Totsuka T, Onizawa M, Suzuki M, Tsuge N, Hasegawa A, Okamoto R, Tsuchiya K, Nakamura T, Arase H, Kanai T , Watanabe M: The development of colitogenic CD4+ T cells is regulated by IL-7 in collaboration with natural killer cell function in a murine model of colitis. (Epub ahead of print) **J Immunol,** 2012.
33. Yoshida T, Takayama K, Kondoh M, Sakurai F, Tani H, Sakamoto N, Matsuura Y, Mizuguchi H, Yagi K: Use of human hepatocyte-like cells derived from induced pluripotent stem cells as a model for hepatocytes in heptitis C virus infection. **Bichem Biophys Res Commun.** 416:119-124, 2011
34. Yui S, Nakamura T, Sato T, Nemoto Y, Mizutani T, Zheng X, Ichinose S, Nagaishi T, Okamoto R, Tsuchiya , Clevers H, Watanabe M: Functional engraftment of colon epithelium expanded in vitro from a single adult Lgr5+stem cell. **Nat Med.** 18: 618- 623, 2012
35. Zheng X, Tsuchiya K, Okamoto R, Iwasaki M, Kano Y, Sakamoto N, Nakamura T, Watanabe M: Suppression of hath1 gene expression directly regulated by hes1 via notch signaling is associated with goblet cell depletion in ulcerative colitis. **Inflamm Bowel Dis.** 11: 2251- 2260, 2011

Sleep Modulatory Medicine

1. Staffs and Students

Professor	Naohiko Inase (Department of Integrated Pulmonology)
Associate Professor	Yasunari Miyazaki
Assistant Professor	Akihito Uezato
Laboratory Technician	Yumi Matsubara
Clerk	Mayumi Asai

2. Purpose of Education

No lectures in our department.

3. Research Subjects

- Epidemiological survey of the nasopharynx and temporomandibular disorders in patients with sleep apnea.
- Effects of NMDA-type glutamate receptor co-agonist on gamma oscillations and sleep in schizophrenia.
- Open-label trial of ramelteon for diabetes mellitus with sleep disorder.
- The effect of chronotherapy with the angiotensin-antagonist in hypertension with sleep apnea syndrome.
- The efficacy of home-oxygen therapy in patients with sleep apnea and pulmonary fibrosis.

4. Clinical Services

Clinical Center for Pleasant Sleep

Monday:	AM	Dr. Tsutsui(Pulmonary Medicine)
	PM	Dr. Fujie (Pulmonary Medicine)
Tuesday:	AM	Dr. Uezato (Sleep Modulatory Medicine)
Thursday:	AM	Dr. Chiba(Pulmonary Medicine)
	PM	Dr. Chiba(Pulmonary Medicine)
Friday:	AM	Dr. Uezato (Sleep Modulatory Medicine)
	AM	Dr. Miyazaki (Sleep Modulatory Medicine)
	PM	Dr. Miyazaki (Sleep Modulatory Medicine)

5. Publication

Original articles

- Sekiguchi T, Ishibashi S, Kubodera T, Fukabori J, Uezato A, Kanbayashi T et al. Anhidrosis associated with hypothalamic lesions related to anti-aquaporin 4 autoantibody. J Neurol 2011; 258(12): 2293-2295.

Department of Clinical Laboratory

1. Staffs

General Manager (Junior Associate Professor)
Naoko Tojo
Associate Manager (Associate Professor)
Shuji Tohda
Assistant Professor Naomi Murakami Tadashi Kanouchi
Ryoko Azuma

2. Purpose of Education

Main purpose of education in the department is to provide the students opportunities to study the clinical laboratory medicine and medical technology. The staffs lecture on clinical laboratory medicine and give technical training of clinical laboratory tests to not only the medical students and medical technologist students in the faculty of medicine of the university but also students in the another vocational schools for medical technologists.

Besides the students, seven residents of the university hospital of medicine had a general training for clinical laboratory medicine, including ultrasonography. Hands-on seminars of Gram staining, abdominal ultrasonography and so on have been repeatedly held for young doctors in the hospital.

3. Research Subjects

1) Evidence-based laboratory medicine
2) Standardization of respiratory function tests.
3) Development of molecular diagnostic tests for hematological diseases.
4) Development of electrophysiological diagnostic tests for peripheral neuropathies.
5) Clinical and electrophysiological study for amyotrophic lateral sclerosis.

4. Clinical Services

High quality and advanced laboratory tests are being speedily done in the clinical laboratory all day all the time. Items of emergency laboratory tests have been in increase, including smear test for tubercle bacillus and cell counting of the cerebrospinal fluid. Since November 2011, blood-taking and analysis have been started at 8:05, 30 minutes earlier than before. It results in shortening the waiting time of patients and in more speedy reporting the results of analysis. The results of physiological examinations are online reported quickly and correctly. The information on sensitivity to antibiotics of the pathogens in each ward is also provided online regularly. In the night time, the laboratory also provides appropriate blood products for transfusion, in cooperation with blood transfusion service of the hospital.

5. Publications

Original Article

1. Abe T, Segawa U, Watanabe H, Yotoriyama T, Kai S, Yasuda A, Shimizu N, **Tojo N**. Point-of-care testing system enabling 30 min detection of influenza genes. Lab Chip. 2011;11:1166-1167.
2. Akaza M, **Kanouchi T**, Inaba A, Numasawa Y, Irioka T, Mizusawa H, Yokota T. Motor nerve conduction study in cauda equina with high-voltage electrical stimulation in multifocal motor neuropathy and amyotrophic lateral sclerosis. Muscle Nerve 2011;43:274-282.
3. Kawaguchi-Ihara N, Okuhashi Y, Itoh M, Murohashi I, Nara N, **Tohda S**. Promotion of the self-renewal capacity of human leukemia cells by sonic hedgehog protein. Anticancer Res. 2011;31:781-784.
4. Okuhashi Y, Itoh M, Nara N, **Tohda S**. Effects of combination of notch inhibitor plus hedgehog inhibitor or Wnt inhibitor on growth of leukemia cells. Anticancer Res. 2011;31:893-896.
5. Siegers GM, Dhamko H, Wang XH, Mathieson AM, Kosaka Y, Felizardo TC, Medin JA, **Tohda S**, Schueler J, Fisch P, Keating A. Human Vδ1 $\gamma\delta$ T cells expanded from peripheral blood exhibit specific cytotoxicity against B-cell chronic lymphocytic leukemia-derived cells. Cytotherapy. 2011;13:753-764.

Blood Transfusion Medicine

1. Staffs (April, 2011)

Jan-Aug

Director (Professor) Shigeki ARII

Assistant Director (Associate Professor)
Michiko KAJIWARA

Sep-Dec

Director (Lecturer) Michiko KAJIWARA

Assistant Director (Medical Technologist)
Naoki OHTOMO

2. Purpose of Education

Transfusion therapy is a supplementation of the blood component, but it also has aspects of cell therapy and transplantation. So, it is important to practice safe and appropriate transfusion therapy. Clinical tests of transfusion, such as blood type test, are most basic immunological test technique. The accurate understanding and practice of these tests is also necessary for the safety of medical treatment. From this point of view, we educate the students of school of medicine, school of allied health sciences, graduate school of medical and dental sciences, medical doctors, and co-medicals.

3. Research Subjects

1) Practice of safe and appropriate transfusion therapy (including prevention of medical accident related transfusion)
2) Basic and clinical research of hematopoietic stem cell transplantation

4. Clinical Services (The result of 2010)

1) The amount of blood products used

Red cell component products	14,208 Units	(7,164 bags)
Platelet concentration	29,140 Units	(2,482 bags)
Fresh frozen plasma	9,185.75 Units	(4,179 bags)

2) Autologous blood collection and transfusion

Autologous blood collection	412 cases	(531times, 1,029Units)
Autologous blood transfusion	346 cases	(821 Units)

3) The number of clinical tests of transfusion

Blood typing	8,141
Anti red blood cell antibody test	3,686
Cross match	11,081

4) Hematopoietic stem cell harvest

Autologous peripheral blood stem cell harvest	13 cases	20 times
Allogenic peripheral blood stem cell harvest	3 cases	3 times
Autologous peripheral mononuclear cell harvest	1 case	1 time
Allogenic bone marrow harvest	12 cases	12 times
	(Including Japan Marrow Donor Program donors)	

5) Hematopoietic stem cell transplantation
(The evaluation and preservation of the stem cells were done in our department)

Autologous peripheral blood stem cell transplantation	9 cases	11 times
Allogenic peripheral blood stem cell transplantation	3 cases	3 times
Autologius peripheral mononuclear cell transplantation	1 case	1 time
Allogenic bone marrow transplantation	14 cases	14 times
Allogenic umbilical cord blood transplantation	3 cases	3 times

5. Publications

Original articles

1. Morio M, Atsuta Y, Tomizawa D, Nagamura-Inoue T, Kato K, Ariga T, Kawa K, Koike K, Tauchi H, Kajiwara M, Hara T, Kato S, Japanese Cord Blood Bank Network. Outcome of unrelated cord blood transplantation in 88 patients

with primary immunodeficiency in Japan. Br J Haematol. 154:363-372, 2011.
2. Fujihara M, Watanabe H, Yamada C, Ohtomo N, Oshida M, Tomoda Y, Yurugi K, Hoshi Y, Takahashi K, Maekawa T, Ohto H, Takeshita A. Medical technologist at university hospital blood transfusion departments play an important role in education in transfusion medicine: The 2009 transfusion conference of Japanese university hospitals. Surveillance report on medical education. Jpn J Transf Cell Ther 57:470-477, 2011.

Department of Blood Purification

Associate Professor	Tatemitsu RAI	
Assistant Professor	Eisei SOHARA,	Shotaro NAITO
Hospital Staff	Yuri KASAGI,	Yuya ARAKI

(1) Education

The Department of Blood Purification has been engaged in such educational activities as follows.

1) Clinical clerkship of 6th year students of Medical School
2) Preclinical lectures of 5th year students of Medical School
3) Lectures of 4th year students of Medical School
4) Lectures of students of Dental School
5) Hospital training of postgraduate master course students of Medical School
6) Hospital training of clinical engineering technologists and nurses (6 trainees)

(2) Research

The Department of Blood Purification has been engaged in such research activities as follows.

1) Pathophysiology and treatment of chronic renal failure
2) Pathophysiology and treatment of acute renal failure
3) New techniques in blood purification

(3) Clinical Services

The achievements of clinical services of The Department of Blood Purification in 2011 are as follows:

Total number of blood purification sessions	6089
Number of hemodialysis (HD) sessions	4736
Number of plasma exchange (PE) sessions	182
Number of plasma adsorption sessions	44
Number of continuous hemodiafiltration (CHDF) sessions	1022
Number of leukapheresis sessions	26
Number of endotoxin adsorption sessions	79

Number of treated patients	
Chronic kidney disease	397
Acute kidney injury	48
Multiple organ failure	15
Hyperlipidemia	4
Autoimmune disease	1
Neurological disease	24
Inflammatory bowel disease	5
Hepatic failure	3
Drug overdose	5

(4) Publications

【Original articles】

1. Chiga M, Rafiqi FH, Alessi DR, Sohara E, Ohta A, Rai T, Sasaki S, Uchida S. Phenotypes of pseudohypoaldosteronism type II caused by the WNK4 D561A missense mutation are dependent on the WNK-OSR1/SPAK kinase cascade. *J. Cell Sci.* 124:1391-5, 2011.
2. Naito S, Ohta A, Sohara E, Ohta E, Rai T, Sasaki S, Uchida S. Regulation of WNK1 kinase by extracellular potassium. *Clin. Exp. Nephrol.* 15:195-202, 2011.
3. Nomura N, Tajima M, Sugawara N, Morimoto T, Kondo Y, Ohno M, Uchida K, Mutig K, Bachmann S, Soleimani M, Ohta E, Ohta A, Sohara E, Okado T, Rai T, Jentsch TJ, Sasaki S, Uchida S. Generation and analyses of R8L barttin knockin mouse. *Am. J. Physiol. Renal. Physiol.* 301:F297-307, 2011.
4. Ohta E, Akazawa M, Noda Y, Mandai S, Naito S, Ohta A, Sohara E, Okado T, Rai T, Uchida S, Sasaki S. Severe

hyperparathyroidism in a pre-dialysis chronic kidney disease patient treated with a very low protein diet. *J. Bone Miner. Metab*. 2011, published online.

5. Sohara E, Rai T, Yang SS, Ohta A, Naito S, Chiga M, Nomura N, Lin SH, Vandewalle A, Ohta E, Sasaki S, Uchida S. Acute insulin stimulation induces phosphorylation of the Na-Cl cotransporter in cultured distal mpkDCT cells and mouse kidney. *PLoS One*. 6:e24277, 2011.

【Scientific meetings】

1. Inoue Y, Sohara E, Kobayashi K, Rai T, Ishibashi K, Sasaki S, Uchida S. Generation and analyses of AQP11 BAC transgenic mice. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
2. Isobe K, Ohta A, Sohara E, Rai T, Sasaki S, Uchida S. Development of new systems to measure total and phosphorylated Na-Cl cotransporter (NCC) protein in human urine. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
3. Iwamoto S, Iimori S, Yokotani A, Naito S, Ohta E, Ohta A, Sohara E, Okado T, Noda Y, Rai T, Uchida S, Sasaki S. Analysis of risk factors associated with the progression of CKD in Japan. The World Congress of Nephrology (WCN), Vancouver, April, 2011.
4. Kahn MZH, Sohara E, Ohta A, Naito S, Chiga M, Rai T, Sasaki S, Uchida S. Urinary excretion of Na-ClCotransporter in exosomes is increased by high salt diet as well as low salt diet. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
5. Mori T, Ohta A, Sohara E, Rai T, Sasaki S, Uchida S. High throughput screening of drugs that inhibit WNK-OSR1/SPAK signaling cascade. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
6. Naito S, Iimori S, Eto K, Sohara E, Okado T, Noda Y, Rai T, Uchida S, Sasaki S. Educational hospitalization effectively delays progression of CKD. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
7. Nishida H, Sohara E, Alessi DR, Nomura N, Rai T, Sasaki S, Uchida S. Increased Na-Cl cotransporter phosphorylation in hyperinsulinemic db/db mice is regulated by insulin/PI3K pathway. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
8. Nomura N, Naito S, Sohara E, Rai T, Sasaki S, Uchida S. Chemical library screening for drugs to correct intracellular mislocalization of R8L mutant barttin. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
9. Oi K, Sohara E, Rai T, Chiga M, Alessi DR, Sasaki S, Uchida S. Renal phenotype of WNK3 knockout mouse. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
10. Sohara E, Rai T, Yang SS, Ohta A, Chiga M, Nomura N, Lin SH, Vandewalle A, Sasaki S, Uchida S. Acute insulin stimulation induces phosphorylation of the Na-Cl cotransporter in cultured distal mpkDCT cells and mouse kidney. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
11. Susa K, Ohta A, Sohara E, Rai T, Kita S, Iwamoto T, Alessi DR, Sasaki S, Uchida S. WNK-OSR1/SPAK-SLC12A phosphorylation cascade in the WNK1 (+/−) mice. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
12. Wakabayashi M, Naito S, Sohara E, Rai T, Sasaki S, Uchida S. Increased protein abundance of the mutant WNK4 may be a cause of the increased WNK4 kinase activity in the mouse model of pseudohypoaldosteronism type II. The 44th Annual Meeting of American Society of Nephrology, Philadelphia, November, 2011.
13. Yokotani A, Iimori S, Iwamoto S, Naito S, Ohta E, Ohta A, Sohara E, Okado T, Noda Y, Rai T, Uchida S, Sasaki S. High dose epoetin to maintain high target hemoglobin increases the risk of cardiovascular events in Japanese patients with CKD. The World Congress of Nephrology (WCN), Vancouver, April, 2011.

Hyperbaric Medical Center

1. Staffs

Center Chief and Junior Associate Professor	Kazuyoshi YAGISHITA	
Tokunin Junior Associate Professor	Mitsuhiro ENOMOTO	
Medical Staff	Arata YUKI,	Takashi TANIYAMA
Tokunin Assistant Professor	Seiichiro TOGAWA,	Yasushi KOJIMA
Researcher	Masaharu SHIBAYAMA,	Masaki HORIE,
	Manabu SHIMODA,	Kazuo YAMAMOTO,
	Naoko SUZUKI,	Kitsuhito SHIIDUKA
Secretary	Naoko FUJIMORI	
Professor Emeritus	Yoshihiro MANO	

2. Purpose of Education

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 arterior 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 effects 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.

3. Research Subjects

1) Soft tissue injuries related with sports activities
2) HBO for conditioning in sports activities
3) Diving medicine
4) Hyperbaric oxygen therapy

4. Clinical Services

Hyperbaric Medical Center in Tokyo Medical and Dental University hospital is the center institute of hyperbaric oxygen therapy and research in Japan, and one of the largest hyperbaric oxygen chamber in the world is set up in Hyperbaric Medical Center, which can contain the maximum number of 16 persons.

As described above, HBO is applied for several conditions, including decompression illness, carbon monoxide poisoning, acute arterial disturbance, and peripheral ischemic disease. In 2011, 5,117 times hyperbaric oxygen therapy (HBO) in 580 patients were performed in our university hospital. In addition, for the purpose of rapid recovery, we now perform HBO aggressively for soft tissue injuries related with sports activities including compartment syndrome, ankle sprain, and knee ligament injury.

5. Publication

Original articles

1) Yagishita K, Muneta T, Ju YJ, Morito T, Yamazaki J, Sekiya I. High-flex posterior cruciate-retaining vs posterior cruciate-substituting designs in simultaneous bilateral total knee arthroplasty. A prospective randomized study. J Arthroplasty, 2011. (in press)
2) Koga H, Muneta T, Yagishita K, Ju YJ, Sekiya I. Surgical management of grade 3 medial knee injuries combined with cruciate ligament injuries. Knee Surg Sports Traumatol Arthrosc 20(1):88-94, 2012.
3) Koga H, Muneta T, Yagishita K, Ju YJ, Sekiya I. The Effect of Graft Fixation Angles on Anteroposterior and Rotational Knee Laxity in Double-Bundle Anterior Cruciate Ligament Reconstruction: Evaluation Using Computerized Navigation. Am J Sports Med (in press).
4) Muneta T, Koga H, Ju YJ, Yagishita K, Sekiya I. Effects of different initial bundle tensioning strategies on the

outcome of double-bundle ACL reconstruction: a cohort study. Sports Med Arthrosc Rehabil Ther Technol. 28;3:15, 2011.

5) Kusano K, Enomoto M, Hirai T, Wakabayashi Y, Itoh S, Ichinose S, Okabe S, Shinomiya K, Okawa A. Enhancement of sciatic nerve regeneration by adenovirus-mediated expression of dominant negative RhoA and Rac1. Neurosci Lett. 29;492(1):64-9, 2011.
6) Sakai K, Okawa A, Takahashi M, Arai Y, Kawabata S, Enomoto M, Kato T, Hirai T, Shinomiya K. 5-year Follow-up Evaluation of Surgical Treatment for Cervical Myelopathy Caused by Ossification of the Posterior Longitudinal Ligament: A Prospective Comparative Study of Anterior Decompression and Fusion with Floating.Method Versus Laminoplasty. Spine (Phila Pa 1976). 2011 May
7) Hirai T, Kawabata S, Enomoto M, Kato T, Tomizawa S, Sakai K, Yoshii T, Sakaki K, Shinomiya K, Okawa A. Presence of Anterior Compression of the Spinal Cord Following Laminoplasty Inhibits Upper Extremity Motor Recovery in Patients with Cervical Spondylotic Myelopathy. Spine (Phila Pa 1976). 2011 May
8) Hirai T, Okawa A, Arai Y, Takahashi M, Kawabata S, Kato T, Enomoto M, Tomizawa S, Sakai K, Torigoe I, Shinomiya K, Middle-Term Results of a Prospective Comparative Study of Anterior Decompression with Fusion and Posterior Decompression with Laminoplasty for the Treatment of Cervical Spondylotic Myelopathy, Spine. 1;36(23):1940-7, 2011.
9) Horie M, Kawashima Y, Naka A, Matsumoto K, Kodera Y, Maeda T, Iida K. Proteomic profiling of K-11706 responsive proteins. Int J Sports Med. 32(7):559-64, 2011.

Center for Cell Therapy

1. Staffs and Students (April, 2011)

Director	Tomohiro Morio (Department of Pediatrics)
Vise Director	Michiko Kajiwara(to August 2011),
	Ichiro Sekiya (from September 2011 Department of Orthopedic Surgery)
Quality control manager	Michiko Kajiwara (Chief Administrator, Department of Blood Transfusion Medicine)
Product manager	Norio Shimizu (Division of Virology, Medical Research Institute)
Technicians	Shizuko Minegishi, Atsushi Ohyama (to June 2011),
	Yuri Kohno (from May 2011)
Technicians (From Collaborative Research)	
	Takashi Kosaka
Clerical Assistant	Akiko Hoshikawa, Ayako Tsuji (to November 2011),
	Jun Kusano (from November 2011)

2. Purpose of Education

Our center is the first ISO9001:2000(2008)-certified cell processing center in Japan. We provide assistance to prepare standard operation procedure (SOP) and also offer on-the-job training for cell processing/manipulating procedures and that for quality assurance at the center.

3. Research Subjects

1. Development of innovative techniques for quality assurance of cell products
2. Development of a novel measure for rapid and sensitive detection of multiple pathogens
3. Clinical study on *ex-vivo* expanded donor T-cell infusion for patients who underwent hematopoietic stem cell transplantation (HSCT)
4. Study on *ex vivo*-activated cord blood T-cells for various conditions post-cord blood stem cell transplantation.
5. Development of short tandem repeat method as a molecular ID for personal identification
6. Research on a regeneration system of the cartilage bone from the synovial membrane (Department of Orthopedic Surgery)
7. Development of novel peptide-pulsed dendritic therapy for adult T-cell leukemia (Department of Immunotherapeutics)

4. Clinical Services

Our center has four independent cell processing rooms (class 10,000 clean rooms) and has received ISO9001:2000(2008) certificate. All the rooms are equipped with a bio-safety cabinet. The hardware as well as software used in our center fulfills all the guidelines that are required for the preparation of cell products of clinical grade.

The cell products prepared in our centers include
#1 *Ex-vivo* expanded T-lymphocytes
#2 Synovium-derived mesenchymal stem cells
#3 Bone marrow-derived mesenchymal stem cells
#4 Processed peripheral blood stem cells

The center offers our novel detection system for 12 different viruses in rapid and sensitive manner for the doctors in our medical hospital. We also measure virus loads of the detected virus using a real time PCR system. We measured 1,455 samples in year 2011 in total.

5. Publications

Original articles

1. Imadome K, Yajima M, Arai A, Nakazawa A, Kawano F, Ichikawa S, **Shimizu N**, Yamamoto N, **Morio T**, Ohga S, Nakamura H, Ito M, Miura O, Komano J, Fujiwara S, Novel Mouse Xenograft Models Reveal a Critical Role of CD4+ T Cells in the Proliferation of EBV-Infected T and NK Cells. *Plos Pathogens*. 2011; 7(10) : e1002326.
2. Kato K, Kojima Y, Kobayashi C, Mitsui K, Nakajima-Yamaguchi R, Kudo K, Yanai T, Yoshimi A, Nakao T, **Morio T**, Kasahara M, Koike K, Tsuchida M, Successful allogeneic hematopoietic stem cell transplantation for chronic

granulomatous disease with inflammatory complications and severe infection. *Int J Hematol.* 2011; 94 : 479-82.

3. Ishimura M, Takada H, Doi T, Imai K, Sasahara Y, Kanegane H, Nishikomori R, **Morio T**, Heike T, Kobayashi M, Ariga T, Tsuchiya S, Nonoyama S, Miyawaki T, Hara T, Nationwide Survey of Patients with Primary Immunodeficiency Diseases in Japan. *J Clin Immunol.* 2011; 31 : 968-76.
4. Nakajima K, Hayashi M, Tanuma N, **Morio T**, An autopsy case of polymicrogyria and intracerebral calcification with death by intracerebral hemorrhage. *Neuropathology*. 2011; 10.1111/j.1440-789.
5. **Morio T**, Atsuta Y, Tomizawa D, Nagamura-Inoue T, Kato K, Ariga T, Kawa K, Koike K, Tauchi H, **Kajiwara M**, Hara T, Kato S,: Outcome of unrelated umbilical cord blood transplantation in 88patients with primary immunodeficiency in Japan. *Br. J. Haematol.* 2011; 154 : 363-72.
6. Asai E, Wada T, Sakakibara Y, Toga A, Toma T, Shimizu T, Imai K, Nonoyama S, **Morio T**, Kamachi Y, Ohara O, Yachie A, Analysis of mutations and recombination activity in RAG-deficient patient. *Clin. Immunol.* 2011; 138 : 172-7.
7. Takagi M, Shinoda K, Piao J, Mitsuiki N, Takagi M, Matsuda K, Muramatsu H, Doisaki S, Nagasawa M, **Morio T**, Kasahara Y, Koike K, Kojima S, Takao A, Mizutani S, Autoimmune Lymphoproliferative Syndrome Like Disease With Somatic KRAS Mutation. *Blood.* 2011; 117 : 2887-90.
8. Sugita S, **Shimizu N**, Watanabe K, Katayama M, Horie S, Ogawa M, Sugimoto Y ,Mochizuki M. Diagnosis of bacterial endophthalmitis by broad-range quantitative PCR. *Br J Ophthalmol.* 2011; 95:345-349.
9. Ng SB, Selvarajan V, Huang G, Zhou J, Feldman AL, Law M, Kwong YS, **Shimizu N**, Nagami Y, Aozasa K, Salto-Tellez M ,Chng WJ. Activated oncogenic pathways and therapeutic targets in extranodal nasal-type NK/T cell lymphoma revealed by gene expression profiling. *J Phatol.* 2011; 223:496-510.
10. Abe T, Segawa Y, Watanabe H, Yotoriyama T, Kai Y, Yasuda A, **Shimizu N**, Tojo N. Point-of-Care Testing System Enabling 30-min Detection of Influenza Genes. *LAB CHIP*. 2011; 11:1166-1167.
11. Yagasaki H, Kato M, **Shimizu N**, Shichino H, Chin M ,Mugishima H. Autoimmune hemolytic anemia and autoimmune neutropenia in a child with erythroblastopenia of childhood (TEC) caused by human herpesvirus-6 (HHV6). *Ann Hematol.* 2011; 90(7):851-852.
12. Watanabe A, Tagawa H, Yamashita J, Teshima K, Nara M, Iwamoto K, Kume M, Kameoka Y, Takahashi N, Nakagawa T, **Shimizu N**, Sawada K. The role of microRNA-150 as a tumor suppressor in malignant lymphoma. *Leukemia*. 2011; 25(8):1324-1334.
13. Sugita S, Ogawa M, Inoue S, **Shimizu N**, Mochizuki M. Diagnosis of ocular toxoplasmosis by two polymerase chain reaction (PCR) examinations: qualitative multiples and quantitative real-time. *Jpn J Ophthalmol.* 2011; Jul 13. 55(5):495-501.
14. Sugita S, **Shimizu N**, Watanabe K, Katayama M, Horie S, Ogawa M, Sugimoto Y ,Mochizuki M. Detection of Candida & Aspergillus species DNA using broad-range real-time PCR for fungal endophthalmitis. *Graefe Arch Clin Exp*. in press.
15. Ng SB, Yan J, Huang G, Selvarajan V, Tay J, Lin B, Bi C, Tan J, Kwong YL, **Shimizu N**, Aozasa K, Chng W. Dysregulated MicroRNAs Affect Pathways and Targets of Biological Relevance in Nasal-type Natural Killer / T-cell Lymphoma. *Blood.* 118(18):4919-4929.2011 Nov 3.
16. Kuwana Y, Takei M, Yajima M, Imadome K, Inomata H, Shiozaki M, Inomata H, Ikumi N, Nozaki T, Shiraiwa H, Kitamura N, Takeuchi J, Sawada S, Yamamoto N, **Shimizu N**, Ito M ,Fujiwara S . Epstein-Barr Virus Induces Erosive Arthritis in Humanized Mice. *PloS ONE* 2011;6(10):e26630. Epub 2011 Oct 19.
17. Ramakrishnan R, Donahue H, Garcia D, Tan J, **Shimizu N**, Rice AP, Ling P. Epstein-Barr virus BART9 miRNA modulates LMP1 levels and affects growth rate of nasal NK T cell lymphomas. *PLoS ONE,* 2011:6(11):e27271 2011 Nov 11.
18. **Sekiya I**, Ojima M, Suzuki S, Yamaga M, Horie M, Koga H, Tsuji K, Miyaguchi K, Ogishima S, Tanaka H, Muneta T. Human mesenchymal stem cells in synovial fluid increase in the knee with degenerated cartilage and osteoarthritis. *J Orthop Res*, doi: 10.1002/jor.22029. 2011 Dec 6.

Clean Room, University Hospital, Faculty of Dentistry

1. Staffs and Students (April, 2011)

Associate Professor	Mitsuhiro SUNAKAWA
Assistant Professor	Hiroyuki MATSUMOTO

2. Purpose of Education

The improvement of the nosocominal infection control system in the University Hospital, Faculty of Dentistry, Tokyo Medical and Dental University to spread the actual infection control method to all staff and clinical course students.

3. Research Subjects

1) The development of disposal, hygienic materials for dental use.
2) The survey for the oral diseases in patients with HIV.
3) The survey for the relationship between the consousness of the staff and students with hospital and the need accident.

[Articles]

1. M Kaneko, T Kaneko, R Kaneko, U Chokechanachaisakul, J Kawamura, M. Sunakawa, T Okiji, H. Suda: The role of N-methyl-D-aspartate receptor subunits in the rat thalamic mediodorsal nucleus during central sensitization. Brain Research 1371:16-22.

[Meeting]

1. U. Chokechanachaisakul, T. Kaneko, Y. Yamanaka, R. Kaneko, M. Sunakawa, T. Okiji, H. Suda: Immune LCM of Resident Macrophages in Cultured Dental Pulp Tissues. The 10th China-Japan Joint Seminar on Histochemistry and Cytochemistry. Beijing, 2011/10/21-24.
2. M. Sunakawa, H. Suda: Treatment of Teeth with Neuropathic Pain after Endodontic: Treatment. Report of Three Cases. KACD. Seoul, 2011/10/21-24.
3. U. Chokechanachaisakul, T. Kaneko, M. Sunakawa, T. Okiji, H. Suda: Artificial Dental Pulp Exposure Injury Up-regulates Mitogen-activated Protain Kinase 13 and 14 in Rat Central Nervous System. KACD. Seoul, 2011/11/12.
4. U. Chokechanachaisakul, T. Kaneko, Y. Yamanaka, M. Sunakawa, T. Okiji, H. Suda: Immuno-laser Capture Microdissection of Macrophages from Rat Tissue Calture Model. 67th Japan Association of Microscopic. Fukuoka, 2011/5/16-18.
5. U. Chokechanachaisakul, T. Kaneko, Y. Yamanaka, R. Kaneko, M. Sunakawa, T. Okiji, H. Suda: Immuno-laser Capture Microdissection of ED2 Expressing Resident Macrophages in Rat Molar Pulp. 52th Japan. Society of Histochemistry and Cytochemistry. Kanazawa, 2011/9/24-25.

Oral and Maxillofacial Biology

1. Staff.

Junior Assiciate Professor　　Yujiro Sakamoto

2. Purpose of Education.

Oral and maxillofacial biology is a branch of morphological sciences, developmental biology, pathology and the neurosciences to understand the structure and function of human body and its pathological conditions. Students are taught in more detail about the normal tooth anatomy and occlusal function as well as the anatomy of the head and neck with specific attention to the muscles, nerves, and arteries associated with the mouth and teeth. Students also receive clinical training in oral cleaning programs. In addition to it, students learn the rudiments of English for oral health care science.

Subjects and contents.

- Structure and function of human body I and II: anatomy, histology, physiology, embryology, oral anatomy, oral histology, oral physiology.
- Mechanism and defense against infection: pathology, immunology, microbiology, oral pathology.
- Basic practice of oral health care science: the practices of the basic sciences.
- English for oral health care science II: reading, writing.
- Oral health care clinical training: the practice in the dental hospital (oral cleaning programs).
- Graduation thesis:

3. Research Subjects

1) Gross anatomical study of head and neck.
2) Light and electron microscopy on the formation of bone and teeth

4. Clinical Service

Oral health care clinic specializes in high quality oral cleaning programs in collaboration with dental hygienists.

5. International meeting

1. 1. Sakamoto Y. Spatial relations of the hyoglossus with the muscles in the suprahyoid region. The 28th annual meeting American Association of Clinical Anatomists, Columbus, USA, July 12-16, 2011.
2. Sakamoto Y. Interrelationship between innervations to the inferior pharyngeal constrictor from the superior laryngeal nerve and the pharyngeal plexus. Scientific Congrss 2011 Europian Association of Clinical Anatomy held jointly with Summer Scientific Meeting 2011 British Association of Clinical Anatomists, Padova, Italy, June 29 - July 2, 2011.

Fundamental Oral Health Care Science

1. Staffs and Students (April, 2011)

Professor	Kumiko Sugimoto (~March.)
	Chiyoko Hakuta (November~)
Junior Associate Professor	Makoto Tsuboi

2. Purpose of Education

Fundamental oral health care science is a section of oral health care sciences which deals with the basic oral health sciences to perform evidence-based oral health care and to support people to attain healthy and happy living. Main objective of fundamental oral health care science in the undergraduate course is to provide students opportunity to study the structure and function of the human body as well as stomatognathic region, pharmacology, laboratory practice of physiology and research process. Students are also taught on subjects of social welfare, such as principles of social welfare, theory of welfare of the disabled, exercises of social assistance skills, and supervision of field practice of social assistance skills, in order to acquire the knowledge and skills needed to social workers.

3. Research Subjects

1) Change in autonomic nerve activities and salivary secretion induce d by taste stimulation
2) The sensitivities to 5 basic tastes and capsaicin in the patients of congenital insensitivity to pain with anhidrosis
3) Objective assessment of internal stress in children during dental treatment by analysis of autonomic nervous activity
4) Interprofessional education in School of Oral Health Care Sciences
5) Comparative analysis of the medical aid services in Japan: Focusing on the feature of hospitals for poverty-level people in the late 1910s

Oral Health Care Education

1. Staffs and Students (April, 2011)

Professor	Kayo TERAOKA
Research Student	Kazunori AMEMIYA

2. Purpose of 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 national 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.

3. Research Subjects

1. Oral health promotion program.
2. Oral health and long-term preventive care for the elderly.
3. Oral care management system for hospitalized person.
4. Oral health administration system in local communities.

Section of Preventive Oral Health Care Science

1. Staffs and Students (2011)

Professor	Kayoko SHINADA	
Junior Associate Professor	Keiko KONDO	
Part-time Lecturer	Hiromi OTSUKA,	Yuki OHARA,
	Chizuru TAZAWA,	Akie KOUNO,
	Miyuki YAMASAKI,	Masako OKADA
Resident	Hidehiro SHIOYAMA	

2. Purpose of Education

In order to cultivate students' abilities to prevent and detect oral diseases at an early stage, which are important to maintain and improve the nation's health, we help students acquire deep academic knowledge and high standard skills in preventive oral health care such as skills to check over the condition of oral cavities. Additionally, we help students develop skills to provide oral health counseling and oral health promotion, and nurture human resources who can actively contribute the development of oral health promotion.

3. Research Subjects

1) Preventive Oral Health Care Sciences
   ①Incident factors and preventive methods on dental caries
   ②Incident factors and preventive methods on periodontal disease
   ③Incident factors and preventive methods on oral malodor
   ④Incident factors and preventive methods on other oral diseases
2) Development of education system for the patients to prevent oral diseases, and for the dental hygiene students.
3) Development of new assessment programs (self assessment, achievement assessment) in technical education for dental hygiene students.

4. Clinical Services

In our Oral Health Care Clinic, dental hygienists support patients' oral health care, and prevent dental caries and periodontal diseases, for the patients to maintain their oral health for the entire lifetime.

5. Publications

Original Article

1. Zaitsu T, Ueno M, Shinada K, Wright FAC, Kawaguchi Y: Relationship between Social Anxiety Disorder and Halitosis, International Journal of Clinical Preventive Dentistry, 7(1): 25-32, 2011.
2. Zaitsu T, Ueno M, Shinada K, Ohara S, Wright FAC, Kawaguchi Y: Association of clinical oral health status and self-rated oral health and GOHAI in Japanese adults, Community Dental Health, 28; 297–300, 2011.
3. Samnieng P, Ueno M, Shinada K, Zaitsu T, Wright FAC, Kawaguchi Y: Association of hyposalivation with oral function, nutrition and oral health in community-dwelling elderly Thai, Community Dental Health, 2011 (in press)
4. Pham TAV, Ueno M, Zaitsu T, Takehara S, Shinada K, Lam PH, Kawaguchi Y: Clinical trial of malodor treatment in patients with periodontal diseases, J Periodont Res, Dec;46(6):722-9, 2011 .
5. Pham TAV, Ueno M, Shinada K, Yanagisawa T, FAC Wright, Kawaguchi Y: Periodontal Disease and Related Factors Among Vietnamese Dental Patients, Oral Health Prev Dent, 9: 185-194, 2011.
6. Samnieng P, Ueno M, FAC Wright, Kawaguchi Y: Oral Health Status and Chewing Ability is Related to Mini-Nutritional Assessment Results in an Older Adult Population in Thailand, Journal of Nutrition in Gerontology and Geriatrics, 30: 291-304, 2011.
7. Ohnuki M, Shinada K, Ueno M, Zaitsu T, FAC Wright, Kawaguchi Y: Exploring taste hyposensitivity in Japanese senior high school students, Journal of Investigative and Clinical Dentistry, 2; 1-7, 2011.
8. Ueno M, Shinada K, Zaitsu T, Yokoyama S, Kawaguchi Y: Effects of an oral health education program targeting oral malodor prevention in Japanese senior high school students, Acta Odontologica Scandinavica, Nov 30 ,2011 .
9. Hashizume LN, Shinada K, Kawaguchi Y: Factors associated with prevalence of dental cariesin Brazillian schoolchildren residing in Japan, Journal of Oral Science, 53(3); 307-312, 2011
10. Ueno M, Zaitsu T, Ohara S, FAC Wright, Kawaguchi Y: Factors influencing perceived oral health of Japanese

middle-aged adults, Asia-Pacific Journal of Public Health, Dec 20 ,2011 .
11. Zaitsu T, Ueno M, Shinada K, Wright FAC, Kawaguchi Y: Social anxiety disorder in genuine halitosis patient, Health and Quality of Life Outcomes, 9(1):94, 2011
12. Ohara Y, Hirano H, Yoshida H, Suzuki T. Ratio and associated factors of dry mouth among community-dwelling elderly Japanese women. Geriatrics Gerontology International 11(1):83-9, 2011

Adult Oral Health Care Science

1. Staffs and Students (April, 2011)

Associate Professor Endo Keiko

2. Purpose of Education

Adult oral health care science examines the role of oral health and methods of oral health promotion in adulthood. Main objective of adult oral health care science in the under-graduate course is to provide students with the opportunity to study the fundamental knowledge and skill of Adult Oral Health Care for preservation and improvement of health for adult people. Students are also taught communication skills to establish a relationship of trust with patients.

3. Research Subjects

1) Development of oral hygiene methods for inpatients
2) Development of health education methods
3) Survey of present and future about dental hygiene activities
4) Development of methods, materials, and program in dental hygiene education

4. Clinical Services

Health education of self-care methods and professional care are provided for patients in the Oral care clinic. In addition, oral care is delivered for inpatients at the neurosurgical ward in collaboration with the ward.

Geriatric Oral Health Care Science

1. Staffs (April, 2011)

Professor	Kazuhiro SHIMOYAMA, DDS, PhD
Junior Associate Professor	Chiyoko HAKUTA , RDH, PhD.

2. Purpose of Education

Students will acquire the fundamental knowledge and skill of Geriatric Oral Health Care for preservation and improvement of health for elderly people through lectures and preclinical/clinical practice. Students will also gain comprehensive knowledge in the field of social insurance, social welfare and health/medical care systems for elderly people throughout this entire period

3. Research subjects

1) Oral health care for elderly people
2) Improvement of oral health for elderly people who require nursing care
3) Effects of geriatric oral health care science education on students

4. Clinical Service

We ensure better health through providing services of oral diseases prevention and maintenance such as dental caries, periodontal disease at the Oral health Care clinic. We also provide comprehensive dental service for improvement of health at the clinic for Gerodontics.

5. Publication

Basic Oral Health Science

1. Staffs and Students (April, 2011～)

Professor　　Kumiko Sugimoto

2. Purpose of Education

Fundamental oral health care science is a section of oral health care sciences which deals with the basic oral health sciences to perform evidence-based oral health care and to support people to attain healthy and happy living. Main objective of basic oral health science in the undergraduate course is to provide students opportunity to study the structure and function of the human body as well as stomatognathic region, pharmacology, laboratory practice of physiology and research process.

3. Research Subjects

1) Changes in autonomic nervous and brain activities induced by taste stimulation
2) The sensitivities to taste, olfactory and capsaicin stimulations in the patients of congenital insensitivity to pain with anhydrosis
3) Evaluation of oral care for the elderly by dental professionals
4) Objective assessment of internal stress during dental treatment by analysis of autonomic nervous activities

Comprehensive Oral Health Engineering

1. Staff

Associate Professor　　Meiko Oki (April, 2011~)

2. Purpose of Education

The goal of the education program in Comprehensive Oral Health Engineering is to provide the knowledge and skills of the figurative arts, design, and the health welfare for oral health engineering students.

The first grade oral health engineering students participate in the tutorial lessons of general knowledge of oral health and specialists, and are introduced to clinical dentistry visiting the hospital clinics, dental technical laboratory, and dental material corporation. Scientific English was provided to learn basic dental terms. The second grade students will attend lectures of health promotion and outlines of 3D CAD/CAM/CAE. The third grade students will attend lectures and clinical laboratories to acquire a broad range of general knowledge and skills of a wide variety of maxillofacial defects, cleft lip and palate, oral appliances to support masticatory, swallowing and speech, and involvement of treatment procedures, by means of the high-advanced dental and medical cares.

The students of special training course of school of dental technologists are provided lectures and clinical laboratories of maxillofacial prosthetic engineering to acquire basic knowledge of maxillofacial defects caused by congenital, developmental, and acquired diseases.

3. Research Subjects

1) The fabrication of facial prostheses using three dimensional rapid manufacturing method

2) Clinical studies of treatments for patients with maxillofacial defects

4. Clinical Services

In the Maxillofacial Prosthetic Clinic, I treat patients with cleft lip and/or palate, maxillary defect, mandibular defect, tongue defect, and facial defect, to improve their masticatory and swallowing functions, speech, and esthetic problems with the Maxillofacial Prosthetic staffs in the University Dental Hospital.

Oral Biomaterials Engineering

1. Staffs and Students

Professor	Hidekazu TAKAHASHI
Assistant Professor	Naohiko IWASAKI

2. Purpose of Education

Dental material science is not only one of basic medical and dental science but also one of clinical dental science. In our department, we will educate students to obtain practical knowledge of the dental materials and devices used in dentistry and to improve skill how to deal with these materials and devices. Our goals of education are to achieve high quality of dental practice with well-understanding dental material and devices.

The aim for education is to obtain the basic knowledge of dental material science and technology. The lecture is simultaneously provided with the laboratory instructions within the limit of the possible.

3. Research Subjects

1. Evaluation of various factors on mechanical properties of teeth substance.
2. Evaluation of fatigue properties of dentin and dental materials using miniature testing pieces
3. Measurement of characteristics of dental ceramic materials and establishment of new testing methods for dental ceramics
4. Measurement of precise deformation using non-contact methods
5. Development of new composite resin with similar machinability of dentin
6. Study on dental root fracture mechanism
7. Application of various types of fiberglass for dentistry
8. Evaluation of composite resin mechanical properties and improvement their bonding efficiency to various materials.
9. Evaluation of impact force absorption of mouthguard and face protect materials

4. Publication

Original articles

1. Bakry AS, Takahashi H, Otsuki M, Yamashita K, Tagami J. CO_2 laser improves 45S5 bioglass interaction with dentin. J Dent Res 2011; 90(2): 246-250.
2. Arksornnukit M, Phunthikaphadr T, Takahashi H. Pressure transmission and distribution under denture bases using denture teeth with different materials and cuspal angulations. J Prosthet Dent 2011; 105(2): 127-136.
3. Takahashi H, Finger WJ, Endo T, Kanehira M, Koottathape N, Komatsu M, Balkenhol M. Comparative evaluation of mechanical characteristics of nanofiller containing resin composites. Amer J Dent 2011; 24(5): 264-270.
4. Kasuga Y, Takahashi H, Akiba N, Minakuchi S, Matsushita N, Hishimoto M. Basic evaluation on physical properties of experimental fluorinated soft lining materials. Dent Mater J 2011; 30(1): 45-51.
5. Osathanon T, Bespinyowong K, Arksornnukit M, Takahashi H, Pavasant P. Human osteoblast-like cell spreading and proliferation on Ti-6Al-7Nb surfaces of varying roughness. J Oral Sci 2011; 53(1): 23-30.
6. Suwannaroop P, Chaijareenont P, Kootathape N, Takahashi H, Arksornnukit M. In vitro wear resitance, hardness and elastic modulus of artificial denture teeth. Dent Mater J 2011; 30(4): 461-468.
7. Sakai Y, Takahashi H, Iwasaki N, Igarashi Y. Effects of surface roughness and tapered angle of cone crown telescopic system on retentive force. Dent Mater J 2011; 30(5): 635-641.
8. Rutkunas V, Mizutani H, Takahashi H, Iwasaki N. Wear simulation effects on overdenture stud attachments. Dent Mater J 2011; 30(6): 845-853.

Fixed Prosthetic Engineering

1. Staffs and Students

Junior Associate Professor　　Tohru Yasue

2. Purpose of Education

Our instruction will include provision of knowledge and technical training of dental laboratory techniques necessary for dental crown restorative procedures to solve morphological, functional and esthetics problems that have been accompanied with eventual loss of tooth substance and body in the oral tissues. Intensive learning of tooth morphology that should be fundamental to every phase of dental laboratory techniques will be scheduled by practical courses based on the science of shape recognition construction. And our teaching will refer to not only provision of forms and occlusal functions to be best suited for individual patients in crown restoration engineering and plate denture engineering, but also fabrication techniques of restorations with highly color matching together with prosthetic restoration methods using most advanced materials.

3. Research Subjects

From the technicians' viewpoint of fabricating dental crown restorations, our research and development will be ready in an approach toward a new technology of dental laboratory engineering and a new material science, especially in the study of advanced restorative engineering using digital equipments.

4. Clinical Services

As far as crown restorations are concerned in dental esthetics based on Zirconia materials with CAD/CAM machining, functional efficiency and durability will be identified in the oral cavity environment, and crown restorations with highly demanding esthetics will be fabricated.

Oral Prosthetic Engineering

1. Staffs and Students (April, 2011)

Professor	Tetsuya SUZUKI
Research Associate	Kouichi HUKAWA

2. Purpose of Education

Oral Prosthetic Engineering is one of the dental sciences which propose to restore and maintain oral function, form and health for partially and/or complete edentulous patients. Main object of Oral Prosthetic Engineering is to provide students to obtain the basic knowledge and technical skill of complete denture prosthodontics, removable partial denture prosthodontics and dental occlusion.

3. Research Subjects

1. Standardization of education for dental technicians
2. Optimal occlusion for removable dentures.
3. Evaluation of various denture materials.
4. Evaluation of oral function in elderly.
5. Influence of masticatory function on brain activity.

4. Publication

Original articles

1. Abe R, Furuya J, Suzuki T. Videoendoscopic measurement of food bolus formation for quantitative evaluation of masticatory function. J Prosthodont Res2011；55:171-178 .
2. Sawada A, Wakabayashi N, Ona M, Suzuki T. Viscoelasticity of Human Oral Mucisa: Implications for Masticatory Biomechanics. J Dent Res 2011；90(5),590-595.

Center for Development of Devices and Drugs in Dentistry

1. Staffs (April, 2011)

Director	Junji TAGAMI	
Co-Director	Hidekazu TAKAHASHI,	Hideki HARASAWA,
	Hidekazu SONODA(～Mar.),	Naoko HARADA (Apr.～)
Member	Naoko HARADA (～Mar.),	Hidekazu SONODA (Apr.～July)
	Miwako WAGAI (CRC),	Emiko NAGAE (Apr.～, CRC)

2. Overview

Center for development of devices and drugs in dentistry was established in April, 2004 and is committed to a wide range of activities, such as education, consultation for new devices and drugs application, and support for clinical trials in University Hospital of Dentistry.

3. Purpose of Education

We provide a education program for the 3rd year students and help them to gain fundamental knowledge of Pharmaceutical Affairs Act which is required for development and application of dental devices. We also collaborate with the Institute of Biomaterials and Bioengineering to achieve the mission that many outcomes from studies about innovative dental devices and materials will be put into use without “device-lag”.

4. Clinical trial Services

In order to accomplish clinical trials successfully, we manage and support from planning, paper work to patient care as a main office of clinical trials in University Hospital of Dentistry.

5. Consultation Services

We provide consultation services about various issues concerning the Pharmaceutical Affairs Act, not only for pharmaceutical and dental companies but also for dentists and researchers in our University.

By the supporting services of clinical trials, we hope that applicant will be able to form a protocol adequately and effectively, and to start the clinical trial swiftly.

6. Achievements

Consultation

From February in 2011, one clinical trial is ongoing.

The 140 consultation services concerning dental devices were performed in 2011.

7. Publications

Original Article

Review Article

Book