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	Yoshihiro Tamamura	
Technician	Miwako Hamagaki	
Graduate Students		
Ph.D. Course	Kou Kayamori	Shouichi Nakanishi
	Lei Cao	Tadanobu Aragaki (Maxillofacial Surgery)
	Tasuku Kihara (Maxillofacial Surgery)	
	Kousuke Umehara (Removable Partial Denture Prosthodontics)	
	Tsutomu Matsumoto (Maxxilofacial Orthognathics)	
	Yumi Terachi (Periodontology)	
	Akiko Himeno (Periodontology)	
	Ichiro Kadouchi (Orthopedic Surgery, Jichi Medical University)	
MS Course	Saki Ichikawa	
Research Student	Masafumi Ishikuro	Masaya Eto
	Zhao Xin	
Secretary	Noriko Yoshida	

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

1. Kondo T, Kitazawa R, Yamaguchi A, Kitazawa S: Dexamethasone promotes osteoclastogenesis by inhibiting osteoprotegerin through multiple levels. ***J Cell Biochem*** 103:335-345,2008
2. Kitaura H, Yoshimatsu M, Fujimura Y, Eguchi T, Kohara H, Yamaguchi A, Yoshida N: An anti-c-Fms antibody inhibits orthodontic tooth movement. ***J Dent Res*** 87:396-400,2008
3. Katsuki Y, Sakamoto K, Minamizato T, Umezawa A, Ikeda M, Perbal B, Amagasa T, Yamaguchi A, Katsube K: Dual role of CCN3/Notch signal in mouse osteogenic mesenchymal stem cells, Kusa. ***Biochem Bioph Res Commun*** 368:808-814,2008
4. Sakamoto K, Tamamura Y, Katsube K, Yamaguchi A: Zinc finger protein 64 participates in Notch signaling and regulates mesenchymal cell differentiation. ***J Cell Sci*** 121:1613-1623,2008
5. Kabasawa Y, Nagumo K, Takeda Y, Kawashima N, Okada N, Omura K, Yamaguchi A, Katsube KI.: Amelogenin positive cells scattered in the interstitial component of odontogenic fibromas. ***J Clin Pathol*** 61:851-855,2008
6. Ishikuro M, Sakamoto K, Kayamori K, Izumo T, Yamaguchi A: Role of fibrous stroma in bone invasion by gingival

squamous cell carcinomas. ***BONE*** 43:621-627,2008

7. Matsuda N, Katsube K, Mikami S, Katsuki Y, Iseki H, Mukai M, Yamaguchi A, Takano Y, Nakajima T, Nakajima H, Kishi K: E-cadherin expression in the subepithelial nevus cells of the giant congenital nevocellular nevi (GCNN) correlates with their migration ability in vitro. ***J Dermatol Sci*** 52:21-30, 2008
8. Matsubara T, Kida K, Yamaguchi A, Hata K, Ichida F, Meguro H, Aburatani H, Nishimura R, Yoneda T:BMP2 regulates Osterix through Msx2 and Runx2 during osteoblast differentiation. ***J Biol Chem*** 283:29119-29125, 2008
9. Yamaguchi A, Sakamoto K, Minamizato T, Katsube K, Nakanishi S: Regulation of osteoblast differentiation mediated by BMP, Notch, and CCN3/NOV. ***The Japanese Dental Science Review.*** 44:48-56,2008

Molecular Cellular Oncology and Microbiology

1. Staffs and Students (April 2008)

Associate Professor	Takuma NAKAJIMA
Junior Associate Professor	Kenji YAMATO
Assistant Professor	Noritaka KAGAYA
Graduate Student	Shinji ENDOH

2. Purpose of Education

Wide diversity of microbial residents in oral cavity including multiple sorts of pathogenic organisms shares the greatest population in our body. The oral cavity is also a major entrance for systemic pathogens such as bacteria and viruses and in addition, the surgical treatments of oral cavity can mediate the blood-transmitting infections. Concurretly, the major subjects for dentists including periodontal diseases and dental caries are caused by microbial infections. Resent research revealed that some oral infections contribute to triggering and deterioration of systemic disorders. Accordingly, dentists should be responsible for both patients and themselves to protect them from pathogenic infections. The education of Microbiology is, therefore the most essential subject for dentistry.

As a responsible department of education and research for basics of microbiology and host cell responses, all of our subjects are based on analyses of molecular cellular and biochemical mechanisms of the interaction between pathogen and host cell responses. The education for graduate students of our department is therefore giving knowledge for concrete approaches and techniques to elucidate both the molecular basics of the pathogenic mechanisms and the novel applications for treatment and/or diagnosis of infectious/oncogenic diseases. Our department participates in the education module "Infection and Immunity" for 3rd degree of undergraduate students of dentistry and share lectures and students' lab. to educate general pathogenic microbiology including oral microbiology.

3. Research Subjects

1) Functional analyses for novel cell detaching factor, Forsythia detaching factor (FDF) from Periodontopathic bacterium *Tannerella forsythia*
2) Analyses for regulatory mechanisms of cellular integrity through formative control of promyelocytic leukemia-nuclear bodies (PML-NBs)
3) Applied research of siRNA and DNA/RNA chimaera for treatment of malignant tumors and infectious diseases.
4) Mechanism of green tea catechin-induced apoptosis in oral cancer cells..
5) Research on the function of novel ERK2 binding proteins.

4. Publications

Original articles

1. Tomi N, Fukuyo Y, Arakawa S and Nakajima T. Pro-inflammatory cytokine production from normal human fibroblasts is induced by *Tannerella forsythia* detaching factor. *J Periodont Res*, **43**, 136-142, 2008.
2. Fukuyo Y, Inoue M, Nakajima T, Higashikubo R, Horikoshi NT, Hunt C, Usheva A, Freeman ML and Horikoshi N, Oxidative Stress Plays a Critical Role in Inactivating Mutant BRAF by Geldanamycin Derivatives, *Cancer Res*, **68**, 6324-6330, 2008
3. Yamato, K., Yamada, T., Kizaki, M., Ui-Tei, K., Natori, Y., Fujino, M., Nishihara, T., Ikeda, Y., Nasu, Y., Saigo, K., and Yoshinouchi, M. New highly potent and specific E6 and E7 siRNAs for treatment of HPV16-positive cervical cancer. *Cancer Gene Ther*. 15:140-153, 2008.
4. Ui-Tei, K., Naito, Y., Zenno, S., Nishi, K., Yamato, K., Takahashi, F., Juni, A. and Saigo, K. Functional dissection of siRNA sequence by systematic DNA substitution: short interfering DNA-RNA chimera with a DNA seed arm is a powerful tool for mammalian gene silencing with virtually no off-target effect. *Nucleic Acids Res*. 36: 2152-2162, 2008.
5. Isoda K, Kagaya N, Akamatsu S, Hayashi S, Tamesada M, Watanabe A, Kobayashi M, Tagawa Y, Kondoh M, Kawase M and Yagi K. Hepatoprotective effect of vitamin B12 on dimethylnitrosamine-induced liver injury. *Biol Pharm Bull*, 31(2): 309-311, 2008.
6. Zhang S, Mahalingam M, Tsuchida N. Naf1 is phosphorylated in M phase and required to protect cells against apoptosis. *Biochem. Biophys. Res. Commun,* 2008, Mar 7; 367(2):364-9.
7. Mahalingam M, Arvind R, Ida H, Murugan AK, Yamaguchi M and Tsuchida N. ERK2 CD domain mutation from a human cancer cell line enhanced anchorage-independent cell growth and abnormality in *Drosophila*. *Oncology Reports*,

2008 20: 957-962.

Molecular Immunology

1. Staffs and Students (April, 2008)

Professor	Miyuki AZUMA	
Assistant Professor	Masaaki HASHIGUCHI	
Adjunct instructor	Hiroshi KIYONO	Fumihiko TSUSHIMA
	Jinhua PIAO	
Graduate Student	Yosuke KAMIMURA	Hiroko KOBORI
	Narumon CHALERMSARP	Yujia CAO
	Takeshi KINEBUCHI	Oto ARAMAKI (Cariology and Operative Dentistry)
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) Immunoenhancing effects by phytochemicals

4. Publications

Original Article

1. Yang J, Poppla J, Khandwala S, Vadivel N, Vanguri V, Yuan X, Dada S, Guleria I, Tian C, Ansari MJ, Shin T, Yagita H, Azuma M, Sayegh MH, Chandraker A. Critical role of donor tissue expression of programmed death ligand-1 in regulating cardiac allograft rejection and vasculopathy. Circulation 117: 660-669, 2008
2. Ritprajak P, Hashiguchi M, Azuma M. Topical application of cream-emulsified CD86 siRNA ameliorates allergic skin disease by targeting cutaneous dendritic cells. Mol Ther 16:1323-1330, 2008
3. Igarashi H, Cao Y, Iwai H, Piao J, Kamimura Y, Hashiguchi M, Amagasa T. Azuma M. GITR ligand-costimulation activates effector and regulatory functions of $CD4^+$ T cells. Biochem Biophys Res Commun 369: 1134-1138, 2008
4. Matsumoto K, Fukuyama S, Eguchi-Tsuda M, Nakano T, Matsymoto T, Matsumura M, Moriwaki A, Kan-o K, Wada Y, Yagita H, Shin T, Pardoll DM, Patcharee R, Azuma M, Nakanishi Y, Inoue H. B7-DC induced by IL-13 works as a feedback regulator in the effector phase of allergic asthma. Biochem Biophys Res Commun 365: 170-175, 2008
5. Hashiguchi M, Kobori H, Ritprajak P, Kamimura Y, Kozono H, Azuma M. Trigerring receptor expressed on myeloid cell-like transcript 2 (TLT-2) is a counter-receptor for B7-H3 and enhances T cell responses. Proc. Nathl. Acad. Sci. USA 105:10495-10500, 2008
6. Okano M, Otsuki N, Azuma M, Fujiwara T, Kariya S, Sugata Y, Higaki T, Kino K, Tanimoto Y, Okubo K, Nishizaki K. Allergen-specific immunotherapy alters the expression of BTLA, a co-inhibitory molecule, in allergic rhinitis. Clin Exp Allergy 38: 1891-1900, 2008
7. Chang W-S, Kim J, Kim Y-J, Kim Y-S, Lee J-M, Azuma M, Yagita H, Kang C-Y. Cutting Edge: programmed death-1/programmed death ligand 1 interaction regulates the induction and maintenance of invariant NKT cell anergy. J. Immunol. 181: 6707-6710, 2008
8. Chalermsarp N, Azuma M. Identification of three distinct subsets of migrating dendritic cells from oral mucosa within the regional lymph nodes. Immunology (on line publication 2008 DOI: 10.1111/j.1365-2567.2008.03031.x)
9. Piao J, Kamimura Y, Iwai H, Cao Y, Kikuchi K, Hashiguchi M, Masunaga T, Jiang H, Tamura K, Sakaguchi S, Azuma M. Enhancement of T cell-mediated anti-tumor immunity via the ectopically expressed glucocroticoid-induced tumor necrosis factor receptor-related receptor ligand on tumors. Immunology (on line publication Dec 24 2008 DOI: 10.1111/j.1365-2567.2008.03036.x)

Oral Radiation Oncology

1. Staffs and Students (April 2008)

Professor	Masahiko MIURA
Tokunin Assistant Professor	Satoko AOKI, Shigehiro ABE, Yoko MORI
Graduate Students (Doctor)	Haruna KANEKO, Kaori IGARASHI, Mayuko Ishikawa
(Master)	Kazuma FUKUDA
Research Associate	Keisuke OHTA, Masahiro ISHIMA

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 opportunity 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) Signal transduction of insulin-like growth factor I (IGF-I) receptor
2) Tumor radiosensitization and antiangiogenic mechanism by sulfoglycolipids
3) Visualization of radioresponse by moleculr imaging
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. Mori, Y., Sahara, H., Matsumoto, K., Takahashi, N., Yamazaki, T., Ohta, K., Aoki, S., Miura, M., Sugawara, F., Sakaguchi, K., and Sato, N.: Downregulation of Tie2 by novel antitumor sulfolipid 3'-sulfoquinovosyl-1'-monoacylglycerol, targeting angiogenesis. ***Cancer Sci***. 99, 1053-1070 (2008).
2. Watanabe, H., Mogushi, K., Miura, M., Yoshimura, R., Kurabayashi, T., Shibuya, H., Tanaka, H., Noda, S., Iwakawa, M., Imai, T.: Prediction of lymphatic metastasis based on gene expression profile analysis after brachytherapy for early-stage oral tongue carcinoma. ***Radiother. Oncol.*** 87, 237-242 (2008).
3. Igarashi, K, Miura, M.: Inhibition of a radiation-induced senescence-like phenotype: a possible mechanism for potentially lethal damage repair in vascular endothelial cells. ***Radiat. Res***. 170, 534-539 (2008).
4. Yoshimura, RI, Shibuya, H, Miura, M, Watanabe, H, Ayukawa, F, Hayashi, K, Toda, K. Quality of life of oral cancer patients after low-dose-rate interstitial brachytherapy. ***Int. J. Radiat. Oncol. Biol. Phys.*** Published online Aug 1, (2008).
5. Abe, S, Yamaguchi, S, Watanabe, A, Hamada, K, Amagasa, T. Hard tissue regeneration capacity of apical pulp derived cells (APDCs) from human tooth with immature apex. ***Biochem. Biophys. Res. Comm. 371, 90-93 (2008).***

Oral and Maxillofacial Surgery

1. Staffs and Students (April, 2008)

Professor	Ken OMURA	
Junior Associate Professor	Hiroyuki HARADA, Yusuke NAKAJIMA	
Tokunin Junior Associate Professor	Daisuke ITO	
Assistant Professor	Minoru IKUTA,	Keiichi MORITA,
	Yuji KABASAWA,	Hiroaki SHIMAMOTO,
	Eriko MARUKAWA,	Hidetaka MIYAZAKI,
	Masaru SATO	
Graduate Student	Kathawut TACHASUTTIRUT,	
	Ayako NEGISHI,	Nami KOIDA,
	Hideaki HIRAI,	Yusuke HIGUCHI,
	Yuri KURIBAYASHI,	Chanwit PRAPINJUMRUNE,
	Yasuko HANABATA,	Atsushi UESUGI,
	Kenji INOMATA,	Kanako MATSUMOTO,
	Takuma KUGIMOTO,	Kiyoshi SATO,
	Yukinobu TAKAHASHI,	Mitsuhiro YOSHIMOTO

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 5000 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. Ariyoshi Y, Shimahara M, Omura K, Yamamoto E, Mizuki H, Chiba H, Imai Y, Fujita S, Shinohara M, Seto K :

Epidemiological study of malignant tumors in the oral and maxillofacial region: survey of member institutions of the Japanese Society of Oral and Maxillofacial Surgeons, 2002. Int J Clin Oncol 13(3):220-228, 2008.

2. Harada H, Omura K : Metastasis of oral cancer to the parotid node. Eur J Surg Oncol 2008, Nov 10 (Epub ahead of print).
3. Ida M, Yoshitake H, Okoch K, Tetsumura A, Ohbayashi N, Amagasa T, Omura K, Okada N, Kurabayashi T : An investigation of magnetic resonance imaging features in 14 patients with synovial chondromatosis of temporomandibular joint. Dentomaxillofac Radiol 37(3):213-219, 2008.
4. Iino G, Nishimura K, Omura K, Kasugai S : Effects of prostaglandin E1 application on rat incisal sockets. Int J Oral Maxillofac Implants 23(5):835-40, 2008.
5. Kabasawa Y, Nagumo K, Takeda Y, Kawasima N, Okada N, Omura K, Yamaguchi A, Katsube K : Amelogenin positive cells scattered in the interstitial odontogenic fibromas. J Clin Pathol 61(7):851-855, 2008.
6. Koida N, Ozaki T, Yamamoto H, Ono S, Koda T, Ando K, Okoshi R, Kamijo T, Omura K, Nakagawara A : Inhibitory role of Plk1 in the regulation of p73-dependent apoptosis through physical interaction and phosphorylation. J Biol Chem 283(13):8555-8563, 2008.
7. Kozaki K, Imoto I, Mogi S, Omura K, Inazawa J : Exploration of tumor-suppressive microRNAs silenced by DNA hypermethylation in oral cancer. Cancer Res 68(7):2094-2105, 2008.
8. Kuprash DV, Qin Z, Ito D, Grivennikov SI, Abe K, Drutskaya LN, Blankenstein T, Nedospasov SA : Ablation of TNF or lymphotoxin signaling and the frequency of spontaneous tumors in p53-deficient mice. Cancer Lett 268(1):70-75, 2008.
9. Momin MA, Okochi K, Watanabe H, Imaizumi A, Omura K, Amagasa T, Okada N, Ohbayashi N. Kurabayashi T : Diagnostic accuracy of cone-beam CT in the assessment of mandibular invasion of lower gingival carcinoma: Comparison with conventional panoramic radiography. Eur J Radiol. 2008 Jul 23 (Epub ahead of print).
10. Morita K, Iwasa T, Imaizumi F, Negishi A, Omura K : A case of maxillary duplication with a soft palate reconstruction using a forearm flap. Int J Oral Maxillofac Surg 37(9):862-5 2008.
11. Negishi A, Ono M, Handa Y, Kato H, Yamashita K, Honda K, Shitashige M, Satow R, Sakuma T, Kuwabara H, Omura K, Hirohashi S, Yamada T : Large-scale quantitative clinical proteomics by label-free liquid chromatography and mass spectrometry. Cancer Sci 2008, Dec 19 (Epub ahead of print).
12. Qi S, Mogi S, Tsuda H, Tanaka Y, Kozaki K, Imoto I, Inazawa J, Hasegawa S, Omura K : Expression of cIAP-1 correlates with nodal metastasis in squamous cell carcinoma of the tongue. Int J Oral Maxillofac Surg. 37(11): 1047-1053, 2008.
13. Satoh Y, Kabasawa Y, Omura K : Analysis of clinical usefulness of the heat flux technique: predictability of the recovery from neurosensory disturbances in the chin undergoing mandibular sagittal split ramus osteotomy. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 106(5):637-643, 2008.
14. Youngnak-Piboonratanakit P, Takahashi Y, Nakajima Y, Omura K : Acute angioedema and urticaria associated with herpes simplex infection?. Acta Stomatol Croat 42(1):64-71, 2008.

Oral and Maxillofacial Radiology

1. Staffs and Students (April, 2008)

Professor	Tohru KURABAYASHI	
Junior Associate Professor	Mizue IDA,	Naoto OHBAYASHI,
	Norio YOSHINO	
Assistant Professor	Akemi TETSUMURA,	Shin NAKAMURA,
	Hiroshi WATANABE,	Kiyoshi OKOCHI
Hospital Staff	Ami KURIBAYASHI,	Akiko IMAIZUMI
Secretary	Izumi MOTOHASHI	
Graduate Student	Mohammad Abdul MOMIN,	Mustafa Alkhader,
	Yoshikazu NOMURA	

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. Ida M, Yoshitake H, Okochi K, Tetsumura A, Ohbayashi N, Amagasa T, Omura K, Okada N, Kurabauyashi T. An investigation of magnetic resonance imaging features in 14 patients with synovial chondromatosis of the temporomandibular joint. Dentomaxillofac Radiol 37: 213-219, 2008.
2. Kuribayashi A, Okochi K, Kobayashi K, Kurabayashi T. MRI findings of temporomandibular joints with disk perforation. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 106: 419-425, 2008.
3. Okochi K, Ida M, Honda E, Kobayashi K, Kurabayashi T. MRI and clinical findings of posterior disk displacement in the temporomandibular joint. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 105: 644-648, 2008.
4. Watanabe H, Mogushi K, Miura M, Yoshimura R, Kurabayashi T, Shibuya H, Tanaka H, Noda S, Iwakawa M, Imai T. Prediction of lymphatic metastasis based on gene expression profile analysis after brachytherapy for early-stage oral tongue carcinoma. Radiother Oncol 87: 237-242, 2008.
5. Takahashi K, Uzawa N, Kosaka S, Yoshino N, Okada N, Amagasa T. Synchronous warthin tumors and lymphoepithelial cyst in the ipsilateral parotid gland. J Oral Maxillofac Surg 66: 1053-1056, 2008.
6. Mukai-Higashihori K, Baba Y, Tetsumura A, Tsuji M, Ishizaki T, Higashihori N, Ohbayashi N, Kurabayashi T, Suzuki S, Ohyama K. Ultrasonographic assessment of new bone formation in maxillary distraction osteogenesis. J Oral Maxillofac Surg 66: 1750-1753, 2008.
7. Sato-Wakabayashi M, Inoue-Arai MS, Ono T, Honda E, Kurabayashi T, Moriyama K. Combined fMRI and MRI movie in the evaluation of articulation in subjects with and without cleft lip and palate. Cleft Palate Craniofacial J 45: 309-314, 2008.
8. Takada J, Ono T, Takahashi S, Honda E, Kurabayashi T. Changes in horizontal jaw position and intraoral pressure.

Angle Orthod 78: 254-261, 2008.
9. Yamada I, Okabe S, Enomoto M, Sugihara K, Yoshino N, Tetsumura A, Kumagai J, Shibuya H. Colorectal carcinoma: in vitro evaluation with high-spatial-resolution 3D constructive interference in steady-state MR imaging. Radiology 246: 444-453, 2008.

Anesthesiology and Clinical physiology

1. Staffs and Students (April, 2008)

Professor	Mashiro UMINO	
Associate Professor	Hikaru KOHASE	
Junior Associate Professor	Shigeharu JINNO	
Assistant Professor	Fumihiro YOSHIKAWA ,	Tomoyuki MIYAMOTO,
	Ryo WAKITA	
Hospital Staff	Yuhko IKUSAWA,	Kae SHIMOMACHI,
	Aya YOSHINO,	Yuka OHNO,
	Saori OHGAMI,	Keiko OGATA,
	Hitomi KUNIMORI,	Youhei FUKUMORI,
	Tatsuo SANADA,	Shizuka HAYASHI,
	Tomoka Mastumura	
Secretary	Kanae TANIMURA	
Graduate Student	Kenzou MAKINO,	Kiyoshi KAMIYA,
	Yukiko BABA,	Haruka HAIDA○
Research Student	Toshio MASUDA,	Yoko SHIRAISHI,
	Katsunori MOTOHASHI,	Nobuyuki KONDOU,
	Yoko IKEDA,	Hiromi IZUMIKAWA,
	Wakako SUMIMOTO,	Kunio AISAKI

2. Purpose of Education

Main objective of Anesthesiology and Clinical Physiology in the graduate course is to provide students inevitable knowledge and skills of general and local anesthesia, management of medically complicated patients in dental clinical setting and oro-facial pain treatment. The subjects including general anesthesia local dental anesthesia, sedation methods, CPR training are scheduled in the 5th grade students. The Students can learn respiratory and cardiovascular physiology , nature of genera anesthetics ,local anesthetics, intravenous anesthetics, muscle reluctant agents. As Psyco- sedation was frequently used in dental clinical setting, the students can learn and acquire the theory and technical aspects of sedation. The students can learn the pharmacological and complicated aspects of local anesthetic s and practice how to handle the local anesthesia including the conduction block and infiltration anesthesia in oral region. The students can learn the theory of CPR and AHA CPR guidelines, and practice and acquire the BLS,ACLS sequence.

3. Research Subjects

1) Develop of non-invasive drug delivery system
2) Elucidation of relationships between noxious stimulation and autonomic nervous systems
3) Elucidation of cause of neuropathic pain and develop of its' treatments
4) Elucidation of mechanism of diffuse noxious inhibitory controlls
5) Clinical research of psyco-sedation and systemic management in dental clinical setting.

4. Clinical Services

Anesthesiology and clinical physiology provide general anesthesia and sedation for oral maxillofacial surgery, managements of medically complicated patients with psyco-sedation, daycare general anesthesia for handicapped patients, emergency treatment in dental hospital, and non invasive local anesthesia.

5. Publications

Original Article

1. Iijima T, Tanaka K, Matsubara S, Kawakami H, Mishima T, Suga K, Akagawa K and Iwao K, Calcium loading capacity and morphological changes in mitochondria in an ischemic preconditioned model Neurosci Lett 2008, 31;448(3):268-72.
2. Keiko Fujii-Abe, Mami Sasao, Haruhisa Fukayama : General anesthesia for a patient with deletion 6q syndrome in addition to laryngomalacia undergoing dental treatment. Journal of Oral Science 2008,50(4),493-495
3. Nakatani Y., Sato-Suzuki I., Tsujino N., Nakasato A., Seki Y., Fumoto M., Arita H. Augmented brain 5-HT crosses

the blood-brain barrier through the 5-HT transporter in rat.European Journal of Neuroscience 2008:27:2466-2472.
4. Nakasato A., Nakatani Y., Seki Y., Tsujino N., Umino M., Arita H. Swim stress exaggerates the hyperactive mesocortical dopamine system in a rodent model of autism. Brain Research 2008:1193:128-135.
5. RYO WAKITA , SAORI OOGAMI, SHIZUKA HAYASHI, MASAHIRO UMINO. The Relation between Epinephrine Concentration and the Anesthetic Effect of Lidocaine Iontophoresis Pain Practice. 2009;9:p 115-21.
6. Satoh Y, Kabasawa Y, Jinno S, Omura K. Analysis of clinical usefulness of the heat flux technique: predictability of the recovery from neurosensory disturbances in the chin undergoing mandibular sagittal split ramus osteotomy. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2008;106:637-43
7. T Matsumura, A Sakai, M Nagano, M Sawada, H Suzuki, M Umino and H Suzuki. Increase in hemokinin-1 mRNA in the spinal cord during the early phase of a neuropathic pain state. British Journal of Pharmacology 2008;155:767–774.
8. Tateno K, Inoue K, Sato T, Fukayama H. Differences in the degree of infiltration of local anesthesia according to the site of injection in rats. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2008, 106, e6-e10.
9. Tanaka K, Iijima T, Mishima T, Suga K, Akagawa K, Iwao Y. Ca2+ buffering capacity of mitochondria after oxygen-glucose deprivation in hippocampal neurons Neurochemical Research 2008, 34(2):221-6.

Review Article

Book

Orofacial Pain Management

1. Staffs and Students (April, 2008)

Professor	Masahiko SHIMADA	
Assistant Professor	Yoko YAMAZAKI	
Hospital Staff	Tomoko TAKAHASHI	Yuko ANDOH
Graduate Student	Daisuke TOMIZAWA	

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

1. Kohjitani, A. Egusa, M. Shimada, M. Miyawaki, T. Accumulated oropharyngeal water increases coughing during dental treatment with intravenous sedation. Journal of Oral Rehabilitation, 35:203-208, 2008
2. Kohjitani, A. Higuchi, H. Shimada, M. Miyawaki T. Oral midazolam for sedation in minor oral operation in children : A retrospectivestudy British Journal of Oral and Maxillofacial Surgery. 46(4):330-331, 2008
3. Maeda,S. Nakatsuka,I. Hayashi, Y. Higuchi,H. Shimada, M. Miyawaki T. Heme oxygenase-1 induction in the brain during lipopolysaccharide-induced acute inflammation. Neuropsychiatr Dis Treat. 4: 663-667, 2008
4. Yoshitomi, T. Kohjitani, A. Maeda, S. Higuchi,H. Shimada, M. Miyawaki T. Dexmedetomidine Enhances the Local Anesthetic Action of Lidocaine via an -2A Adrenoceptor. Anesth Analg. 107: 96-101, 2008
5. Maeda, S. Miyawaki, T. Higuchi, H. Shimada, M. Effect of flumazenil on disturbance of equilibrium function induced by midazolam. Anesth Prog. 55(3):73-77, 2008
6. Yamazaki Y, Ren K, Shimada M, Iwata K. Modulation of paratrigeminal nociceptive neurons following temporomandibular joint inflammation in rats. Exp Neurol 214(2): 209-218, 2008.
7. Hayashi, S. Ogami, S. Shibaji, T. Umino, M. Lidocaine transport through a cellophane membrane by alternating current iontophoresis with a duty cycle. Bioelectrochemistry, 74(2):315-322. 2008

Diagnostic Oral Pathology

1. Staffs and Students (Apr. 2008)

Associate Professor	Norihiko OKADA	
Hospital Staff	Mai NISIOKA	Yuuichi YAMADA
	Kiyoko NAGUMO	Kana IIDA
	Hiroe Kobayasi	Akino INOUE
	Eriko KANAMORI	
Graduate Student	Shigeo KAWAI	

2. Purpose of Education:

Diagnostic Oral Pathology is functioning as a central clinical laboratory for clinical examination in the dental hospital, which deals with hematological, biochemical, bacteriological, pathological sampls, and human blood for autologustransfusion. The purpose of education is teaching the undergraduate students in the dental school the clinicopathological, pathological problems and techniques for diagnoses. Main objects of education to the graduate students in the diagnostic oral pathlogy are provide them opportunies to study advanced diagnostic skills for their studies. For example,immunohistochemical, and electronmicroscopic techniques for pathological research, hematology, and immunology are also involved. Another purpose of education is training young pathologaical doctors to get enough skills to make a diagnosis of the many biopsy cases and operation materials.

3. Research Sujects:

1. Clinicopathological and pathological studies of the neoplasms in the oro-facial regions.
2. Clinico-bacteriological analyses of the infectious disease in the orofacial regions.
3. Immunological and pathological studies of the various oral mucous membrane diseases.

4. Clinical Services:

Dignostic Oral Pathology provides the results of hematological (43,620 items in 2008), biochemical and immnochemical (206,833 items in 2008), and pathological examinations (2,433 samples in 2008) clinically, and these results of the examinations may contribute to medical and dental treatments for the patients.

5. Publications:

Original Article

1. M.Ida, H.Yositake, K.Okochi, A.Tetsumura, N.Obayasi, T.Amagasa, K.Omura, N.Okada and T.Kurabayasi: An investigation of magnetic resonance imaging features in 14 patients with synovial chondromatosis of the temporomandibular joint. Dentomaxillofacial Radiology. 37:213-219, 2008.

Case Report

1. K.Takahasi, N.Uzawa, S.Kosaka N.Yosino, N.Okada and T.Amagasa :Synchronous Warthin Tumors and Lymphoepithelial Cyst in the Ipsilateral Parotid Gland. J Oral Maxillofac Surg. 66:1053-1056,2008.

Developmental Oral Health Sciences

1. Staffs and Students (April, 2008)

Professor	Yuzo TAKAGI	
Junior Associate Professor	Yoshiaki ONO,	Zenzo MIWA
Assistant Professor	Yoshiaki HASHIMOTO,	Michiyo MIYASHIN,
	Haruko FUJITA,	Mizuho MOTEGI
Hospital Staff	Orie ITO,	Jyunko TSUKAMOTO,
	Naho ISHIBASHI,	Kyoko KIKUCHI,
	Satoko KAKINO	
Secretary	Toshiko HIROSE	
Graduate Student	Yukiko SHINDO,	Sriarj WANTIDA,
	Naoto YANO,	Yuki IMAMURA,
	Kanae WADA,	Mohammad Naser AHAMMED,
	Yuriko IWABUCHI,	Akira OHIRA,
	Naoko UEHARA,	Sun MEINA,
	Isidro Sharon YAMBAO,	Natsumi TSUCHIHASHI,
	Yukie NAKAJIMA	

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. Kakino S, Takagi Y, Takatani S. Absolute transmitted light plethysmography for assessment of dental pulp vitality

through quantification of pulp chamber hematocrit by three-layer model. J Biomed Opt. 13(5):054023-1-18, 2008.
2. Kumada M, Senpuku H, Motegi M, Nakao R, Yonezawa H, Yamamura H, Watanabe H, Tagami J. Effects of *Enterococcus faecium on Streptococcus mutans* biofilm formation using flow cell system. J Oral Biosci. 50(1):68-76, 2008.
3. Ma Nyunt Nyunt, Miyashin M, Yamashita Y, Takagi Y. Penetration of resin into experimentally formed infractions in porcrine tooth crowns. Pediatric Dental J. 18(2):86-101, 2008.
4. Yokoyama E, Kakino S, Matsuura Y. Raman imaging of carious lesions using a hollow optical fiber probe. Appl Opt. 47(23): 4227-4230, 2008.
5. Yonezawa H, Kuramitsu HK, Nakayama S, Mitobe J, Motegi M, Nakao R, Watanabe H, Senpuku H. Differential expression of the Smb bacteriocin in *Streptococcus mutans* isolates. Antimicrob Agents Chemother. 52(8):2742-9. 2008.

Orthodontic Science

1. Staffs and Students

Professor	Kunimichi Soma (-March)	
Associate Professor	Masataka Hisano (-March)	
Junior Associate Professor	Yoshiro Matsumoto,	Eiji Fukuyama,
	Zuisei Kanno (April-)	
Assistant Professor	Zuisei Kanno (-April),	Sawa Kaneko,
	Mariko Horiuchi,	Tadachika Yabusita,
	Jun Hosomichi,	Ippei Watari (April-)
Graduate Student	Yuji Ishida (-March),	Miho Ozaki (-March),
	Maki Takei(-March),	Hu Fang-Wei (-March),
	Termsuknirandorn Saewadee (-March),	
	Changsiripun Chidsanu,	Takayoshi Ishida,
	Hiroko Ohmori,	Naoki Shibutani,
	Wattanachai Tanapan,	Jung Hang Sul,
	Rina Katayama,	Emi Sakou,
	Mai Shibata,	Abbassy Mona Aly Abd-Ellatif,
	Koji Honda,	Yukiko Kuroda,
	Satomi Naitou,	Yasuhiro Shimizu,
	Yumi Arai (April-),	Risa Usumi (April-),
	Chiho Katou (April-),	Ikuko Kure (April-),
	Maya Hiranuma (April-),	Mariko Mizumachi (April-)

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.

1. Chung C. J., Soma K., Rittling S. R., Denhardt D. T., Hayata T., Nakashima K., Ezura Y., Noda M.: OPN Deficiency Suppresses Appearanc of Odontoclastic Cells and Resorption of the Tooth Root Induced by Experimental Force Application. Journal of Cellular Physiology 214(3):614-620, 2008.
2. Ono N., Nakashima K., Rittling S. R., Schipani E., Hayata T., Ezura Y., Soma K., Denhardt D. T., Kronenberg H. M., Noda M.: Osteopontin Negatively Regulates Parathyroid Hormone Receptor Signaling in Osteoblasts. The Journal of Biological Chemistry 283(28):19400-19409, 2008.
3. Suzaki Y., Matsumoto Y., Kanno Z., Soma K.: Pre-application of Orthodontic Forces to the Donor Teeth Affects Tooth Transplantation Prognosis. The Angle Orthodontist 78(3):495-501, 2008.
4. Termsuknirandorn S., Hosomichi J., Soma K.: Influences of Occlusal Stimuli on the Expression of IGF-1 and IGF-1 Receptor in the Rat Periodontal Ligament. The Angle Orthodontist 78(4):610-616, 2008.
5. Ozaki M., Kaneko S., Soma K.: Masseter Muscular Weakness Affects Temporomandibular Synovitis Induced by Jaw Opening in Growing Rats. The Angle Orthodontist 78(5):819-825, 2008.
6. Ishida Y., Kanno Z., Soma K.: Occlusal Hypofunction Induces Atrophic Changes in Rat Gingiva. The Angle Orthodontist 78(6):1015-1022, 2008.
7. Liu C., Kaneko S., Soma K.: Expression of Integrin alpha5 beta1, Focal Adhesion Kinase and Integrion-linked Kinase in Rat Condylar Cartilage during Mandibular Lateral Displacement. Arcives of Oral Biology 53(8):701-708, 2008.
8. Abbassy M. A,. Watari I,. Soma K.: Effect of Experimental Diabetes on Craniofacial Growth in Rats. Archives of Oral Biology 53(9):819-825, 2008.
9. Suzuki B,. Hisano M., Soma K.: A Three-Dimensional Finite Element Analysis of the Effect of Vertical Mandiular Asymmetry on the Biomechanical Changes in the Temporomandibular Joint. Journal of Orofacial Pain 2008.
10. Horiuchi Y., Horiuchi M., Soma K: Treatment of Severe Class II Division 1 Deep Overbite Malocclusion Without Extractions in an Adult. American Journal of Orthodontics & Dentofacial Orthopedics 133(4):121-129, 2008.
11. Yagi S., Fukuyama E., Soma K.: Involvement of Periodontal Sensory Input in Deglutitive Tongue Function. Dysphagia 23(3):221-229, 2008.
12. Wada H., Hosomichi J., Simomoto Y., Soma K.: Influence of Occlusal Hypofunction on the Mechanical Properties of Rat Alveolar Bone. Orthodontic Waves 67(1):9-14, 2008.
13. Takei M., Yonemitsu I., Watari I., Muramoto T., Soma K.: Influence of Liquid Diet Feeding on Calcitonin Gene-related Peptide-like Immunoreactive Nerve Fibers in Rat Temporomandiular Joints during Growth Period. Orthodontic Waves 67(1):15-22, 2008.
14. Okayama A., Horiuchi M., Soma K.: Association between Jaw Fatigue and Occlusion. Orthodontic Waves 67(1):167-170, 2008.
15. Hu F. W., Hosomichi J., Kanno Z., Soma K.: The Influence of Occlusal Stimuli on basic Fibroblast Growth Factor Expression in the Periodontal Healing of Replanted Teeth. Journal of Medical and Dental Science 55(1):129-135, 2008.

Cariology and Operative Dentistry

1. Staffs and Students (April, 2008)

Professor	Junji Tagami	
Associate Professor	Masayuki Otsuki	
Junior Associate Professor	Toru Nikaido,	Masatoshi Nakajima
Assistant Professor	Takako Yoshikawa,	Yasushi Shimada,
	Yuichi Kitasako,	Ryuzo Kishikawa,
	Nanako Iwamoto,	Go Inoue,
	Eitetsu Cho	
Tokunin Assistant Professor	Khairul Matin	
Hospital Staff	Keiichi Hosaka,	Tomohiro Takagaki,
	Meu Ariyoshi,	Takehiro Takaoka
Technical assistant	Alireza Sadr,	Maan M Nayif
Secretary	Shiori Ogi,	Tomoko Okura
Foreign Researcher	Yi-Ling Tsai	
Graduate Student	Hiroko Aiuchi,	Anjum Atia,
	Bakry Ahmed Samir Ibarahim,	Leila Daneshmehr,
	Yasuhiro Iida,	Ichiro Ikeda,
	Shuuzou Kitayama,	Mariko Naitou,
	Keiko Nakata,	Shinichirou Ogisu,
	Yuuji Suyama,	Kenichi Tajima,
	Gen Taniguchi,	Peththahandi Gayani Kanchana Waidyasekera,
	Shenghua Wei,	Ayako Arimoto,
	Shima Ito,	Miho Nishimura,
	Yushiko Kondo,	Masako Okuma,
	Kanako Shida,	Lei Zhu,
	Kanako Aoki,	Oto Aramaki,
	Mie Fujii,	Fahimeh Hayati,
	Kanako Horie,	Chiaki Ichikawa,
	Ayaka Kishi,	Fumihiko Mori,
	Keizo Tanno,	Tomoyuki Takai,
	Patricia Makishi,	Naoko Seki,
	Yuko Shinoda,	Rena Takahashi,
	Masahiro Takahashi,	Ryoichirou Uchida,
	Hidenori Hanba,	Keisuke Kanbara,
	Sitthikorn Kunawarote,	Takehiro Oyangai,
	Miyuki Tanaka,	Eri Tano,
	Mako Tsubone,	Wongyon Min,
	Yuko Natsume,	Chika Yahagi
Research Student	Shinji Ogura,	Mineo Kijima,
	Yuka Takano,	Kaoruko Tanaka,
	Toshiaki Hirano,	Shigeyuki Nagai,
	Tomomasa Nomura,	Hiroshi Sato,
	Hiroyuki Takanashi,	Yumiko Fujita
Intern	Takako Ide,	Tomoko Mizutani,
	Rena Maruoka,	Mariko Ui,
	Masahiro Ono,	Ayano Ishikawa

2. Purpose of Education

The 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
Pulpal response to restorative materials
Improvement of various restorative techniques for direct and indirect restorations
Improvent of various esthetic treatment techniques
Caries risk assessment and prevention of recurrent caries

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 Article

1. Aiuchi H, Kitasako Y, Fukuda Y, Nkashima S, Burrow MF, Tagami J. Relationship between quantitative assessments of salivary buffering capacity and ion activity product for hydroxyapatite in relation to cariogenic potential. Australian Dental Journal 53(2): 167-171, 2008.
2. Aksornmuang J, Nakajima M, Foxton RM, Panyayong W, Tagami J. Regional bond strength and failure analysis of fiber post bonded to root canal dentin. Oper Dent 33(6): 636-643, 2008.
3. Anjum A, Matin K, Uchida R, Tagami J. Influence of Aging on Direct Resin Composite Repair Bond. International Chinese Journal of Dentistry 8: 53-61, 2008.
4. Ariyoshi M, Nikaido T, Foxton RM, Tagami J. Microtensile bond strengths of composite cores to pulpal floor dentin with resin coating Dent Mater J 27(3):400-7. 2008.
5. Ariyoshi M, Nikaido T, Okada A, Foxton RM, Tagami J. Dentin bond strengths of three adhesive / composite core systems using different curing units. Dent Mater J. 27(2):187-94. 2008.
6. Burrow MF, Kitasako Y, Thomas CD, Tagami J. Comparison of enamel and dentin microshear bond strengths of a two-step self-etchoing priming system with five all-in-one system. Operative Dentistry 33(4): 456-460, 2008.
7. Daneshmehr L, Matin K, Nikaido T, Tagami J. Effects of root dentin surface coating with all-in-one adhesive materials on biofilm adherence. J Dent 36(1): 33-41, 2008.
8. de Carvalho RC. de Freitas PM. Otsuki M. de Eduardo CP. Tagami J. Micro-shear bond strength of Er:YAG-laser-treated dentin. Lasers in Medical Science. 23(2):117-24, 2008.
9. dos Santos Daroz CB, Oliveira MT, de Góes MF, Nikaido T, Tagami J, Giannini M. Bond strength of a resin cement to dentin using the resin coating technique. Braz Oral Res 22(3): 198-204, 2008.
10. Gyo M, Nikaido T, Okada K, Yamauchi J, Tagami J, Matin K. Surface Response of Fluorine-polymer Incorporated Resin Composites to Cariogenic Biofilm Adherence. Appl Environ Microbiol 74(5):1428-1435, 2008.
11. He Z, Shimada Y, Sadr A, Ikeda M, Tagami J. The effects of cavity size and filling method on the bonding to Class I cavities. The Journal of Adhesive Dentistry10(6): 447-453, 2008.
12. Kitasako Y, Burrow MF, Stacey M, Huq L, Reynolds EC, Tagami J. Comparative analysis of three commercial saliva testing kits with a standard saliva buffering test. Australian Dental Journal 53(2): 140-144, 2008.
13. Kitasako Y, Ikeda M, Tagami J. Pulpal responses to bacterial contamination following dentin bridging beneath hard-setting calciu, hydroxide and self-etching adhesive resin system. Dental Traumatology 24(2): 201-206, 2008.

14. Kitasako Y, Ikeda M, Burrow MF, Tagami J. A technique using resin composite with orthodontic wire to replace a missing tooth rapidly. Dental Traumatology 24(1): 127-130, 2008.
15. Jaberi Ansari Z, Sadr A, Moezizadeh M, Aminian R, Ghasemi A, Shimada Y, Tagami J, Jaberi Ansari S, Moayedi S. Effects of one-year storage in water on bond strength of self-etching adhesives to enamel and dentin. Dental Materials Journal 27(2): 266-272, 2008.
16. Nayif MM, Nakajima M, Foxton RM, Tagami J. Bond strength and ultimate tensile strength of resin composite bonded into dentine cavity; Effect of bulk and incremental technique. J Dent 36(3): 228-234, 2008.
17. Nayif MM, Nakajima M, Aksornmuang J, Ikeda M, Tagami J. Effect of adhesion to the cavity walls on the mechanical properties of resin composites. Dent Mater 24(1): 83-89, 2008.
18. Nikaido T, Kitasako Y, Burrow MF, Umino A, Maruoka R, Ikeda M, Tagami J. Effect of resin coating on dentin bond durability of a resin cement over 1 year. Am J Dent 21(1): 64-68, 2008.
19. Nishimoto Y. Otsuki M. Yamauti M. Eguchi T. Sato Y. Foxton RM. Tagami J. Effect of pulse duration of Er: YAG laser on dentin ablation. Dental Materials Journal 27(3):433-9, 2008.
20. Okada A, Nikaido T, Ikeda M, Okada K, Yamauchi J, Foxton RM, Sawada H, Tagami J, Matin K. Inhibition of biofilm formation using newly developed coating materials with self-cleaning properties. Dent Mater J 27(4): 565-572, 2008.
21. Senawongse P. Otsuki M. Tagami J. Mjor IA. Morphological characterization and permeability of attrited human dentine. Archives of Oral Biology 53(1):14-9, 2008.
22. Torkabadi S, Nakajima M, Ikeda M, Foxton RM, Tagami J. Bonding durability of HEMA-free and HEMA-containing one-step adhesives to dentine surrounded by bonded enamel. J Dent 36(1): 80-86, 2008.
23. Takanashi E, Kishikawa R, Ikeda M, Inai N, Masayuki Otsuki M, Foxton RM, Tagami J. Influence of Abrasive Particle Size on Surface Properties of Flowable Composites. Dental Materials Journal 27(6): 780－786, 2008.
24. Wei S, Sadr A, Shimada Y, Tagami J. Effects of caries-affected dentin hardness on the shear bond strength of current adhesives. The Journal of Adhesive Dentistry 10(6): 431-440, 2008.
25. Yuan Y, Shimada Y, Ichinose S, Tagami J. Hybridization quality in cervical cementum and superficial dentin using current adhesives. Dental Materials 24(5): 584-593, 2008.

Fixed Prosthodontics

1. Staffs and Students(April, 2008)

Professor	Hiroyuki MIURA	
Associate Professor	Keiichi YOSHIDA	
Assistant Professor	Hideya HAMANO,	Daizo OKADA,
	Ayako TOKUDA,	Wataru KOMADA,
	Chiharu SHIN,	Munenaga MIYASAKA,
	Kosuke NOZAKI,	Asano KAWAZU
Hospital Staff	Masaya YOSHIMINE,	Masaki OKINO,
	Miho HASHIMOTO,	Nao NISHIDA,
	Muneari MIYASAKA	
Secretary	Yoshiko UCHIDA	
Graduate Student	Shiho OTAKE,	Haruo OKAYASU,
	Kumiko KAWASHIMA,	Yuko KIZUKI,
	Yuji FUKUI,	Emi NISHIJIMA,
	Chalida NAKALEKHA,	Koichiro YUSA,
	Kenichi Goshima,	Haruomi ABE,
	Jinbao MA,	Reiko OGURA,
	Naosuke KUMAGAE	

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 occlusal contact on stomatognathic system including periodontal tissues. (Tooth displacement, distortion of alveolar bone, occlusal contact, proximal contact etc.)
3) Clinical application of All-Ceramic CAD/CAM FPDs.
4) Influence of occlusal height for an important prosthesis on the periodontal tissues of the antagonist.
5) Application of laser welding in crown and bridge restorations.
6) Influence of dental materials for periodontal tissues and biological body.
7) 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) Nagatomi H, Yoshimine M, Miura H, Tanaka Y, Arai I: Multivariate analysis of the mechanical properties of boluses during mastication with the normal dentitions. J med dent sci 55: 197-206, 2008.
2) Okada D, Miura H, Suzuki C, Komada W, Shin C Yamamoto M, Masuoka D: Stress Distribution in Root Restored with Different Kinds of Post Systems with Composite Resin. Dent Mater J 27: 605-611, 2008.
3) Suzuki C, Miura H, Okada D, Komada W: Investigation of Stress Distribution in Roots Restored with Different Crown Materials and Luting Agents. Dent Mater J 27(2): 229-236, 2008.
4) Suzuki C, Miura H, Okada D, Komada W, Miyasaka M, Yamamoto M, Masuoka D: The Investigation of Distortions around the Cervical Area of Teeth Restored with Two Kinds of Crown Materials. Dent Mater J (in press).
5) Yoshimine M, Nagatomi H, Miura H, Tanaka Y, Arai I: Analysis of the mechanical properties of food bolus masticated by denture wearers. J med dent sci 55: 227-246, 2008.

Pulp Biology and Endodontics

1. Staffs and Students (April 2008)

Professor	Hideaki SUDA	
Associate Professor	Chihiro KOBAYASHI,	Mitsuhiro SUNAKAWA
Junior Associate Professor	Atsushi TAKEDA,	Hideharu IKEDA
Assistant Professor	Arata EBIHARA,	Nobuyuki KAWASHIMA,
	Hiroyuki MATSUMOTO,	Takatomo YOSHIOKA,
	Reiko WADACHI,	Noriyuki SUZUKI
Hospital Staff	Tomoatsu KANEKO,	Izumi KIKUCHI,
	Hitomi ISHIMURA,	Satomi TAKAHASHI,
	Yohsuke HAYASHI,	Hidetoshi SAEGUSA
Graduate Student	Takahiro HANADA,	Sachio YAHATA,
	Satoshi WATANABE,	Carlos Gabriel ADORNO-QUEVEDO,
	Jing XU,	Jun KAWAMURA,
	Yu KOIZUMI,	Chizuko KOKUZAWA,
	Hitoshi SAKAUE,	Toshihiko YOSHIOKA,
	Bolortuya GOMBO,	Uraiwan CHOKECHANACHAISAKUL

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 popularize new principles and techniques on endodontics among general dental practitioners and endodontic specialists.

3. Research Subjects

1) Defense systems in the dental pulp tissues
2) Elucidation of periapical pathosis and regulation of periapical bone destruction
3) Developmental mechanisms of dentin/pulp complex and horizon of its regeneration
4) A study on the root canal irrigation
5) A study on the development of the new apex locator
6) A study on the strain of the root canal dentin
7) The application of medicine to endodontics
8) The safety control in dentistry
9) Application of laser to endodontics
10) Electrophysiological approach to enamel, dentinal tubules and odontoblasts
11) Neuro-scientific research for the toothache
12) Logistic regression equation to screen for vertical root fractures using cone-beam CT (3DX)
13) Global Center of Excellence (GCOE) Program
"International Research Center for Molecular Science in Tooth and Bone 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 amazing 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 Article

1) Kawamura-Hagiya Y, Yoshioka T, Suda H. Logistic regression equation to screen for vertical root fractures using periapical radiographs. Dentomaxillofacial Radiology 37(1): 28-33, 2008.
2) Kaneko T, Okiji T, Kaneko R, Suda H. Characteristics of resident dendritic cells in different regions of the rat periodontal ligament. Cell and Tissue Research 331(2): 413-421, 2008.
3) Kaneko T, Okiji T, Zhao L, Esgeurra R, Suda H. Heterogeneity of dendritic cells in rat apical periodontitis. Cell and Tissue Research 331(3): 617-623, 2008.
4) Kaneko T, Okiji T, Kaneko R, Nor JE, Suda H. Antigen presenting cells in radicular granulomas. Journal of Dental Research 87(6): 553-557, 2008.
5) Cordeiro M, Dong Z, Kaneko T, Zhang Z, Miyazawa M, Songtao S, Smith AJ. Dental pulp tissue engineering with stem cells from exfoliated deciduous. Journal of Endodontics 34(8): 962-969, 2008.
6) Kabasawa Y, Nagumo K, Takeda Y, Kawashima N, Okada N, Omura K, Yamaguchi A, Katsube K. Amelogenin positive cells scattered in the interstitial component of odontogenic fibromas. Journal of Clinical Pathology 61: 851-855, 2008.
7) Sasaki H, Suzuki N, Kent R, Kawashima N, Takeda J, Stashenko P. T cell response mediated by myeloid cell-derived IL-12 is responsible for *Porphyromonas gingivalis*-induced periodontitis in IL-10-deficient mice. Journal of Immunology 180: 6193-6198, 2008.
8) Leshem O, Kashino S, Goncalves R, Suzuki N, Onodera M, Fujimura A, Sasaki H, Stashenko P, Campos-Neto A. Th1 biased response to a novel *Porphyromonas gingivalis* protein aggravates bone resorption caused by this oral pathogen. Microbes and Infection 10: 664-672, 2008.

Book

1) Kawashima N, Suda H. Immunopathological aspects of pulpal and periapical inflammations. In: Essential Endodontology - Prevention and Trearment of Apical Periodontitis. 2nd ed., Blackwell Munksgaard, p44-80, 2008.

Advanced Biomaterials

1. Staffs and Students (April, 2008)

Associate Professor	Hidekazu TAKAHASHI
Assistant Professor	Hideo NAKAMURA
Research Associate	Naohiko IWASAKI
Graduate Student	Reza FAZAL
Research Student	Mitsufumi AKAKURA
Research Student	Ken-ichi BABASONO

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 is to achieve high quality of dental practice with well-understanding dental material and devices.

The aim for undergraduate 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.

The main program for graduate sutudent is composed of the lecture and laboratory instructions for understanding physical and chemical properties of new materials and technology for dental use. Recent researches in our department will be also introduced.

3. Research subjects:

1. Development research of fatigue properties of dental materials using miniature testing pieces of dental materials.
2. Effect of immersion condition on mechanical properties of teeth substance.
3. Measurement of characteristics of human teeth using a new measuring techniques.
4. Study of precise dental casting using quick heating method.
5. Development research of new gypsum investment for high melting alloy.
6. Evaluation of physical properties of dental gold alloy casting.
7. Corrosion behavior of dental gallium alloy.
8. Bonding behavior of dental ceramic to dental alloy casting, especially titanium casting.
9. Shelf life of dental materials.

4. Publications

Original Articles

1. Tokunaga R, Takahashi H, Iwasaki N, Kobayashi M, Tonami K, Kurosaki N. Effect of polymorphism of SiO2 addition on mechanical properties of feldspathic porcelains. Dent Mater J 2008; 27(3): 347-355.
2. Finger WJ, Kurokawa R, Takahashi H, Komatsu M. Sulcus reproduction with elastomeric impression materials: A new in vitro testing method. Dent Mater 2008. 24(10): 1655-1660.
3. Imamura S, Takahashi H, Hayakawa I, Loyaga-Rendon PG, Minakuchi S. Effect of filler type and polishing on the discoloration of composite resin artificial teeth. Dent Mater J 2008; 27(6): 802-808

Organic Biomaterials

1. Staffs and Students (April, 2008)

Professor	Kazunari AKIYOSHI	
Associate Professor	Yoshihiro SASAKI	
Assistant Professor	Akihiko WATANABE, Nobuyuki MORIMOTO, Shinichi SAWADA	
Research stuff	Wakiko ASAYAMA	
Secretary	Nanae NISHI	
Graduate Student	Yayoi OZAWA,	Setsuko YAMANE,
	Tai HIRAKURA,	Yuki MORITANI,
	Sayaka TOITA,	Koki KAMIYA,
	Kozue EBIHARA,	Asako SHIMODA,
	Hironobu SUGIURA,	Haruko TAKAHASHI,
	Yoko TADA,	Atsushi MUROTA,
	Yuka YAMAMOTO,	Junichi YASUOKA,
	Yuji TSUCHIDO	

2. Purpose of Education

Courses: Biomaterials, Advanced Medical Materials, Advanced Organic Materials

3. Research Subjects

1) Nanogel engineering for drug delivery system and tissue engineering
2) Chaperoning engineering for control of function of biomacromolecules
3) Liposome and membrane protein engineering towards *de novo* cell
4) Development of hybrid biomaterials

4. Publications

Original Article

1. Nomura SM, Kondoh S, Asayama W, Asada A, Nishikawa S, Akiyoshi K. Direct preparation of giant proteoliposomes by in vitro membrane protein synthesis. J Biotechnol 133: 190-195, 2008.
2. Shimizu T, Kishida T, Hasegawa U, Ueda Y, Imanishi J, Yamagishi H, Akiyoshi K, Otsuji E, Mazda O. Nanogel DDS enables sustained release of a cytokine for tumor immunotherapy. Biochem Biophys Res Commun 367: 330-335, 2008.
3. Kageyama S, Kitano S, Hirayama M, Nagata Y, Imai H, Shiraishi T, Akiyoshi K, Scott A, Murphy R, Hoffman E, Old L, Katayama N, Shiku H. Humoral immune responses in patients vaccinated with 1-146 HER2 protein complexed with cholesteryl pullulan nanogel (CHP-HER2). Cancer Sci 99: 601-607, 2008.
4. Iwata R, Iwasaki Y, Akiyoshi K. Covalent immobilization of antibody fragments on well-defined polymer brushes via site-directed method. Colloid Surf B-Biointerfaces 62: 288-298, 2008.
5. Asayama W, Sawada S, Taguchi H, Akiyoshi K. Comparison of Refolding Activities between Nanogel Artificial Chaperone and GroEL Systems. Int J Biol Macromol 42: 241-246, 2008.
6. Toita S, Hasegawa U, Koga H, Sekiya I, Muneta T, Akiyoshi K. Protein-conjugated QD effectively delivered into living cells by a cationic nanogel. J Nanosci Nanotechnol 8: 1-7, 2008.
7. Ayame H, Morimoto N, Akiyoshi K. Self-assembled cationic nanogels for intracellular protein delivery system. Bioconjugate Chem 19: 882-890, 2008.
8. Morimoto N, Ohki T, Kurita K, Akiyoshi K. Thermo-responsive hydrogels with nanodomains: rapid shrinking of nanogel-crosslinking hydrogel of poly (N-isopropyl acrylamide) Macromol Rapid Commun 29: 672-676, 2008.
9. Kudo H, Yagi T, Chu MX, Saito H, Morimoto M, Iwasaki Y, Akiyoshi K, Mitsubayashi K. Glucose sensor using phospholipid polymer-based enzyme immobilization method. Anal Bioanal Chem 391: 1269-1274, 2008.
10. Morimoto N, Qiu XP, Winnik FM, Akiyoshi K. Dual Stimuli-Responsive Nanogels by Self-Assembly of Polysaccharides Lightly Grafted with Thiol-Terminated Poly(N-isopropylacrylamide) Chains. Macromolecules 41: 5985-5987, 2008.
11. Yasuhara K, Sasaki Y, Kikuchi J. Fluorescent sensor responsive to local viscosity and its application to the imaging of liquid-ordered domain in lipid membranes. Colloid Surf B-Biointerfaces 67: 145-149, 2008.

12. Iwasaki Y, Takami U, Sawada S, Akiyoshi K. Interfacing biomembrane mimetic polymer surfaces with living cells – Surface modification for reliable bioartificial liver. Appl Surf Sci 255: 523-528, 2008.
13. Yamane S, Sasaki Y, Akiyoshi K. Siloxane-crosslinked Polysaccharide Nanogels for Potential Biomedical Applications. Chem Lett 37: 1282-1283, 2008.

Functional Materials (Applied Functional Molecules)

1. Staffs and Students (April, 2008)

Professor	Akio KISHIDA	
Associate Professor	Yoshinori KADOMA	
Assistant Professor	Ayumi OSAKI,	Tsuyoshi KIMURA
Tokunin Assistant Professor	Kwangwoo NAM	
Secretary	Naomi HIWATARI	
Graduate Student	Seiichi FUNAMOTO,	Masaki OZAWA,
	Yukiko ITO,	Yoshihide HASHIMOTO,
	Takashi NAGAOKA,	Hokuto KONNO,
	Yusuke AGO,	Kenji YAMAMOTO,
	Rie FUKAYA,	Jun NEGISHI,
	Taiji IZUMI,	Terumi OGAWA,
	Asami SANO,	Yuki SAKAI,
	Yukiko SHIMATSU,	Naoko NAKAMURA,
	Shinzo NAKAMURA,	Hiroko TAKOROKO,
	Kaori TANIGUCHI,	
Research Student	Shunsuke KAWAMATA,	Reiko KUROKAWA,
	Kosuke KASAHARA,	Marie SHIMADA,
	Chie MINATO	

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) Shingo Mutsuo, Kazuya Yamamoto, Tsutomu Furuzono, Tsuyoshi Kimura, Tsutomu Ono, Akio Kishida. Pressure-induced molecular assembly of hydrogen-bonded polymers, Journal of Polymer Science Part B: Polymer Physics, 46(7) : pp.743-750, 2008.
2) Kwangwoo Nam, Tsuyoshi Kimura, Akio Kishida. Controlling Coupling Reaction of EDC and NHS for Preparation of Collagen Gels Using Ethanol/Water Co-Solvents. Macromolecular Bioscience, 2008, 8, 32-37
3) Ozawa M., Komiyama K, Nakai I, Kishida A, Oosaki A. TRAIL-enhancing activity of Erythrinan alkaroids from Erythrina veltina Bioorg, Med Chem Lett, Web-released, 2008.
4) Ozawa M, Honda K, Nakai I, Kishida A, Oosak A, Hypahorine, indole aikaroid from Erythrina veltina,induced sleep on nomal mice.Bioorg, Med Chem Lett 18, pp.3992-3994. 2008.
5) Masato Yamamoto, Masako Suzuki, Masanori Tachikawa, Akihiro Fujishima, Takashi Miyazaki, Hisashi Hisamitsu, Katsunori Kojima, Yoshinori Kadoma. Film formation from mixed solutions of 1,3,5-Triazine-2,4-dithione and phosphate onto Au, Ag, and Cu substrates. J Phys Chem C; 112(17): 6914-6923. 2008
6) Yoshinori Kadoma, Shigeru Ito, Ichiro Yokoe, Seiichiro Fujisawa. Comparative study of the alkyl and peroxy radical-scavenging activity of 2-t-butyl-4-methoxyphenol (BHA) and its dimer, and their theoretical parameters. In vivo ; 22(3): 289-296. 2008
7) Satoshi Ono, Yoshinori Kadoma, Sadao Morita, Kazuo Takakuda. Development of new bone cement utilizing low toxicity monomers. J Med Dent Sci; 55: 189-196. 2008
8) Yoshinori Kadoma, Seiichiro Fujisawa. A comparative study of the radical-scavenging activity of the phenolcarboxylic acids caffeic acid, p-coumaric acid, chlorogenic acid and ferulic acid, with or without 2-mercaptoethanol, a thiol, using the induction period method. Molecules; 13(10): 2488-2499. 2008

Removable Partial Denture Prosthodontics

1. Staffs and Students (April, 2008)

Professor	Yoshimasa IGARASHI	
Associate Professor	Hiroshi MIZUTANI	
Junior Associate Professor	Masayuki HIDESHIMA,	Kenji FUEKI
Assistant Professor	Masayuki SATOU,	Takeshi UENO,
	Ichirou MINAMI,	Teruyasu NAKAMURA,
	Jyurou WADACHI,	Kumiko ARIDOME,
	Syusuke INUKAI	
Tokunin Assistant Professor	Ryunosuke KAZAMA (since October)	
Hospital Staff	Tomohiro ANDO,	Eiko YOSHIDA,
	Mieko YOSHIMURA,	Masahiro Ona,
	Takeyoshi SUGIURA	
Secretary	Haruka MATUURA	
Graduate Student	Kyouko TUCHIYA,	Yoshiaki SHIMURA,
	Hiroshi FURUMOTO,	Kouji NAGATA,
	Masahito OOIDA,	Kouta OKANO,
	Yuka ABE,	Kazuki ISHIHATA,
	Yoshiyuki SAKAI,	Jyunishirou WADA,
	Kousuke UMEHARA,	Aiichirou AO,
	Yuuki IWAKI,	Kengo FUJIKI,
	Keita YODA	

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) Association between food mixing ability and electromyographic activity of jaw-closing muscles during chewing of a wax cube.
2) Evaluation of Implant over dentures.
3) Assessment of the Pronunciation in Subjects with Sound Dentition.
4) Influences of Fixed Metallic Abutments on MRI Artifacts.
5) Adhesive Force of Magnetic Assembly maxillary to Denture Base with Self-Curing Resin.
6) Effect of direct retainer and major connector designs on RPD and abutment tooth movement dynamics.
7) Chewing ability's association with oral health-related QoL in prosthodontic patients.
8) The relationship between missing occlusal units and oral health-related quality of life in SDA patients.
9) Influence of the arrangement of the magnetic attachments in the remaining dentition upon the denture mobility.

4. Clinical Services

Patients with missing teeth have increased in step with the aging of the population, so improving their quality of 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. Destine D, Mizutani H, Igarashi Y. Metallic Artifacts in MRI Caused by Dental Alloys and Magnetic Keeper. J Jpn Prosthodont Soc 52(2): 205-210, 2008.

2. Rutkunas V, Mizutani H, Peciuliene V, Bendinskaite R, Linkevicius T. Maxillary complete denture outcome with two-implant supported mandibular overdentures. A systematic review. Stomatologija, Baltic Dental and Maxillofacial J. 10(1): 10-15, 2008.
3. Rutkunas V, Mizutani H, Puriene A. Conventional and Early loading of two-implant supported mandibular overdentures. A systematic review. Stomatologija, Baltic Dental and Maxillofacial J. 10(2): 51-61, 2008.
4. Fueki K, Sugiura T, Yoshida E, Igarashi Y. Association between food mixing ability and electromyographic activity of jaw-closing muscles during chewing of a wax cube. J Oral Rehabil 35 (5): 345-352, 2008.
5. Kadota C, Sumita Y, Wang Y, Otomaru T, Mukohyama H, Fueki K, Igarashi Y, Taniguchi H. Comparison of food mixing ability among mandibulectomy patients. J Oral Rehabil 35 (6): 408-414, 2008.
6. Wakabayashi N, Ona M, Suzuki T, Igarashi Y. Nonlinear Finite Element Analyses: Advances and Challenges in Dental Applications. Journal of Dentistry. 36(7): 463-471, 2008.
7. Shirasu K, Wakabayashi N, Yoneyama T, Igarashi Y. Non-linear finite element stress analysis of plastic deformation in Co-Cr wrought-wire clasps. Dental Materials. 24(11):1518-24, 2008.
8. Baba K, AridomeK, PallegamaR.Management of bruxism-induced complications in removable partial denture wearers using specially designed dentures. Journal of cranio mandibular practice.26:71-76, 2008.
9. Hangai K, Aridome K, Wang CH, Igarashi Y. Clinical evaluation of semi-adjustable articulators:Reproducibility of sagittal condylar path inclination assessed by a jaw-tracking system with six degrees of freedom. The Journal of Japan Prosthodontic Society. 52:360-365,2008.
10. Ito H, Baba K, Aridome K, Okada D, Tokuda A, Nishiyama A, Miura H, Igarashi Y. Effect of direct retainer and major connector designs on RPD and abutment tooth movement dynamics. J Oral Rehabil. 35(11):810-5.2008.
11. Inukai M, Baba K, John MT, Igarashi Y. Does Removable Partial Denture Quality Affect Individuals' Oral Health? J Dent Res 87(8):736-739, 2008.
12. Baba K, Inukai M, John MT. Feasibility of oral health-related quality of life assessment in prosthodontic patients using abbreviated Oral Health Impact Profile questionnaires. J Oral Rehabil. 35(3):224-8, 2008.

Oral Implantology and Regenerative Dental Medicine, Dental Implant Clinic

1. Stuffs and Students

Professor	Shohei KASUGAI	
Associate Professor	Makoto SHIOTA	
Junior Associate Professor	Noriko TACHIKAWA	
Assistant Professor	Hisatomo KONDO, Shinji KURODA	
Hospital Stuffs	Toru KANAI,	Hidemichi KIHARA,
	Kyoko TAKAFUJI,	Hidemi NAKATA,
	Tatsuya FUJIMORI,	Yoko YAMAGUCHI
Secretary and Technical Assistant	Michiko SUZUKI	
Graduate Student	Shigehisa OKABAYASGI,	Mitsumune ODA,
	Hiroshi KOBAYASHI,	Takahiro NAKAMURA,
	SAMEE Mayurach,	Maho OZEKI,
	Kazuhiro KON,	Tetsu MACHIDA,
	Katsuichiro MARUO,	Norihide UENO,
	Junhi PARK,	Myat NYAN,
	Malik Ismail HUDIEB,	Junichi KIMURA,
	Yuki DATE,	Kanako NORITAKE,
	Hisham Khalifa ROJUBANI,	Reena RODRIGUEZ,
	Srilatha BHARGAVA,	HAO Jia,
	Tokuo AKINO,	Tomoko NAGATOMO,
	Masaki FUJII,	Akiko HURUICHI,
	Osama ZAKARIA	

2. Purpose of Education

The current dental implant treatment is very predictable and it has several advantages compared to the treatments with bridges or removable dentures. Main objective of oral Implantology in the undergraduate course is to provide students opportunities to study basic knowledge about dental implant treatment: The characteristics and whole procedure of this treatment from examination, diagnosis and treatment planning which are followed by dental implant surgery, prosthetic treatment and maintenance. The graduate course provides recent and advanced levels of knowledge of dental implant treatment. The training course of dental implant treatment provides trainees opportunities to learn much deeper knowledge and skill of dental implant treatment by giving them chances to assist the clinical stuffs in dental implant treatment. The graduate course of oral Implantology and regenerative dental medicine gives students chances to learn recent concept of tissue engineering and to predict the future of this attractive scientific and clinical field in the active discussions.

3. Research Subjects

(1) Examination of patients received dental implant treatment
(2) Development of dental implant
(3) Diagnosis and treatment planning in dental implant treatment
(4) Treatment of implatitis
(5) Regeneration of bone and periodontal tissues

4. Clinical Survices

We treated edentulous patients with dental implants in Dental Implant Clinic, Dental Hospital. We installed approximately 1,800 implants from April 2008 to March 2009. Number of the patients in the Dental Implant Clinic is increasing every year because of the increase of the aged population and the predictability of the treatment. Furthermore, since dental implant treatment is invasive than conventional treatments, patients prefer to be treated in big hospitals rather than private dental offices. Our clinical cases are from simple cases to extensively-advanced cases including fully edentulous cases including bone reconstruction and/or augmentation. Notably, clinical cases of complications of patients, who were treated in other clinics, are increasing recently.

5. Publications

Original Articles

1. Nyan M, Sato D, Kihara H, Machida T, Ohya K, Kasugai S. Effects of the combination with alpha-tricalcium phosphate and simvastatin on bone regeneration. Clinical Oral Implant Research, *In Press*
2. Kobayashi H, Katakura O, Morimoto N, Akiyoshi K, Kasugai S. Effects of cholesterol-bearing pullulan (CHP)-nanogels in combination with prostaglandin E1 on wound healing. Journal of Biomedical Material Research, Part B: Applied Biomaterials, in press
3. Oda M, Kuroda S, Kondo H, Kasugai S. Hydroxyapatite fiber material with BMP-2 gene induces ectopic bone formation. Journal of Biomedical Materials Research Part B: Applied Biomaterials, *In Press*
4. Nakamura T, Shiota M, Kihara H, Yamashita Y, Kasugai S. Effects of granule size and surface properties of red algae-derived resorbable hydroxyapatite on new bone formation. Journal of Oral Tissue Engineering 6(3): 167-179, 2009
5. Okabayashi S, Takayama K, Kuroda S, Kanai T, Fujii S, Sato H, Kasugai S. Hydoroxyapatite fiber material for bone tissue engineering. Journal of Oral Tissue Engineering 6(3): 180-188, 2009
6. Iino G, Hishimura K, Omura K, Kasugai S. Effects of prostaglandin E1 application on rat incisal sockets. Int J Oral Maxillofac Implants 23(5):835-40, 2008
7. Kaneda K, Kuroda S, Goto N, Sato D, Ohya K, Kasugai S. Is Sodium Alginate an Alternative Hemostatic Material in the Tooth Extraction Socket? Journal of Oral Tissue Engineering 5(3):127-133, 2008
8. Ito Y, Sato D, Yoneda S, Ito D, Kondo H, Kasugai S. Relevance of resonance frequency analysis to evaluate dental implant stability: Simulation and histomorphometrical animal experiments. Clinical Oral Implant Research 19(1):9-14, 2008
9. Samee M, Kasugai S, Kondo H, Ohya K, Shimokawa H, Kuroda S. BMP-2 and VEGF Transfection to Human Periosteal Cells Enhances Osteoblast Differentiation and Bone Formation. Journal of Pharmacological Sciences 108(1): 18-31, 2008
10. Yokoyama Y, Damrongrungruang T, Kuroda S, Takano Y, Ohya K, Kasugai S and Kondo H. Comparative analysis of gene expression by cDNA microarray between cementoblasts and periodontal ligament cells in the murine mandible. The Journal of Oral Bioscience 50 (3) : 183-193, 2008

Complete Denture Prosthodontics

1. Staffs and Students (April, 2008)

Professor	Shunsuke MINAKUCHI	
Assistant Professor	Tatsuro UCHIDA,	Yukiko FUJINAMI,
	Norihisa AKIBA,	Yoshinori Kaiba,
	Manabu KANAZAWA	
Hospital Staff	Natsumi AOYAMA,	Yusuke SATO,
	Takuya TOKITA,	Soichiro IMAMURA,
	Kei OHYA,	Yuta KASUGA
Graduate Student	Maiko IWAKI,	Mai Okubo,
	Yuki KUMAMOTO,	Yuuki HIRAJIMA,
	Akinobu AZUMA,	Masanao INOKOSHI,
	Yuriko KOMAGAMINE,	Shin TAKESHITA,
	Hiroshi KATASE	

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. Sato Y, Kaiba Y, Hayakawa I. Evaluation of denture retention and ease of removal from oral mucosa on a new gel-type denture adhesive. Nihon Hotetsu Shika Gakkai Zasshi 2008; 52(2):175-82.
2. Kasuga Y, Akiba N, Minakuchi S, Uchida T, Matsushita N, Hishimoto M, Hayakawa I. Development of soft denture lining materials containing fluorinated monomers. Nihon Hotetsu Shika Gakkai Zasshi 2008; 52(2): 183-8.
3. Imamura S, Takahashi H, Hayakawa I, Paola G. LOYAGA-RENDON, Minakuchi S. Effect of filler type and polishing on the discoloration of composite resin artificial teeth. Dent Mater J 2008; 27(6): 802-8.

Maxillofacial Anatomy

1. Staffs and Students (April, 2008)

Professor	Yasuo YAMASHITA	
Associate Professor	Tatsuo TERASHIMA	
Assistant Professor	Shun-ichi SHIKANO	Tatsuhiko ABE
Technical Official	Toshimitsu YAMAMOTO	Michi MATSUBARA

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

4. Publications

Original Article

1. Higuchi K, Santiwong P, Tamaki H, Terashima T, Nakayama H, Notani T, Iseki H, Baba O, Takano Y.: Development and terminal differentiation of pulp and periodontal nerve elements in subcutaneous transplants of molar tooth germs and incisors of the rat. Eur J Oral Sci, 116(4):324-333, 2008 Aug.
2. Nyunt Nyunt M, Miyashin M, Yamashita Y, Takagi Y: Penetration of resin into experimentally formed infractions in porcine tooth crowns. Pediatric Dental Journal, 18(2):86-101, 2008.
3. Panza G, Stohr J, Birkmann E, Riesner D, Willbold D, Baba O, Terashima T, Dumpitak C.: Aggregation and amyloid fibril formation of the prion protein is accelerated in the presence of glycogen. Rejuvenation Res, 11(2):365-369, 2008 Apr.

Review Article

Book

1. Terashima T: Histology of bone. In: Basic and Clinical Science of AQB Implant, pp. 26-40, ADVANCE Press, Tokyo, 2008.
2. Terashima T: Oral Anatomy for Implant. In: Basic and Clinical Science of AQB Implant, pp. 42-70, ADVANCE Press, Tokyo, 2008.

Special Lecture

1. Yamashita Y.: Oral Anatomy. Chiba insurance doctor society (In Sakura). 1,June,2008.
2. Terashima T: Structure of wall around the oral cavity and pathway to oral cavity of the nerve and artery. Nihon Dental College, 1, Sep,2008.

Cognitive Neurobiology

1. Staffs (April, 2008)

Affiliate Professor	Atsusi IRIKI
Associate Professor	Miki TAOKA
Junior Associate Professor	Hisayuki OJIMA
Assistant Professor	Michio TANAKA
Secretary	Masae HIYOMORI

2. Education

1. Fundamentals of sensory organ and nervous system

Somatosensory, visual, auditory and chemical senses are basic sensory modalities of humans. Stimuli arising from the environment are detected by sensory organs, and processed and transmitted through sensory nervous system. Finally, sensory information is conveyed to the brain. The objects of this study are understanding the anatomy of peripheral nervous system and the physiology of sensory processing in subcortical nervous system.

2. Practical course for physiology

This course contains four experiments, 1) electrophysiology of somatosensory cortex, 2) reflexes of eye movements, 3) electromyograms of masticatory muscles, 4) autonomic control and automaticity of the heart. The objects of this practical course is to understand the basic physiological mechanism of human adaptive behaviour, the fundamentals of experimental techniques and how to present the results of experiments.

3. Central nervous system

Understanding the environment and planning appropriate actions are major functions of human brain. The main objects of this study are understanding the mechanisms of sensation and integration of information processing in the brain.

3. Research Subjects

1) Brain mechanisms of symbol manipulation.
2) Neuronal mechanisms of tactile recognition.
3) Neuronal mechanisms of multimodal processing in the primary auditory cortex.

4. Publications

Original Article

1. Fujii N, Hihara S, Nagasaka Y, Iriki A. Social state representation in prefrontal cortex. Soc Neurosci 23:1-12, 2008. [Epub ahead of print]
2. Corradi-Dell' Acqua C, Ueno K, Ogawa A, Cheng K, Rumiati RI, Iriki A. Effects of shifting perspective of the Self; an fMRI study. NeuroImage 40:1902-1911, 2008.
3. Okanoya K, Tokimoto N, Kumazawa N, Hihara S, Iriki A. Tool-use training in a species of rodent: the emergence of an optimal motor strategy and functional understanding. PloS ONE 26: 3(3): e1860, 2008.

Review Article

1. Iriki, A., Sakura, O. The neuroscience of primate intellectual evolution: natural selection and passive and intentional niche construction. Phil Trans R Soc B 363: 2229-224, 2008.
2. Okano, H, Yanagida, T, Iriki, A. Introduction. Japan: its tradition and hot topics in biological sciences. Phil Trans R Soc B 363: 2067-2069, 2008.

Book

1. Iriki A. Posterior Parietal Cortex & Tool Usage & Hand Shape. Larry Squire et al. Eds., The New Encyclopedia of Neuroscience, 2008.

Molecular Craniofacial Embryology

1. Staffs and Students

Professor	Sachiko Iseki	
Associate Professor	Masa-Aki Ikeda	
Assistant Professor	Masato Ota	
Part-time Lecturer	Shumpei Yamada,	Shigeru Okuhara,
	Kaori Kondo,	Ayako Mikura
Graduate Student	Juan Liu (Gerodontology),	
	Takashi Nuri (Osaka Medical College Plastic and Reconstructive Surgery)	
	Ryousuke Nagaoka (Maxillofacial Surgery)	
	Yuki Date (Oral Implantology and Regenerative Dental Medicine)	
	Teng Ma (April～), Widya Lestari (April～),	
	Khandakar Abu Shameem MD. Saadat (April～),	
	Eiko Ozono,	Megumi Otsu
Foreign Researcher	Solachudin J. A. Ichwan (～March),	
	Olivier Philippe (April～)	

2. Purpose of education

Section of Molecular Craniofacial Embryology studies molecular mechanisms of craniofacial morphogenesis including regulation of cell proliferation and differentiation, and apply these achievements to regenerative medicine. Main objective of our section in the graduate course is to provide students with opportunities to define the research topic by themselves with the advice of laboratory staffs. Students can learn research laboratory techniques according to their projects, ways to make strategies, and scientific English writing.

3. 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

4. Publications

Original articles

1. Kojima A, Nakahama K, Ohno-Matsui K, Shimada N, Mori K, Iseki S, Sato T, Mochizuki M, Morita I. Connexin 43 contributes to differentiation of retinal pigment epithelial cells via cyclic AMP signaling. Biochem. Biophys. Res. Commun. 366, 532-538, 2008.
2. Hjiantoniou E, Anayasa M, Nicolaou P, Bantounas I, Saito M, Iseki S, Uney J,B, and Phylactou L.A. Twist induces reversal of myotube formation. Differentiation 76, 182-192, 2008.
3. Vivatbutsiri P, Ichinose S, Hytönen M, Sainio K, Eto K, and Iseki S. Impaired meningeal development in association with apical expansion of calvarial bone osteogenesis in the *Foxc1* mutant. J, Anat, 212, 603-611, 2008.
4. Yoshida T, Vivatbutsiri P, Morriss-Kay G, Saga Y, and Iseki S. Cell lineage in mammalian craniofacial mesenchyme. Mech. Dev. 125, 797-808, 2008.
5. McBratney-Owen B, Iseki S, Bamforth S,D, Olsen B,R, and Morriss-Kay G,M. Development and tissue origins of the mammalian cranial base. Dev. Biol. 322, 121-132, 2008.
6. Iwanaga R, Ozono E, Fujisawa J, Ikeda MA, Okamura N, Huang Y, Ohtani K. Activation of the cyclin D2 and cdk6 genes through NF-kB is critical for cell cycle progression induced by HTLV-I Tax. Oncogene 27, 5635–5642, 2008.
7. Katsuki Y, Sakamoto K, Minamizato T, Makino H, Umezawa A, Ikeda MA, Perbal B, Amagasa T, Yamaguchi A, Katsube K. Inhibitory effect of CT domain of CCN3/NOV on proliferation and differentiation of osteogenic mesenchymal stem cells, Kusa-A1. Biochem. Biophys. Res. Commun. 568, 808-814, 2008.
8. Ohazama A, Johnson EB, Ota MS, Choi HJ, Porntaveetus T, Oommen S, Itoh N, Eto K, Gritli-Linde A, Herz J, Sharpe PT. Lrp4 modulates extracellular integration of cell signaling pathways in development. PLoS ONE. e4092,

2008.

Review Article

1. Suganuma T, Ikeda MA. Tumor Growth Suppression by the Coactivator p300. J. Oral Biosci. 50 (2),115-124, 2008.
2. Ichwan, SJA, Ikeda MA. Defect in Ser46 Phosphorylation of p53 Protein: A Resistance Mechanism against p53 Gene Transfer in Oral Squamous Cell Carcinoma Cells. J. Oral Biosci. 50 (2), 98-106, 2008.
3. Ota, MS. The role of Sonic Hedgehog Signaling and Fibroblast Growth Factors in Tooth Development in Mice. J. Oral Biosci. 50 (3), 167-174, 2008.

Cellular Physiological Chemistry

1. Staffs and Students (April, 2008)

Professor	Ikuo Morita	
Associate Professor	Ken-ichi Nakahama	
Junior Associate Professor	Hiroshi Fujita, Takako Hase, Chieko Yokoyama	
Assistant Professor	Kotaro Kato	
Tokuninn Assistant Professor (COE)	Olga Safronava	
Graduate Student	Bhattacharjee Rajib,	Yoko Aoi,
	Praween Wayakanon	
Research Student	Wanida Techawattanawisal,	Nakalekha Chalida
	Jizhong Yuan,	Jun-ichi Tsugawa,
	Jiying Wang,	Noriaki Shimada,
	Atsuko Taki	Noriko Oshima
Professor (Nano Medicine DNP)	Mayumi Abe	
Assistant Professor (Nano Medicine DNP)	Motohiro Komaki, Tomoko Yoshida	
Associate Professor (Natural Resources & Physiological Chemistry)	Takahiro Sato	
Assistant Professor (Natural Resources & Physiological Chemistry)	Masako Akiyama	

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. Pluemsampant S, Safronova O, Nakahama K, Morita I. Protein kinase CK2 is a key activator of histone deacetylase in hypoxia-associated tumors. Int. J. Cancer. 122(2):333-41, 2008
2. Kojima A, Nakahama K, Ohno-Matsui K, Shimada N, Mori K, Iseki S, Sato T, Mochizuki M, Morita I. Connexin 43 contributes to differentiation of retinal pigment epithelial cells via AMP signaling. Biochem. Biophys. Res. Commun., 366(2):532-8,2008
3. Kaneda M, Zhang D, Bhattacharjee R, Nakahama KI, Arii S, Morita I. Vitamin K2 suppresses malignancy of HuH7 hepatoma cells via inhibition of connexin 43. Cancer Lett., 263(1): 53-60, 2008
4. Wang J, Ohno-Matsui K, Yoshida T, Kojima A, shimada N, Nakahama K, Safronova O, Iwara N, Saido TC, Mochizuki M, and Morita I. Altered function of factor caused by amiloid β: Implication for pathogensis of age-related macular degeneration from drusen. The Journal of Immunology, COMPLEMENT FACTOR I DYSFUNCTION CAUSED BY Aβ:712-720, 2008
5. Hayashi H, Nakahama K, Sato T, Tuchiya T, Asakawa Y, Maemura T, Tanaka M, Morita M, Morita I. The role of Mac-1 (CD11b/CD18) in osteoclast differentiation induced by receptor activator of nuclear factor-jB ligand. FEBS Letters 582 :3243–3248, 2008
6. Tsuchiya T, Nakahama K, Asakawa Y, Maemura T, Tanaka M, Takeda S, Morita M and Morita I. The reduction in pigment epithelium-derived factor is a sign of malignancy in ovarian cancer expressing low-level of vascular endothelial growth factor. Gynecological Endocrinology, 2008, in press
7. Mukai N, Akahori A, Komaki M, Li.Q, Kanayasu-Toyoda T, Ishii-Watanabe A, Kobayashi A, Abe M, Amagasa T, and Morita I. A comparison of tube forming potential in early and late endothelial progenitor cells. Exp. Cell Res. 314(3):430-440, 2008

8. LP. Lefter, Dima S, Sunamura M, Furukawa T, Sato Y, Abe M, Chivu M, Popescu I, and Horii A. Transcriptional silencing of ETS-1 efficiently suppresses angiogenesis of pancreatic cancer. Cancer Gene Therapy, 16(2):137-148, 2008
9. Nishida Y, Shibata K, Yamasaki M, Sato Y, Abe M. A possible role of vimentin on the cell surface for the activation of latent transforming growth factor-β. FEBS Letter, 583(2):308-312, 2008

Review Article

Book

Oral and Maxillofacial Surgery

1. Staffs and Students (2008)

Professor	Teruo AMAGASA	
Associate Professor		
Junior Associate Professor	Hiroshi IWAKI	Junichi ISHII
Assistant Professor	Satoshi YAMAGUCHI	Naoya ARAI (until February)
	Narikazu UZAWA	Yutaka SATOU
	Hiroyuki YOSHITAKE	Yasuyuki Michi
	Kazuto KUROHARA (from March)	
Hospital Staff	Kazuto KUROHARA (until February)	
	Takashi MISHIMAGI	Kouichi NAKAKUKI
	Yoshio OHYAMA	Yasuhiro YUKI
	Youhei TSUTAKI (from April)	
	Mie MOCHIZUKI	Miho SUZUKI
	Misa HOSOKI (until March)	Yuko KATSUKI (from April)
	Aya KAWAMATA (from April)	
	Erina NAKAMURA (from April)	
	Aya ITOU (until March)	
Graduate Student	Hanna IGARASHI (until March)	
	Yuko KATSUKI (until March)	
	Aya KAWAMATA (until March)	
	Erina NAKAMURA (until March)	
	Kenichirou (until March)	Natsuko TAKATSUKA
	Nobuyoshi TOMOMATSU	Keiichi HAMADA
	Tadanobu ARAGAKI	Begun Asuma
	Hiroaki Satou	Junichi TSUGAWA
	Nobuhiro KATAOKA	Keiko MAEDA
	Tasuku KIHARA	Yasuhiro KURASAWA
	Ryousuke NAGAOKA	Tomomi SAKUMA
	Chieko MICHIKAWA	Hiroyuki NAKACHI
	Paksinee Kamolrtanakul	Junya AOYAGI
	Hiroyuki ENDOU (from April)	
	Daisuke MIYAJIMA (from April)	
	Yoshimi NAKATA (from April)	
	Erika OHUE (from April)	Jun SUMINO (from April)
	Takashi WATANABE (from April)	
	Jose maria seiyi SHINDOI ARAKAWA (from April)	

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. Takahashi K, Uzawa N, Kosaka S, Yoshino N, Okada N, Amagasa T. : Synchronous Warthin Tumors and Lymphoepithelial Cyst in tha Ipsilateral Parotid Gland. Journal of Oral and Maxillofacial Surgery 66(5) : 1053-1056, 2008
2. Abe S, Yamaguchi S, Watanabe A, Hamada K, Amagasa T. : Hard tissue regeneration capacity of apical pulp derived cells(APDCs)from human tooth with immature apex. Biochemical and Biophysical Research Communications 371 : 90-93, 2008
3. Kawamata A, Izu Y, Yokoyama H, Amagasa T, F.Wagner E, Nakashima K, Ezura Y, Hayata T, and Noda M : JunD suppresses bone fortmation and contributes to low bone mass induced by estrogen depletion. Journal of Cellular Biochemistry 103 : 1037-1045, 2008
4. Nakamura E, Kozaki K, Tsuda H, Suzuki E, Pimkhaokham A, Yamamoto G, Irie T, Tachikawa T, Amagasa T, Inazawa J and Imoto I : Frequent silencing of a putative tumor suppressor gane melatonin receptor 1 A(MTNR1A) in oral squamous-cell carcinoma. Cancer Sci 99(7) : 1390-1400, 2008
5. Igarashi H, Cao Y, Iwai H, Piao J, Kamimura Y, Hashiguchi M, Amagasa T, Azuma M : GITR ligand-costimulation actives effector and regulatory functions of CD4+T cells. Biochemical and Biophysical Research Communications 369 : 1134-1138,2008
6. Mukai N, Akahori T, Komaki M, Li Q, Kanayasu-Toyoda T, Ishii-Watabe A, Kobayashi A, Yamaguchi T, Abe M, Amagasa T, Morita I. A comparison of the tube forming potentials of early and late endothelial progenitor cells. Exp Cell Res. 2008; 314(3): 430-40.
7. Katsuki Y, Sakamoto K, Minamizato T, Makino H, Umezawa A, Ikeda M, Perbal B, Amagasa T, Yamaguchi A, Katsube K : Inhibitory effect of CT domain of CCN3/NOV on proliferation and differentiation of osteogenic mesenchymal stem cellc, Kusa-A1. Biochemical and Biophysical Research Communications 368 : 808-814,2008
8. Ida M., Yoshitake H., Okoch K., Tetsumura A., Ohbayashi N., Amagasa T., Omura K., Okada N., Kurabayashi T. : An investigation of magnetic resonance imaging features in 14 patients with synovial chondromatosis of the temporomandibular joint. Dentomaxillofacial Radiology37(4) : 213-219, 2008
9. Momin M A, Okochi K, Watanabe H, Imaizumi A, Omura K, Amagasa T, Okada N, Ohbayashi N, Kurabayashi T. Diagnostic accuracy of cone-beam CT in the assessment of mandibular invasion of lower gingival carcinoma: Comparison with conventional panoramic radiography. Eur J Radiol. 2008

Maxillofacial Orthognathics

1. Staffs and Students (April, 2008)

Professor	Keiji MORIYAMA	
Associate Professor	Shoichi SUZUKI	
Junior Associate Professor	Takashi ONO,	Naoto SUDA
Assistant Professor	Yoshiyuki BABA,	Tatsuo KAWAMOTO,
	Michiko TSUJI,	Takuya OGAWA
Graduate Student	Takato INOKUCHI,	Mitsu HATTORI,
	Akiko MINATO,	Shinta Wirahadi KUSUMAH,
	Ganburged GANJARGAL,	Ng Inn WO,
	Hideki KAMATA,	Hiroyuki SUZUKI,
	Nana OKAMOTO,	Kaori TAKECHI,
	Rina HIKITA,	Tsutomu MATSUMOTO

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. Tutorial lessons will be also provided students as a part of clinical lecture so that it supports them to understand cleft lip and/or palate and other congenital craniofacial conditions.

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）Evaluate changes in soft tissue following maxillofacial surgery using 3D images

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. Gereltzul E, Baba Y, Suda N, Shiga M, Inoue M, Tsuji M, Shin I, Hirata Y, Ohyama K, Moriyama K. Case Report of de novo Dup(18p)/Del(18q) and R(18) Mosaicism. Journal of Human Genetics 53(10):941-6, 2008.
2. Putranoto P, Oba Y, Kaneko K, Shioyasono A, Moriyama K. Effects of bisphosphonates on roots resorption and cytokine expression during experimental tooth movements in rats. Orthod Waves 67(4) :141-149, 2008.
3. Okudaira M, Ono T, Kawamoto T, Moriyama K. Three-dimensional analysis of lower lip movement during articulation in subjects with mandibular prognathism. Orthod Waves. 67(3): 93-103, 2008.
4. Okudaira M, Kawamoto T, Ono T, Moriyama K. Soft-tissue changes in association with anterior maxillary osteotomy: a pilot study. Oral Maxillofac Surg. 12(3):131-8, 2008.

5. Kinouchi N, Ohsawa Y, Ishimaru N, Ohuchi H, Sunada Y, Hayashi Y, Tanimoto Y, Moriyama K, Noji S. Atelocollagen-mediated local and systemic applications of myostatin-targeting siRNA increase skeletal muscle mass. Gene Ther. 15(15):1126-30, 2008.
6. Mukai-Higashihori K, Baba Y, Tetsumura A, Tsuji M, Ishizaki T, Higashihori N, Ohbayashi N, Kurabayashi T, Suzuki S, Ohyama K. Ultrasonographic assessment of new bone formation in maxillary distraction osteogenesis. J Oral Maxillofac Surg. 66(8):1750-3, 2008.
7. Sato-Wakabayashi M, Inoue-Arai MS, Ono T, Honda E, Kurabayashi T, Moriyama K. Combined fMRI and MRI movie in the evaluation of articulation in subjects with and without cleft lip and palate. Cleft Palate Craniofac J. 45(3):309-14, 2008.
8. Hashimoto K, Otsuka R, Minato A, Sato-Wakabayashi M, Takada J, Inoue-Arai MS, Miyamoto JJ, Ono T, Ohyama K, Moriyama K. Short-term changes in temporomandibular joint function in subjects with cleft lip and palate treated with maxillary distraction osteogenesis. Orthod Craniofac Res. 11(2):74-81, 2008.
9. Murakami M, Ohkuma M, Nakamura M. Molecular mechanism of transforming growth factor-beta-mediated inhibition of growth arrest and differentiation in a myoblast cell line. Dev Growth Differ. 50(2):121-30, 2008.
10. Yokota T, Shimokawa H, Shibata S, Itoh K, Baba Y, Ohya K, Ohyama K, Suzuki S. Insulin-like growth factor I regulates apoptosis in condylar cartilage. J Dent Res. 87(2):159-63, 2008.
11. Takada J, Ono T, Takahashi S, Honda E, Kurabayashi T. Changes in horizontal jaw position and intraoral pressure. Angle Orthod. 78(2):254-61, 2008.
12. Suda N. Comprehensive gene expression analysis in human periodontal ligaments of the mandibular third molars performing vertical movement and the maxillary second premolars with occlusal contact. Orthod Craniofac Res. 11(1):1-7, 2008.
13. Oba Y, Yasue A, Kaneko K, Uchida R, Shioyasono A, Moriyama K. Comparison of stability of mandibular segments following the sagittal split ramus osteotomy with poly-L-lactic acid (PLLA) screws and titanium screws fixation. Orthod Waves 67:(1) 1-8, 2008.
14. Shiga M, Saito M, Hattori M, Torii C, Kosaki K, Kiyono T, Suda N. Characteristic phenotype of immortalized periodontal cells isolated from a Marfan syndrome type I patient. Cell Tissue Res. 331(2):461-72, 2008.

Maxillofacial Prosthetics

1. Staffs and Students (April, 2008)

Professor	Hisashi TANIGUCHI	
Junior Associate Professor	Yuka SUMITA	
Assistant Professor	Toshiaki IIDA,	Mariko HATTORI
Hospital Staff	Yuko TERUYAMA,	Mai MURASE
Secretary	Yuki SAKURAI	
Graduate Student	Ken INOHARA,	Takafumi OTOMARU,
	Naoko MINAMISAWA,	Taiji HOSHIAI,
	Nafees Uddin CHOWDHURY,	MD. Ziauddin,
	Masataka HOJO,	Chang Qingan,
	Rie TODA,	Jien MORIMATA
Special Student	Mihoko HARAGUCHI,	Chiaki KADOTA,
	Ayako HAGINO	

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. C. kadota, Y. I. Sumita, Y. Wang, T. Otomaru, H. Mukohyama, K. Fueki, Y. Igarashi, H. Taniguchi. Comparison of food mixing ability among mandibulectomy patients. J Oral Rehabil 35(6): 408–414, 2008.
2. Itsuki Murase. In-Vivo Modal Analysis of Maxillary Dentition in a Maxillectomy Patient Wearing Buccal Flange Obturator Prostheses with Different Bulb Height Designs. Prosthodont Res Pract 52(2): 150-159, 2008.
3. Mai Murase, Yuka I. Sumita, Hisashi Taniguchi. Evaluation of Voice Production by Acoustic Measurements in Mandibulectomy Patients. Maxillofacial Prosthetics 31(1): 1-9, 2008.
4. Yuka I. Sumita, Takafumi Otomaru, Hisashi Taniguchi. Effects of a Denture Adhesive in Edentulous Maxillectomy patients. Prosthodont Res Pract 7(2): 195-197, 2008.
5. Ayako Hagino, Ken Inohara, Yuka I. Sumita, and Hisashi Taniguchi. Investigation of the Factors Influencing the Outcome of Prostheses on Speech Rehabilitation of Mandibulectomy Patients. Prosthodont Res Pract 52(3): 543-549, 2008.
6. Chaivut Prunkngarmpun, Yuka I. Sumita, Hisashi Taniguchi. Three Monosyllables for Standard Words in Nasometer Test: To Evaluate Air Leakage in Maxillectomy Patients. Prosthodont Res Pract 52(4): 507-512, 2008.
7. Hayashi K, Hatsuno K, Yoshimura RI, Iida T, Ayukawa F, Toda K, Taniguchi H, Shibuya H. Electron Therapy for Orbital and Periorbital Lesions Using Customized Lead Eye Shields. Ophthalmologica 26;223(2): 96-101, 2008.
8. Takafumi OTOMARU, Yuka I. SUMITA, Hisashi TANIGUCHI. Reliability of a tongue movement test in patients with mandibulectomy and/or glossectomy. Maxillofacial Prosthetics 31(2): 61-66, 2008.

Review Article

1. Hisashi Taniguchi, Yuka Iwakura Sumita, Takafumi Otomaru, Naoko Minamisawa, Ken Inohara. Maxillofacial Prosthodontics－Current Treatment and Reserch. Prosthodont Res Pract 7(2): 132-134, 2008.

Dentistry for Persons with Disabilities

1. Staffs and Students (April,2008)

Associate Professor	Tsuneyoshi YAMAZAKI	
Junior Associate Professor	Osamu SHINOZUKA	
Junior Associate Professor (Part-time)		
	Minoru INADA	Yasuka KUSUMOTO
	Yohei TAKEUCHI	
Hospital Staff	Takae SAKAMOTO	Syohei TAMURA
	Mariko WATANABE	
Graduate Student	Taisuke FUJIBAYASHI	Moriyuki NAKAMURA
	Naoki HAYASHI	Norihiko KANAKUCHI
Research Student	Hiromichi MIYAZAKI	Manami ARIFUKU

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) Oral stimulation and cerebral function
5) Development of the paste for the dry mouth
6) Development of the welfare apparatus (Toothbrush with irrigation and suctioning capabilities, e-Brush Ⅱ® etc)
7) Oral care by e-Brush Ⅱ®
8) Gingival overgrowth of the pharmacogenic
9) Development of the clinical pathway of the systemic illness
10) Microanalysis of the salivary chemical component
11) Functional water
12) 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

Abstract

1) M. Nakamura, T. Fujibayashi, A. Tominaga, T. Kawarai, N. Satoh, T. Yamazaki, and H. Senpuku : Preventive Effects of Hinokitiol against C.Albicans Adherence to Epithelial Cells. CD of Abstracts, Journal of Dental Research, Vol. 87, Special Issue B. (86th General Session & Exhibition of the IADR ・ 32nd Annual Meeting of the CADR, July 2-5, 2008, Tronto, Canada)
2) N. Isogawa, O. Shinozuka, K.Ikari, M. Fujimoto, T, Yamazaki, Y, takagi: Dental Checkup with Structured Visual Guides in Preschool Autistic Children, Abstracts Book 109, 2008. (6th. Conference of Pediatric Dentistry Association of Asia, July 10-12,2008, Kuala Lumpur, Malaysia)

Metallic Biomaterials (Metals)

1. Staffs and Students (April, 2008)

Professor	Takao HANAWA	
Associate Professor	Naoyuki NOMURA	
Assistant Professor	Hisashi DOI, Yusuke TSUTSUMI	
Tokunin Assistant Professor	Yasuko SEKI	
Secretary	Toshie NAKANISHI	
Researcher	Svitlana KOPYL,	Emilia PECHEVA
Graduate Student	Kei OYA,	Yuta TANAKA,
	Madoka MURAKAMI,	Suyalatu,
	Hitomi HIRUMA,	Yuko TANAKA,
	Ryota KONDO	
Research Student	Kenichi IIYAMA	

2. Purpose of Education

We aim to understand the structure and character of nano-layers formed on metals surface, the formation of body tissues on materials. Especially, we focus the reaction between biomolecules and cells on metals with the evaluation of nano-scale change of surface oxides layer. The goal of our laboratory is to select appropriate biomaterials for various medical cares by understanding crystal structure, processing, heat treatment, mechanical properties such as strength and toughness, and electrochemical character of metallic biomaterilas.

3. Research Subjects

1). Bio-functionilization of metals with surface modification
2). Development of novel alloys for biomedical applications
3). Development of porous metals composites with mechanical compatibility
4). Development of Zr-based alloys for minimizing MRI artifacts

4. Publications

Original Article

1. Sakamoto H, Hirohashi Y, Saito H, Doi H, Tsutsumi Y, Suzuki Y, Noda K, Hanawa T. Effect of active hydroxyl groups on the interfacial bond strength of titanium with segmented polyurethane through γ-mercapt propyl. Dent Mater J, 27: 81-92, 2008.
2. Sakamoto H, Hirohashi Y, Doi H, Tsutsumi Y, Suzuki Y, Noda K, Hanawa T. Effect of UV irradiation on the shear bond strength of titanium with segmented polyurethane through γ-mercapt propyl trimethoxysilane. Dent Mater J 27: 81-92, 2008.
3. Lee S-H, Nomura N, Chiba A, Significant improvement in mechanical properties of biomdedical Co-Cr-Mo alloys with combination of N addition and Cr-enrichment. Mater Trans 49: 260-264, 2008.
4. Tanaka Y, Saito H, Tsutsumi Y, Doi H, Imai H, Hanawa T, Active hydroxyl groups on surface oxide film of titanium, 316L stainless steel, and Cobalt-Chromium-Molybdenum alloy and its effect on the immobilization of poly(ethylene glycol). Mater Trans 49: 805-811, 2008.
5. Srimaneepong V, Yoneyama T, Kobayashi E, Doi H, Hanawa T, Comparative study on torsional strength, ductility and fracture characteristics of laser-welded $\alpha+\beta$ Ti–6Al–7Nb alloy. Dent Mater 24: 839-845, 2008.
6. Sato Y, Nomura N, Fujinuma S, Chiba A, Microstructure and tensile properties of hot-pressed Co-Cr-Mo alloy compacts for biomedical applications. J. J. Inst. Met. 72: 532-537, 2008.
7. Tanaka Y, Nakai M, Akahori T, Niinomi M, Tsutsumi Y, Doi H, Hanawa T, Characterization of air-formed surface oxide film on Ti-29Nb-13Ta-4.6Zr using XPS and AES. Corro Sci 50: 2111-2116, 2008.
8. Sato Y, Nomura N, Chiba A, Effect of nitrogen content on microstructure of hot-pressed Co-Cr-Mo alloy compacts for biomedical applications. J. J. Inst. Met. 72: 875-880, 2008.

Review Article

1. T. Hanawa: Metals for dental treatment. Bullettin of The Iron and Steel Institute of Japan. 13: 209-215, 2008.
2. Tsutsumi Y: Effects of Pd and Pt on corrosion behavior of Zr in simulated body fluid. The Journal of Dental

Engineering 166: 35-36, 2008.
3. N. Nomura: Metallic materials for regenerative medicine. Journal of Japanese Society for Biomaterials 26: 320-324, 2008.
4. Creation of titanium-Segmented polyurethane composite through silane coupling agent, Journal of The Society of Materilas Science, Japan 57: 859-867, 2008.

Book

1. T. Hanawa: Chap.2, Metallic Biomaterials, Materials Series, Biomaterials, Uchida Rokakuho Publishing Co. 29-84, 2008.
2. T. Hanawa: Chap.7, Case histories of Implants and dental restoratives, The current Issue Case Histries in Corrosion Failures Analysis and Corrosion Diagnosis, Technosystem, 911-923, 2008.
3. T. Hanawa: Implants and Biomaterials, Metallic titanium, Basis and Application of AQB Implant, AQB Workshop, Advance Co. Ltd., 144-154, 2008.
4. T. Hanawa: Review Chap.3.2, Metals, Biomaterials, Ecomaterials Series, Japanese Society for Ceramics, Nikkan Kogyo Shinbunnsha, 29-35, 2008.

5. Others

Invited lecture

1. Hanawa T. Surface treatment to improve biocompatibility of Ti-Ni Alloy. Seminar of Department of Orthodontics, University of Helsinki, Helsinki, Finland, Mar, 2008.
2. Hanawa T. Current and future metal-based biomaterials, Seminar Series in MIRDC, Metal Industries Research & Development Centre, Kaohsiung, Taiwan, Aug, 2008.
3. Hanawa T. Surface modification of metals for biomedical use, Seminar Series in MIRDC, Metal Industries Research & Development Centre, Kaohsiung, Taiwan, Aug, 2008.
4. Hanawa T. Resent research on metals for medicine and dentistry in IBB-TMDU, Seminar Series in MIRDC, Metal Industries Research & Development Centre, Kaohsiung, Taiwan, Aug, 2008.
5. Tsutsumi Y. Round robin testing on biotribocorrosion, COST533 action, Biotribology: materials for Improved Wear Resistance of Total Artificial Joints, Athens, Greek, Oct, 2008.
6. Hanawa T. Immobilization of poly(ethylene glycol) to metal surfaces with electrodeposition, 4th International Symposium Design, Processing,a nd Properties of Advanced Engineering Materials (ISAEM-2008), Nagoya University, Nagoya, Japan, Nov, 2008.
7. Hanawa T. Immobilization of poly(ethylene glycol) to metal surfaces with electrodeposition, 4th International Symposium Design, Processing,a nd Properties of Advanced Engineering Materials (ISAEM-2008), Nagoya University, Nagoya, Japan, Nov, 2008.
8. Hanawa T. Calcium phosphate formation mechanism on titanium, The Seventh International Symposium on Biomaterials, Kyngpook National University, Deague, Korea, Dec, 2008.
9. Hanawa T: Biocompatibility and safety of Co-Cr alloys, The 2nd workshop on development of the novel processing of artificial joints, Toyama New Industry Organization, Takaoka, Feb. 2008.
10. Hanawa T: Immobilization of bio-functional molecules on metals for anti-bacterialization, The 2nc meeting of the interaction between biofilm and steels, Division of microstructure and properties in The Iron and Steel Institute of Japan, Osaka, Feb. 2008.
11. Hanawa T: Biofilm formation on orthopedics implants and infection, Plasma ion forum, Kyoto, April 2008.
12. Hanawa T: Biocompatibility of metals and their bio-functionalization, Conference for Japan Medical Materials and the associated company, Osaka, April 2008.
13. Hanawa T: Metals for orthopedics, Lecture of training and development in the 81st meeting of the Japanese Orthopedic Association, May 2008.
14. Nomura N: Fabrication of porous metals and their integrations for biomedical applications. Workshop of cooperative research in Institute for Materials Research, Tohoku University, The meetings of the Japanese Society for Biomaterials in the Tohoku Region, Sendai, Nov. 2008.
15. Tsutsumi Y: Corrosion measurement for metallic biomaterials. 堤　祐介. Workshop of cooperative research in Institute for Materials Research, Tohoku University, The meetings of the Japanese Society for Biomaterials in the Tohoku Region, Sendai, Nov. 2008.
16. Hanawa T: Bio-functionalization of metals by immobilizing bio-functional molecules using electrodeposition method,

Symposium on regenerative medicine and medical engineering, Sapporo, Dec. 2008.

Patent

1. Bone fixation devices, TOKUGAN 2008-032345, Hanawa T, Doi H, Akazawa T, Nakamura K, Murata M, 2008.2.13.
2. Metallic materials inhibiting blood clots formation and platelet adhesion, TOKUGAN 2008-107373, Yoneyama T, Hanawa T, Komiya T, 2008.4.17.
3. Manufacture method for biomaterials in contact with hard tissue, PCT/JP2008/066054, Tsutsumi Y, Nishimura D, Hanawa T, 2008.9.5
4. Metallic biomaterials and medical devices, TOKUGAN 2008-246799, Hanawa T, Nomura N, 2008.9.25
5. Polymer brushes and their fabrication methods, TOKUGAN 2008-247361, Hanawa T, Tsutsumi Y, Nam K, Kishida A, Kobayashi H, Yoshikawa C, 2008.9.26

Award

1. Tsutsumi Y: 6th IBB BioFuture Research Encouragement Prize, Young Investigator Division, January 2008.
2. Nishimura D: 6th IBB BioFuture Research Encouragement Prize, Master Course Division, January 2008.
3. Tanaka Y: 6th IBB BioFuture Research Encouragement Prize, Foreign Institution Travel Award, January 2008.
4. Hanawa T: Fellow, Biomaterials Science and Engineering (FBSE), the International Union of Societies for Biomaterials Science and Engineering, May 2008.
5. Y. Tanaka: 4th International Symposium on Designing, Processing and Properties of Advanced Engineering Materials, Nagoya, Excellent poster awards, Nov. 2008.

Biomechanics (Biodesign)

1. Staffs and Students

Professor	Kazuo TAKAKUDA	
Assistant Professor	Yoshihisa KOYAMA,	Masahiro NAGAI
Research Assistants	Hiroko MATSUMOTO	
Graduate Students	Satoshi ONO,	Seiji ASODA,
	Tomoyuki KAWAI,	Takayuki ARITA,
	Takao IRIBE,	Kazunori UEDA,
	Hiroyuki KADONO,	Yuki SAITO,
	Hiroshi YANAGIDA,	Teruaki YOSHIDA,
	Hazuki KOSHITOMAE,	Ryo KOKUBUN,
	Yutaka FUKUDA,	Masahiro WATANABE,
	Atsushi MITA,	Tetsuro WATANABE,
	Takashi KITAO,	Kimihiro OKANO,
	Ryoichi SUZUKI,	Katsunari MURAKAMI

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. Fujii K, Matsumoto HN, Koyama Y, Iwasaki Y, Ishihara K, Takakuda K. Prevention of biofilm formation with a coating of-methacryloyloxyethyl phosphorylcholine polymer. *J Veterinary Med Sci* 70-2:167-173, 2008.
2. Mukai T, Shirahama N, Tominaga B, Ohno K, Koyama Y, Takakuda K. Development of watertight and bioabsorbable synthetic dural substitutes. *Artificial Organs*, 32-6:473-483, 2008.
3. Ono S, Kadoma Y, Morita S, Takakuda K. Development of new bone cement utilizing low toxicity monomers. *J Med Dent Sci* 55:189-196, 2008.
4. Matsumoto HN, Koyama Y, Takakuda K. Effect of mechanical loading timeline on periosteal bone formation. *J*

Biomech Sci Eng 3-2:176-187, 2008.
5. Asoda S, Arita T, Koshitomae H, Takakuda K. Mechanical attachment of soft fibrous tissues to implants by using mesh structures. *Clinical Oral Implants Research* 19:1171-1177, 2008.
6. Yoshida T, Mizuno I, Kikuchi M, Koyama Y, Takakuda K. Changes in osteogenic activity of MG63 cells on Hydoroxyapatite/Collgen nanocomposite sponge under pressure/perfusion culture. *Key Engineering Materials,* 361-363:1079-1082, 2008.

Presentations

1. Kikuchi, M., Koyama, Y., Takakuda, K. and Tanaka, S. Preparation of interconnected porous scaffold using hydroxyapatite/collagen bone-like nanocomposite membrane and its biological reactions. *Materials Research Society 2008 Spring meeting,* San Francisco (USA), Mar, 2008.
2. Kikuchi M, Koyama Y, Takakuda K, Edamura K, Tanaka S. Development novel artificial bone using hydroxyapatite/collagen self-organized bone like nanocomposite membrane. *International Conference Composites/Nano engineering ICCE-16*, Kunming (China), Jul, 2008.
3. Kikuchi M, Suetsugu Y, Yoshida T, Koyama Y, Sotome S, Itoh S, Takakuda K, Shinomiya K, Edamura K, Nagaoka K, Tanaka S, Kweon OK. Research on bone regeneration materials in ceramic biomaterial, *Japan-Korea Joint Symposium 2008 Biomaterials & Regenerative Medicine,* Tsukuba (Japan), Aug, 2008.
4. Kikuchi M, Koyama Y, Takakuda K, Tanaka S. Preparation of unidirectional porous scaffold using hydroxyapatite/collagen bone-like nanocomposite membrane and its biological reactions. *4th International Symposium Apatite & Correlative Biomaterials,* Manila (Philippine), Sep, 2008.
5. Kikuchi, M, Edamura, K, Koyama, Y, Takakuda, K, Tanaka, S. Critical bone defect regeneration using unidirectional porous scaffold composed of hydroxyapatite/collagen bone-like nanocomposite membrane, *Asian Bioceramics Symposium 2008*, Chennai (India), Nov, 2008.
6. Byeon YE, Ryu HH, Koyama Y, Kikuchi M, Lee SR, Seo MS, Kim WH, Kang KS, Kweon OK. Enhanced osteogenesis of canine allogenic umbilical cord blood-delived mesenchymal stem cells associated with beta-tricalcium phosphate. *2008 Annual Conference Tissue Engineering & Regenerative Medicine International Society-Asian pacific region,* Taipei(Taiwan), Nov, 2008.
7. Onomoto H, Yoshioka T, Shinozaki K, Tanaka J, Matsumoto H, Tanioka A, Kishiya Y, Kashiwazaki H, Inoue N, Koyama Y, Takakuda K. Characteristics of chitosan film coated with apatite. *IUMRS International Conference in asia 2008*, Nagoya (Japan), Dec, 2008.

Clinical Anatomy

1. Staffs and Students (April, 2008)

Associate Professor	Keiichi AKITA	
Research Associate	Kumiko YAMAGUCHI	
Graduate Student	Kosuke MATSUNAGA,	Naoki MATSUOKA,
	Atsuo KATO	

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) Analyses of the lamination in the masticatory muscles with special reference of nerve supply
3) Embryological study of the differentiation of cloaca and surrounding muscles.
4) Cadaveric study of the female pelvis for the gynecologic oncology and colposcopy

4. Publications

Original Article

1. Yamaguchi K, Kiyokawa J, Akita K. Developmental processes and ectodermal contribution to the anal canal in mice. Ann Anat. 2008;190(2):119-28.
2. Mochizuki T, Sugaya H, Uomizu M, Maeda K, Matsuki K, Sekiya I, Muneta T, Akita K. Humeral insertion of the supraspinatus and infraspinatus. New anatomical findings regarding the footprint of the rotator cuff. J Bone Joint Surg Am. 2008 May;90(5):962-9.
3. Tanaka R, Ibukuro K, Akita K. The left inferior phrenic artery arising from left hepatic artery or left gastric artery: radiological and anatomical correlation in clinical cases and cadaver dissection. Abdom Imaging. 2008 May-Jun;33(3):328-33.
4. Usui A, Akita K, Yamaguchi K. An anatomic study of the divisions of the lateral pterygoid muscle based on the findings of the origins and insertions. Surg Radiol Anat. 2008 Jun;30(4):327-33.
5. Arai R, Sugaya H, Mochizuki T, Nimura A, Moriishi J, Akita K. Subscapularis tendon tear: an anatomic and clinical investigation. Arthroscopy. 2008 Sep;24(9):997-1004.
6. Hamada J, Igarashi E, Akita K, Mochizuki T. A cadaveric study of the serratus anterior muscle and the long thoracic nerve. J Shoulder Elbow Surg. 2008 Sep-Oct;17(5):790-4.
7. Nakamura M, Nishiyama Y, Henmi C, Iwanaga S, Nakagawa H, Yamaguchi K, Akita K, Mochizuki S, Takiura K. Ink jet three-dimensional digital fabrication for biological tissue manufacturing: analysis of alginate microgel beads produced by ink jet droplets for three dimensional tissue fabrication. J. Imaging Sci Technol. 2008 52:6

Plastic & Reconstructive surgery

1. Staffs and Students (April, 2008)

Junior Associate Professor	Hiroki Mori	
Assistant Professor (Hospital Staff)	Masumi Suzuki	
Graduate Student	Petros R,	Hilati A

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. Various vascularized tissue transfer
2. Development of wound dressing using Chitosan
3. Development of artificial nerve

Clinical research

1. Cleft lip and palate
2. Microtia
3. Sensory recovery of transfer tissue
4. Breast reconstruction
5. Skin cancer
6. Esophagus 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, Hata Y. Modified C-V flap in nipple reconstruction. Journal of Plastic, Reconstructive & Aesthetic Surgery 2008; 61: 1109-1110

Head and Neck Surgery

1. Staff s and Students

Professor	Seiji Kishimoto	
Assistant Professor	Satoshi Shirakura (～March),	Ryosuke Kamiyama (April～)
Hospital Staff	Tomomasa Hayashi (April～)	
Secretary	Mariko Toa	
Graduate Student	Ryuichi Hayashi (～March),	Mituru Ebihara,
	Toru Ugumori,	Tomomasa Hayashi,
	Masakazu Miyazaki	

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.

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. Yasumura T, Sakuraba M, Kimata Y, Nakatsuka T, Hayashi R, Ebihara S, Hata Y. Functional Outcomes and Reevaluation of Esophageal Speech After Free Jejunal Transfer in Two Hundred Thirty-Six Cases. Annals of Plastic Surgery. 62(1), 2009.
2. Yuichi Tomidokoro,Ryuichi Hayashi,Mitsuo Yamasaki,Genichiro Ishii,Tomoyuki Kamijo,Satoshi Ebihara. Simultaneous squamous cell carcinoma with leiomyosarcoma of the larynx. Auris Nasus Larynx.36 : 239-243,2009
3. Kiyota N, Tahara M, Fjii S, Kawashima M, Ogino T, Minimi H, Hayashi R,A Ohtsu A. Nonplatinum-based Chemotherapy with Irinotecan Plus Docetaxel for Advanced or Metastatic Olfactory Neuroblastoma. American Cancer Society. 112(4):885-891, 2008.
4. Kusahuka K, Takizawa Y, Ueno T, Ishiki H, Asano R, Kamijo T, Iida Y, Ebihara M, Ota Y, Onitsuka T, Kameya T. Dedifferentiated epithelial-myoepithelial carcinoma of the parotid gland:a rare case report of immunohistochemical analysis and review of the literature. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2008;106:85-91
5. Hata H, Ebihara M, Onitsuka T, Nakagawa M, Kitagawa Y, Ota Y. Large ameloblastoma of the mandible with hypoproteinemia. Int. J.Oral Maxillofac. Surg.2008;37:866-869

Review Article

Book

International Congress

1. S.Kishimoto: Chairman : JBES Special Lecture" Surgical Management of Carcinoma of Cervical Esophagus 2 by William I Wei: 15ht World Congress for Bronchology and 15ht World Congress for Bronchesophagology, Tokyo, March, 2008

2. Tsunoda, S Kishimoto: Digital image enhanced for detailed endoscopic observation: possibility of the early detection for otolaryngological lesions. 12th Japan-Korea Joint Meeting of Otorhinolaryngology-Head and neck Surgery, Nara, April, 2008
3. S Kishimoto, A Tunoda: Surgical technique of facial dismaking approach for craniofacial lesion. 12th Japan-Korea Joint Meeting of Otorhinolaryngology-Head and neck Surgery, Nara,April,2008
4. S Kishimoto: Chairman:Oral session "head and Neck Surgery. 12th Japan-Korea Joint Meeting of Otorhinolaryngology-head and neck Surgery, Nara, April ,2008
5. S. Shirakura, S. Kishimoto, A. Tsunoda. The surgical treatment of pediatric sarcoma in the head and neck region. 7th International Conference on Head and Neck Cancer. San Francisco July, 2008
6. S. Kishimoto, A. Tsunoda, H. Koda. Surgical technique of "facial dismasking approach" for craniofacial lesion. 7th International Conference on Head and Neck Cancer, San Francisco, July,2008
7. T. Asakage, S. Kishimoto. Elective Neck Dissection for Stage II Tongue Cancer. 7th International Conference on Head and Neck Cancer. San Francisco, July,2008
8. A. Tsunoda, R. Kamiyama, T. Sumi, K. Kitamura, S. Kishimoto and Kouichi. K. Digital image enhancement for detailed endoscopic observation: possibility of the early detection of Head & Neck lesion. 7th International Conference on Head and Neck Cancer, San Francisco, July, 2008
9. S. Kishimoto. Symposium : Techniques & pitfalls in surgery of neck and salivary gland "Standard neck dissection -A demonstration using frozen fresh cadaver-. 10th Sumposium of the Korea Society of Head and Neck Surgery: Technique & pitfalls in head and neck surgry, Pusan, Novemmber, 2008
10. S. Kishimoto. Symposium: Infratemporal fossa and parapharyngeal space "Surgical strategy for extracranial trigeminal schwannoma", 9th Asian-Oceanian International Congress on SkullBaseSurgery, Pusan,November, 2008
11. S. Kishimoto. Symposium: Tran facial approach to skull base lesion". 9th Asian-Oceanian International Congress on Skull Base Surgery, Pusan, November, 2008

Diagnostic Radiology and Oncology

1. Staff and Students (April to December, 2008)

Professor	Hitoshi Shibuya	
Associate Professors	Isamu Ohashi and Ichiro Yamada	
Lecturers	Kaoru Hanafusa and Mitsuhiro Kishino (Spt.～),	
	Ryuhji Ishida (～Aug.),	
Research Associates	Kazunori Kubota,	Rin Chaou,
	Fumio Ayukawa (～Spt.)	YoshioKitazume(Oct.～),
	Keiji Hayashi	
Hospital Staff members	Kazuma Toda,	Takaya Takeguchi (～Oct),
	Akira Toriihara,	Satoko Arai (～Nov.),
	Shuichiro Nakaminato (～June),	
	Akiyuki Matsuhisa,	Daisuke Amano
Graduate Students	Piao Yong Nan,	Boldo Bayahkhuu,
	Abulajiang Tayier and Rahman MD Khalilur	
Research Students	Kiyomi Amemiya and Yoshiaki Katada	

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 60 members; about 40 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. degree and 34 students have obtained a degree of PH.D. under the guidance of Prof. Shibuya.

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:

Two sets high speed MRI (1.5T) 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 he radiation oncology section. The 720 new patients referred for radiotherapy in 2008 included 250 cases of head and neck cancer patients, 120 prostate cancer patients and 110 breast cancer patients. Over 140 oral/oropharynx cancer patients were treated by brachytherapy in 2008. The results of brachytherapy were compatible to the results obtained by surgery, and post-treatment quality of life was better than after surgery.

We are now conducting gene analyses of oral cancers, and comparisons between tumor gene expression and the results of treatment are providing new information in regard to the treatment of head and neck cancers.

4. Manuscript

1. Yoshimura RI, Hayashi K, Ayukawa F, Toda K, Iwata M, Oota S, Hoshi A, Wakatsuki M, Kurosaki H, Okazaki A, Shibuya H. Radiotherapy dosed at special reference points correlate with the outcome of cervical cancer therapy. Brachytherapy 7: 260-266, 2008 .
2. Watanabe H, Mogushi K, Miura M, Yoshimura R, Kurabayashi T, Shibuya H, Tanaka H, Noda S, Iwakawa M, Imai T. prediction of lymphatic metastasis based on gene expression profile analysis after brachytherapy for early-stage oral tongue carcinoma. Radiotherapy and Oncology 87:237-242, 2008.
3. Morooka M, Kubota K, Murata Y, Shibuya H, Ito K, Mochizuki M, Akashi T, Chiba T, Nomura T, Ito H, Morita T. ^{18}F-FDG-PET/CT findings of granulocyte colony stimulating factor (G-CSF)-producing lung tumors . Ann Nuc Med. 22, 635-639; 2008.
4. Katada Y, Kishino M, Ishihara K, Takeguchi T, Shibuya H. Anomalous arterial supply to the gallbladder from the superior mesenteric artery: angiography and computed tomography findings in two cases. Acta Radiol. 49: 987-990, 2008.
5. Teshima T, Numasaki H, Shibuya H, Nishio M, Ikeda H, Ito H, Sekiguchi k, Kamikonnya N, Koizumi M, Tago M, Nagata Y, Masaki H, Nishimura T, Yamada S, Japanese structure survey of radiation oncology in 2005 based on institutional stratification of patterns of care study. Int J Radiat Oncol Biol Phys. 72: 144-152, 2008.
6. Hayashi K, Hatsuno K, Yoshimura RI, Iida T, Ayukawa F, Toda K, Taniguchi H,Shibuya H.Electron Therapy for Orbital and Periorbital Lesions Using Customized Lead Eye Shields. Ophthalmologica. 223(2): 96-101, 2008.
7. Satoh S, Kitazume Y, Taura S, Kimula Y, Shirai T, Ohdama S. Pulmonary emphysema: histopathologic correlation with minimum intensity projection imaging, high-resolution computed tomography, and pulmonary function test results. J Comput Assist Tomogr 2008;32: 576-582.
8. Satoh S, Kitazume Y, Ohdama S, Kimula Y, Taura S, Endo Y. Can malignant and benign pulmonary nodules be differentiated with diffusion-weighted MRI? Am J Roentgenol 2008;191: 464-470.
9. Nakagawa T, Yamada M, Suzuki Y. 18F-FDG uptake in reactive neck lymph nodes of oral cancer: relationship to lymphoie follicles. J Nuc Med. 48:1053-1059, 2008.
10. Ibukuro K, Tanaka R, Fukuda H, Abe S, Tobe K. The superior group of vessels in the faiciform ligament: anatomical and radiological correlation. Surg Radiol Anat. 2008; 30:311 - 5
11. Tanaka R, Ibukuro K, Akita K. The left inferior phrenic artery arising from left hepatic artery or left gastric artery: radiological and anatomical correlation in clinical cases and cadaver dissection. Abdom Imaging. 2008; 33: 328-33
12. Yamada I, Okabe S, Enomoto M, Sugihara K, Yoshino N, Tetsumura A, Kumagai J, Shibuya H. Colorectal carcinoma: in vitro evaluation with high-spatial-resolution 3D constructive interference in steady-state MR imaging. Radiology 246(2): 444-453, 2008.
13. Bold B, Piao Y, Murata Y, Kishino M, Shibuya H. Usefulness of PET/CT for detecting a second primary cancer after treatment for squamous cell carcinoma of the head and neck. Clin Nuc Med33: 831-833, 2008

5. Congress

1. Isogai J, Miyazaki M, Shimada T, Hatakeyama H, Yamada T, Matsuo N, Maejima S, Yodo K, Miyata T: Non-contrast MRA of the Toes using time-Spatial Labeling Inversion Pulse (time-SLIP) and Optimization of Flow-spoiled Gradient Pulses for the Assessment of Foot Arteries in Flow-spoiled Fresh Blood Imaging (FBI); ISMRM, Toronto, May 2008
2. Miyazaki M, Yui M, Kanazawa H, Isogai J, Takahashi J. Nonenhanced MRA Technique: Applications of Time Spatial Labeling Inversion Pulse (Time-SLIP). MRAngio Club Meeting, Graz, October 2008
3. Nakagawa T, Yamada M, Uno T, Suzuki Y, Toriihara A, Umehara I, Yoshida K. FDG uptake in GIST with the relation to tumor size and mitosis. European Congress of Radiology (ECR). 7-11 March 2008 Vienna, Austria.

4. Nakagawa T, Yamada M, Uno T, Suzuki Y, Ren L, Umehara I, Yoshida K. 18F-FDG uptake in reactive neck lymph nodes of oral cancer: relationship to lymphoie follicles. 55th Annual Meeting of the Society of Nuclear Medicine (SNM). 14-18 June 2008 New Orleans, USA.
5. Nakagawa T, Matsumoto J, Saito Y, Kambe T, Umehara I, Yoshida K. Dual time point 18F-FDG PET/CT of operable non-small cell lung carcinoma: 18F-FDG uptake in the primary tumor in comparison with pathological factors. Annual Congress of European Association of Nuclear Medicine (EANM). 11-15 Oct 2008 Munich, Germany.
6. Nakagawa T, Shimbo M, Tomioka S, Nakatsu H, Umehara I, Yoshida K. 18F-FDG PET/CT study in patients with urothelial carcinoma: Diagnostic utility of evaluating possible metastatic lesions. 9th Asia Oceania Congress of Nuclear Medicine & Biology (AOCNMB). Abstract. 31 Oct-4 Nov 2008 New Delhi, India.
7. Nakagawa T, Matsumoto J, Saito Y, Kambe T, Umehara I, Yoshida K. 18F-FDG uptake in operable non-small cell lung carcinoma: Comparison with pathological vessel invasion and nodal metastasi. 94th Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA). 30 Nov-5 Dec 2008 Chicago, USA.

Biostructural Science

1. Staffs and Students (as of April, 2008)

Professor	Yoshiro TAKANO	
Associate Professor	Makoto J TABATA	
Assistant Professor	Otto BABA,	Masayuki YOSHIMI
	Yoko SHUDA (on leave for child care)	
Technician	Hachiro ISEKI	
Secretary	Yuichiro NAKAI	
Graduate Student	Yi LI,	Kazunori HIGUCHI,
	Hiroto NAKAYAMA,	Takuya NOTANI,
	Masud AHMAD,	Devi Sewvandini ATUKORALA
Research Students	Hitoshi TAMAKI,	Nobuyuki TAKAHASHI,
	Jun-ichi MATSUNARI	

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. Clinical Services

5. Publications

Original Article

1. Louzao MC, Espiña B, Vieytes MR, Vega FV, Rubiolo JA, Baba O, Terashima T, Botana LM: "Fluorescent glycogen" for in vivo and in vitro detection. Glycoconj J, 25: 503-510, 2008.
2. Shibata S, Baba O, Oda T, Tamaki-Yokohama T, Qin C, Butler WT, Sakakura Y, Takano Y: An immunohistochemical and ultrastructural study of the pericellular matrix of uneroded hypertrophic chondrocytes in the mandibular condyle of aged c-src-deficient mice. Arch Oral Biol, 53: 220-230, 2008.
3. Panza G, Stöhr J, Birkmann E, Riesner D, Willbold D, Baba O, Terashima T, Dumpitak C: Aggregation and amyloid fibril formation of the prion protein is accelerated in presence of glycogen. Rejuvenation Res、11, 365-369, 2008.
4. Higuchi K, Santiwong P, Terashima T, Nakayama H, Notani T, Iseki H, Baba O, Takano Y: Development and terminal differentiation of pulp and periodontal nerve elements in subcutaneous transplants of molar tooth germs

and incisors of the rat. Eur J Oral Sci, 116: 324-333, 2008.

5. Li Y, Nakayama H, Notani T, Ahmad M, Tabata MJ, and Takano Y: Phosphatase actions at the site of appositional mineralization in bisphosphonate-affected bones of the rat. J Med Dent Sci, 55, 255-265, 2008.
6. Katsube K, Matsuda N, Kishi K, Takano Y, Iseki H, Katsuki Y, Yamaguchi A, Nakajima H, Mikami S, Mukai M, Nakajima T: E-cadherin expression in the subepithelial nevus cells of the giant congenital nevocellular nevi (GCNN) correlates with their migration ability in vitro. J Dermatol Sci, 51: 21-30, 2008

Review Article

Book

Awards

1. Notani T: JADR Young Investigator Award 2008 (Three-dimensional & layered culture method for tooth induction and development, 56th JADR General Session, Nagoya, November 29, 2008.

Abstracts

[International Meetings]

1. Li Y, Nakayama H, Notani T, Ahmad M, and Takano Y: Matrix Vesicles-Induced Mineralization and Phosphatase Actions in Bisphosphonate-Affected Bones. 86th IADR General Session, July 2-July 5, 2008, Toronto, Canada
2. Winarakwong L, Santiwong P, Poomsawat S, Takano Y: Displacement of Orthodontic Microscrews under Retractive Force in the Rat Maxilla. The 7th World Implant Orthodontic Conference, September 2008, Seoul, Korea.
3. Takano Y: Cell Dynamics in Calcium Regulating Epithelium of the Enamel Organ during Tooth Enamel Formation：The 7th Federation Meeting of Korean Basic Dental Scientists, 2008, Dec 2-Dec 3, 2008, Seoul, Korea

[Domestic Meetings]

1. Takano Y.: 石灰化機構から象牙芽細胞と骨芽細胞の異同を探る、日本解剖学会シンポジウム：象牙芽細胞と骨芽細胞の違いを考える、第113回日本解剖学会学術大会、平成20年3月27日～29日、大分大学
2. Inohaya K, Takano Y, Kudo A: Analysis of the Dharma-medaka mutant, which shows a defect in formation and/or maintenance of intervertebral region. 第４１回日本発生生物学会 2008年5月28日～30日、徳島
3. Inohaya K, Takano Y, Kudo A: 脊椎骨融合を示すダルマメダカ変異体の原因遺伝子の解明 Analysis of the Dharma-medaka mutant, which shows a defect in formation of vertebral column、日本動物学会第79回大会 ９月５日～７日 福岡大学
4. Yagi Y, Suda N, Moriyama K, Yamakoshi Y, Baba O：Enamel matrix derivative (EMD)の歯根吸収抑制活性はアメロゲニンが担う. 第67回日本矯正歯科学会大会、2008年9月16-18日, 千葉.
5. Baba O, Ota MS, Terashima T, Tabata MJ, Takano Y: ラット歯髄におけるFGF18の発現：in situ RT-PCRによる検出. 第50回歯科基礎医学会, 2008年9月23-25日, 東京.
6. Terashima T, Baba O, Abe T, Sjhikano S, Yamashita Y, Ohida S: 長期間器官培養法と皮下移植法を用いたマウス歯胚の多根歯形成について. 第50回歯科基礎医学会, 2008年9月23-25日, 東京.
7. Yagi Y, Suda N, Yamakoshi Y, Baba O, Moriyama K: Amelogeninはin vivoにおいて歯根吸収を抑制する. 第50回歯科基礎医学会, 2008年9月23-25日, 東京.
8. Atukorala ADS, Higuchi K, Tabata MJ, Baba O, Mitani H , Takano Y: Impaired Tooth Development In Reduced Scale Medaka Mutant. 56th General Session of the JADR, Nov29-30, 2008, Nagoya, Japan.
9. Notani T, Tabata MJ, Baba O, Takano Y: Three-dimensional & layered culture method for tooth induction and development. 56th General Session of the JADR, Nov29-30, 2008, Nagoya, Japan.
10. Ahmad M, Iseki H, Baba O, Tabata MJ, Takano Y: Provisional mineralization layer in the predentin of murine teeth 56th General Session of the JADR, Nov29-30, 2008, Nagoya, Japan.
11. Yagi Y, Suda N, Yamakoshi Y, Baba O, Moriyama K: Amelogenin is a Potent Inhibitor of Odontoclastic Root Resorption. 56th General Session of the JADR, Nov29-30, 2008, Nagoya, Japan.

[Invited Lectures]

1. Takano Y: Bone remodeling and Ca mobilization in Medak、JAXA Workshop on Animal Models for Space Flight Experiments, Jan 11, Tokyo.
2. Takano Y: Role of odontoblasts and osteoblasts in mineralization of dentin and bone, Symposium on odontoblasts

and osteoblasts, 113th General Session of Japanese Association of Anatomists、Mar 27-29, 2008, Ohita.

3. Takano Y: Cell Dynamics in Calcium Regulating Epithelium of the Enamel Organ during Tooth Enamel Formation : Water and Salt Institute Seminar, , Sept 16, 2008, Water and Salt Institute, Aarhus University, Denmark.
4. Takano Y: Cell Dynamics in Calcium Regulating Epithelium of the Enamel Organ during Tooth Enamel Formation : The 7th Federation Meeting of Korean Basic Dental Scientists (2008), Dec 2- 3, 2008, Seoul, Korea.

Pharmacology

1. Staffs and Students(April, 2008)

Professor	Keiichi OHYA
Associate Professor	Hitoyata SHIMOKAWA
Assistant Professor	Yukihiko TAMURA
Assistant Professor	Kazuhiro AOKI
Technologist	Mariko TAKAHASHI
Secretary	Chikako KIDO
Graduate Student	SOYSA Hennadige Niroshani Surangika
	Wantida SRIARJ (Developmental Oral Health Science)
	ALLES Chrisman Neil Roshan Alexander
	Nobuyoshi TOMOMATSU(Maxillofacial Surgery)
	Kenichi NAGANO
	Hiroyuki NAKACHI(Maxillofacial Surgery)
	Naoki HAYASHI(Dentistry for Persons with Disabilities)
	Toshimi SATO

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) Drug effects on the formation mechanism of teeth and bone
2) Pharmacological analysis of bone resorption mechanism
3) Development of inhibitors for bone resorption and their clinical trials
4) Toxicity of heavy metals in mineralized tissue

4. Publications

Original Article

1. Yokota T, Shimokawa H, Shibata S, Itoh K, Baba Y, Ohya K, Ohyama K, Suzuki S. Insulin-like Growth Factor I Regulates Apoptosis in Condylar Cartilage. J Dent Res Vol.87(2), pp159-163, 2008
2. Asagiri M, Hirai T, Kunigami T, Kamano S, Gober H-J, Okamoto K, Nishikawa K, Latz E, Golenbock D.T, Aoki K, Ohya K, Imai Y, Morishita Y, Miyazono K, Kato S, Saftig P, Takayanagi H. Cathepsin K-Dependent Toll-Like Receptor 9 Signaling Revealed in Experimental Arthritis. Science Vol.319, pp.624-627, February 2008
3. Mian MD, Saito H, Alles N, Shimokawa H, Aoki K, Ohya K. Lipopolysaccharide-induced bone resorption is increased in TNF type 2 receptor-deficient mice in vivo. J Bone Miner Metab Vol.26, pp469-477, 2008
4. Yokoyama Y, Damrongrungruang T, Kuroda S, Takano Y, Ohya K, Kasugai S, Kondo H. Comparative Analysis of Gene Expression by cDNA Microarray between Cementoblasts and Periodontal Ligament Cells in the Murine Mandible. J Oral Biosci Vol.50(3), pp183-193, 2008
5. Samee M, Kasugai S, Kondo H, Ohya K, Shimokawa H, Kuroda S. Bone Morphogenetic Protein-2(BMP-2) and Vascular Endothelial Growth Factor (VEGF) Transfection to Human Periosteal Cells Enhances Osteoblast Differentiation and Bone Formation. J Pharmacol Sci Vol.108, pp18-31, 2008

Tissue Regeneration

1. Staff (April, 2008)

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

Original Article

1. Shinomura, T., Nakamura, S., Ito, K., Shirasawa, S., Höök, M. and Kimura, J. H. Adsorption of Follicular Dendritic Cell-secreted Protein (FDC-SP) onto Mineral Deposits – APPLICATION OF A NEW STABLE GENE EXPRESSION SYSTEM – J. Biol. Chem. 283 33658-33664 (2008)

Biochemistry

1. Staffs and student (April, 2008)

Professor	Masaki Yanagishita
Associate Professor	Miki Yokoyama
Junior Associate Professor	Yasuhiro Kumei
Assistant Professor	Katarzyna Anna Podyma-Inoue
Technical staff	Kazue Terasawa
Graduate student	Takahiro Masa

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. Localization of transmembrane proteins on the plasma membrane
d. Sensing and response mechanisms of cells toward gravity

4. No clinical services

5. Publications

[Original article]

1. Miki Hara-Yokoyama, Tomoko Kimura, Hiroaki Kaku, Motoaki Wakiyama, Yoko Kaitsu, Mio Inoue, Seisuke Kusano, Mikako Shirouzu, Shigeyuki Yokoyama, Toshiaki Katada, Yoshio Hirabayashi, Kiyoshi Takatsu, Masaki Yanagishita. Alteration of enzymatic properties of cell-surface antigen CD38 by agonistic anti-CD38 antibodies that prolong B cell survival and induce activation. International Immunopharmacology 8:59-70, 2008
2. Kaori Ueno-Noto, Miki Hara-Yokoyama and Keiko Takano, "Gangliosides' Inhibitory Effects on NAD Glycohydrolase: Estimating the Solvation Effect in the Physiological Environment", Bull. Chem. Soc. Jpn., 81, 1062-1071 (2008)
3. Miki Hara-Yokoyama, Kazue Terasawa, Akio Kihara, Jin-Wook Kim, Chan-Seo Park, Yoshio Hirabayashi, Yausyuki Hirabayashi and Masaki Yanagishita, "Sphingosine Kinase 2 Inhibitor Acceralates Fas-Medicated Cell Death Progression in A20/2J Cells", The Open Bioactive Compounds Journal, 1, 22-27 (2008)

[Review article]

1. Masaki Yanagishita, Katarzyna Anna Podyma-Inoue and Miki Yokoyama. Extraction and separation of proteoglycans. Glycoconj. J. (2008) in press.

[Proceeding]

1. Zeredo, J.L., Kumei, Y., Shibasaki, T., Yoshida, N. Kimoto, M. Toda, K.: Biting behavior induced by acute stress in the rat during experimental tooth movement. Proceedings of Measuring Behavior 2008, pp. 235, 2008.
2. Kumei, Y. Zeredo, J.L., Seki, S., Matsuura, M., Kimoto, M., Kageyama, D., Fusejima, Y., Ikeda, T., Toda, K.: Measuring the neuronal activity of hypothalamus nd behavior of rats on the diffuse low gravity conditions. Proceedings of Measuring Behavior 2008, pp. 245, 2008.
3. Kimoto, M., Kumei, Y., Zeredo, J.L., Toda, K.: Changes in feeding behavior after high gravity loading in orchidectomized and ovariectomized rats. Proceedings of Measuring Behavior 2008, pp. 298, 2008.

[Book chapter]

1. Masaki Yanagishita and Katarzyna Anna Podyma-Inoue, "Degradation of Hyaluronan and Its Disorder", In Experimental Glycoscience and Glycobiology, N. Taniguchi, A. Suzuki, H. Narimatsu, T. Kawasaki and S. Hase (eds), Springer, Tokyo (2008)

6. Presentation at meetings

1. Sachiko Takehara, Masaki Yanagishita, Katarzyna A. Podyma-Inoue, Masayuki Ueno, Kayoko Shinada and Yoko Kawaguchi, "Comparison of glycosylated and total salivary proteins between halitosis and non-halitosis patients", The 8th International Conference of Asian Academy of Preventive Dentistry, November 6 - 8, 2008, Jeju, Korea
2. Kumei, Y., Shimokawa, H., Morita, S., Ohya, K., Katano, H., Akiyama, H., Hirano, H., Sams, C.F., Whitson, P.A.: Down-regulation of ribosomal RNA synthesis in rat osteoblasts during spaceflight. at "Apoptosis World 2008" Symposium (Luxembourg). January 24, 2008.
3. Kumei, Y., Zeredo, J.L., Akiyama, H., Onizuka, T., Kobayashi, K., Kobayashi, C.: Apoptosis and senescence assessment of human oral tissues by telomere DNA. at "Apoptosis World 2008" Symposium (Luxembourg). January 25, 2008.
4. Zeredo, J.L., Sasaki, K.M., Aoki, A., Kumei, Y., Izumi, Y., Toda, K.: Post-operative pain sensation and possible apoptosis involvement in laser incisions. at "Apoptosis World 2008" Symposium (Luxembourg). January 25, 2008.
5. Kumei, Y., Shimokawa, H., Morita, S., Ohya, K., Akiyama, H., Hirano, H., Sams, C.F., Whitson, P.A.: Spaceflight decreased ribosomal RNA levels in rat osteoblasts. at "Life in Space for Life on Earth 2008" Symposium (Angers, France), June 23, 2008.
6. Kumei, Y., Zeredo, J.L., Seki, S., Kageyama, D., Matsuura, M., Fusejima, Y., Ikeda, T., Toda, K.: Rat hypothalamic response to the Lunar and Martian gravity during parabolic flights. at "Life in Space for Life on Earth 2008" Symposium (Angers, France), June 25, 2008.
7. Zeredo, J.L., Kumei, Y., Toda, K.: Stressful behaviors during moderate-low gravity exposure in rats. at "Life in Space for Life on Earth 2008" Symposium (Angers, France), June 25, 2008.
8. Kumei, Y., Akiyama, H., Ikeda, T., Ishioka, N., Ito, M., Iwasaki, K., Igarashi, M., Kageyama, D., Kizaki, M., Matsuura, M., Morita, S., Mukai, C., Nomura, Y., Toda, K., Wakata, K., Yamashita, M. Zeredo, J.L.: Japanese Research Group for Life Sciences in the Lunar and Martian Gravity. at "Life in Space for Life on Earth 2008" Symposium (Angers, France), June 26, 2008.
9. Zeredo, J.L., Kumei, Y., Shibasaki, T., Yoshida, N. Kimoto, M. Toda, K.: Biting behavior induced by acute stress in the rat during experimental tooth movement. At "Measuring Behavior 2008" Symposium (Maastricht, The Netherlands), August 27, 2008.
10. Kumei, Y. Zeredo, J.L., Seki, S., Matsuura, M., Kimoto, M., Kageyama, D., Fusejima, Y., Ikeda, T., Toda, K.: Measuring the neuronal activity of hypothalamus nd behavior of rats on the diffuse low gravity conditions. at "Measuring Behavior 2008" Symposium (Maastricht, The Netherlands), August 27, 2008.
11. Kimoto, M., Kumei, Y., Zeredo, J.L., Toda, K.: Changes in feeding behavior after high gravity loading in orchidectomized and ovariectomized rats. At "Measuring Behavior 2008" Symposium (Maastricht, The Netherlands), August 28, 2008.

7. Invited lecture

1. Masaki Yanagishita, "Roles of nucleotide sugar transporters in the formation of extracellular matrix", Annual Meeting for the Tumor Biology Research Group, Faculty of Medicine, University of Tromsø, September 22-24, 2008, Skibotn, Norway.

Cell Signaling

1. Staffs and Students (April, 2008)

Professor	Hiroshi TAKAYANAGI	
Associate Professor	Toshio HONGO	
Assistant Professor	Masahiro SHINOHARA,	Tomoki NAKASHIMA,
	Satoru HARUMIYA	
Tokunin Associate Professor	Masatsugu OHORA	
Tokunin Assistant Professor	Takako KOGA	
Graduate Student	Mikihiro HAYASHI,	Erik Idrus,
	Abdul Alim AL-BARI	

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) Functional analysis of genes by gene manipulations, RNAi and gene-disrupted mice
5) Development of clinical application by experimental animal disease models

5. Publications

【Original Article】

1. Mori Y, Tsuji S, Inui M, Sakamoto Y, Endo S, Ito Y, Fujimura S, Koga T, Nakamura A, Takayanagi H, Itoi E. and Takai T. Inhibitory immunoglobulin-like receptors LILRB and PIR-B negatively regulate osteoclast development. **J Immunol** 181, 4742-4751, 2008
2. Akiyama T, Shimo Yu, Yanai H, Qin J, Ohshima D, Maruyama Y, Asaumi Y, Kitazawa J, Takayanagi H, Penninger JM, Matsumoto M, Nitta T, Takahama Y and Inoue J. The tumor necrosis factor family receptors RANK and CD40 cooperatively establish the thymic medullary microenvironment and self-tolerance. **Immunity** 29, 423-437, 2008
3. Hikosaka Y, Nitta T, Ohigashi I, Yano K, Ishimaru N, Hayashi Y, Matsumoto M, Matsuo K, Penninger JM, Takayanagi H, Yokota Y, Yamada H, Yoshikai Y, Inoue J, Akiyama T and Takahama Y. The cytokine RANKL produced by positively selected thymocytes fosters medullary thymic epithelial cells that express autoimmune regulator. **Immunity** 29, 438-450, 2008
4. Shinohara M, Koga T, Okamoto K, Sakaguchi S, Arai K, Yasuda H, Takai T, Kodama T, Morio T, Geha RS, Kitamura D, Kurosaki T, Ellmeier W, Takayanagi H. Tyrosine kinases Btk and Tec regulate osteoclast differentiation by linking RANK and ITAM signals. **Cell** 132, 794-806, 2008
5. Asagiri M, Hirai T, Kunigami T, Kamano S, Gober HJ, Okamoto K, Nishikawa K, Latz E, Golenbock DT, Aoki K., Ohya K, Imai Y, Morishita Y, Miyazono K, Kato S, Saftig P and Takayanagi H. Cathepsin K-dependent toll-like receptor 9 signaling revealed in experimental arthritis. **Science** 319, 624-627, 2008

【Review Article】

1. Nakashima, T. and Takayanagi, H. The dynamic interplay between osteoclasts and the immune system. **Arch Biochem Biophys** (Highlight Issue: Bone Remodeling) 473(2), 166-171, 2008

【Presentation】

1. Hiroshi Takayanagi: Molecular mechanism in osteoclastogenesis. JSPS Core-to-Core Program International Workshop on Advanced Bone and Joint Science (ABJS) 2008.12.4, Tokyo
2. Hiroshi Takayanagi: Bone and Immune System. Annual Meeting of Korean Endocrine Society 2008.11.8 Jeju, Korea
3. Hiroshi Takayanagi: Th17 Cytokines and their Effects. 2008 ACR Basic Research conference 2008.10.24 San Francisco
4. Hiroshi Takayanagi: Osteoclasts in Arthritis and Osteoimmunology. The 13th Congress of the Asia Pacific League of Associations for Rheumatology 2008.9.23, Yokohama
5. Hiroshi Takayanagi: Use of mouse genetics in bone biology and osteoimmunology. EMBO Practice Course on "Anatomy and Embryology of the Mouse" 2008.9.10, Zagreb, Croatia
6. Hiroshi Takayanagi: Unexpected link between osteoclast and the immune system 2nd International Conference on Osteoimmunology: Interactions of the Immune and Skeletal Systems 2008.6.11, Rhodos, Greece
7. Hiroshi Takayanagi: Regulation of Osteoclastogenesis and Osteoimmunology. International Bone and Mineral Society Davos Workshops, 2008.3.10, Davos, Switzerland
8. T. Nakashima, H. Takayanagi: The crucial role of RANKL in bone loss and cancer metastasis. The 13th Congress of Asia Pacific League of Associations for Rheumatology, 2008.9.26, Yokohama
9. T. Koga, M. Shinohara, K. Okamoto, K. Arai, H. Takayanagi: Tec kinases form an osteoclastogenic signaling complex with SLP adaptor proteins. The 13th Congress of Asia Pacific League of Associations for Rheumatology, 2008.9.26, Yokohama
10. K. Arai, M. Shinohara, T. Koga, K. Okamoto, H. Takayanagi: Therapeutic potential of Tec kinase inhibitors on bone destruction. The 13th Congress of Asia Pacific League of Associations for Rheumatology, 2008.9.26, Yokohama
11. M. Shinohara, T. Koga, K. Okamoto, K. Arai, H. Takayanagi: Tyrosine kinases Btk and Tec are essential for osteoclast differentiation. The 13th Congress of Asia Pacific League of Associations for Rheumatology, 2008.9.25, Yokohama
12. K. Okamoto, M. Asagiri, T. Hirai, T. Kunigami, H.J. Gober, K. Nishikawa, K. Aoki, K. Ohya, S. Kato, P. Saftig, H. Takayanagi: A Novel Role of Cathepsin K In Autoimmunity: Regulation of Toll-Like Receptor 9 signaling in Dendritic Cells. The 13th Asia Pacific League of Associations for Rheumatology Congress, 2008.9.24, Yokohama
13. M. Hayashi, T. Nakashima, H. Takayanagi: NFATc1-dependent programme of osteoclast differentiation and function. The 13th Congress of Asia Pacific League of Associations for Rheumatology, 2008.9.24, Yokohama
14. Suematsu, Y. Tajiri, T. Nakashima, S. Ochi, H. Oda, K. Nakamura, S. Tanaka, H. Takayanagi: Effect of combined use of anti-rheumatic drugs on osteoclast differentiation. The 13th Congress of Asia Pacific League of Associations for Rheumatology, 2008.9.24, Yokohama
15. M. Shinohara, T. Koga, K. Okamoto, K. Arai, H. Takayanagi: Tec kinases, Therapeutic Targets for Bone Destructive Diseases. The 30th Annual Meeting of the American Society for Bone and Mineral Research. 2008.9.12,13, Montreal, Canada
16. K. Okamoto, M. Asagiri, T. Hirai, T. Kunigami, H.J. Gober, K. Nishikawa, K. Aoki, K. Ohya, S. Kato, P. Saftig, H. Takayanagi: Osteoclast-Independent Function of Cathepsin K: Regulation of Toll-like Receptor 9 Signaling in Autoimmunity. The 30th Annual Meeting of the American Society for Bone and Mineral Research. 2008.9.12,13, Montreal, Canada
17. M. Shinohara, T. Koga, K. Okamoto, T. Nakashima, H. Inoue, K. Arai, H. Takayanagi: The role of Tec family kinases in osteoclast differentiation. 2nd International Conference on Osteoimmunology: Interactions of the Immune and Skeletal Systems 2008.6.13, Rhodos, Greece
18. H.J. Gober, M. Asagiri, T. Hirai, T. Kunigami, K. Okamoto, K. Nishikawa, A. Suematsu, M. Hayashi, P. Saftig, and H. Takayanagi: Cathepsin K regulated TH17 cell polarization through toll-like receptor 9 Signaling in dendritic cells. 2nd International Conference on Osteoimmunology: Interactions of the Immune and Skeletal Systems 2008.6.13, Rhodos, Greece

Periodontology

1. Staffs and Students (April, 2008)

Professor	Yuichi IZUMI	
Associate Professor	Hisashi WATANABE	
Lecturer	Shigeru ODA,	Satsuki HAGIWARA
Research Associate	Makoto UMEDA,	Toshiyuki NAGASAWA,
	Shinichi ARAKAWA,	Akira AOKI,
	Hiroaki KOBAYASHI	
GCOE AI Supper Students	Karine Antonine,	Noriko EBE,
	Aleksic Verica,	GA Rajakaruna,
	Aslam AL Mehdi	
Graduate Students	Nami HASEGAWA,	Ikufumi SATO,
	Tomonari SUDA	Yukiko BANDO,
	Maiko FUJIMURA,	Keiko TANAKA,
	Hidetomo ONISHI,	Norio AOYAMA,
	Chie KOBAYASHI,	Chihiro HARUTA,
	Tatsuro KOYANAGI,	Takafumi SUZUKI,
	Yoichi TANIGUCHI,	Mayu TERACHI,
	Hiromi NANBARA,	Ayae HAYAGUMO,
	Akiko HIMENO,	Bharti PARIKSHA
	Hospital Staff:6,	Research Student:21,
	Registered dentist:21,	Foreigner researcher:3

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) Periodontal microbiota 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. Chen YW, Umeda M, Nagasawa T, Takeuchi Y, Huang Y, Inoue Y, Imai T, Izumi Y, Ishikawa I. Periodontitis may increase that risk of peripheral arterial disease. Eur J Vas Endovasc Surg 35:153-158, 2008.
2. Eguchi T, Koshy G, Umeda M, Iwanami T, Suga J, Nomura Y, Kawanami M, Ishikawa I. Micro changes in patients with acute periodontal abscess after treatment detected by Padotest. Oral Dis 14;180-184, 2008.
3. Flores MG, Yashiro R, Washio K, Yamato M, Okano T, Ishikawa I. Periodontal ligament cell sheet promotes periodontal regeneration in athymic rats. J Clin Periodontol 35(2):1066-1072, 2008.
4. Iwasaki K, Komaki M, Mimori K, Leon E, Izumi Y, Ishikawa I. IL-6 induces osteoblastic differentiation of periodontal ligament cells. J Dent Res 87(10):937-942, 2008.
5. Iwaya Y, Machigashira M, Kanbara K, Miyamoto M, Noguchi K, Izumi Y, Ban S. Surface properties and biocompatibility of acid-etched titanium. Dent Mater J 27:415-421, 2008
6. Kadomatsu H, Matsuyama T, Yoshimoto T, Negishi Y, Sekiya H, Yamamoto M, Izumi Y. Injectable growth/

differentiation factor-5/ recombinant human collagen composite induces endochondral ossification via sox9 expression and angiogenesis in murine calvariae. J Periodontal Res 43: 483-489, 2008.
7. Kamiyama K, Arakawa S, Takahashi M, Chiba K, Yamami N, Yagishita K, Mano Y. Effects of nano-bubble water on periodontal disease. The Jpn J Hyperbaric and Undersea Med 43:53-60, 2008.
8. Kawakatsu N, Oda S, Kinoshita A, Kikuchi S, Tsuchioka H, Akizuki T, Hayashi C, Kokubo S, Ishikawa I, Izumi Y. Effect of rhBMP-2 with PLGA/gelatin sponge type (PGS) carrier on alveolar ridge augmentation in dogs. J Oral Rehabil 35: 647-655, 2008.
9. Kubota T, Inoue Y, Iwai T, Kurihara N, Huang Y, Umeda M. Arterial thrombosis after intravenous infusion of oral bacterium in a rat model. Ann Vasc Surg 22:412-416, 2008.
10. Li X, Iwai T, Nakamura H, Inoue Y, Chen Y, Umeda M, Suzuki H. An ultrastructural study of *Porphyromonas gingivalis*-induced platelet aggregation. Thromb Res 122:810-819, 2008.
11. Maruyama H, Aoki A, Sasaki KM, Takasaki AA, Iwasaki K, Ichinose S, Oda S, Ishikawa I, Izumi Y. The effect of chemical and/or mechanical conditioning on the Er:YAG laser treated root cementum: analysis of surface morphology and periodontal ligament fibroblast attachment. Lasers Surg Med 40(3):211-222, 2008.
12. Matsuyama T, Tokuda M, Izumi Y. Significance of thrombomodulin release from gingival epithelial cells in periodontitis patients. J Periodontal Res 43: 379-385, 2008.
13. Morimoto Y, Kawahara K-I, Tancharoen S, Kikuchi K, Matsuyama T, Hashiguchi T, Izumi Y, Maruyama I. Tumor necrosisi factor-alpha stimulates gingival epithelial cells to release high mobility-group box 1. J Periodontal Res 43: 76-83, 2008.
14. Nakamura N, Yoshida M, Umeda M, Huang Y, Kitajima S, Inoue Y, Ishikawa I, Iwai T. Extended exposure of lipopolysaccharide fraction from *Porphyromonas gingivalis* facilitates mononuclear cell adhesion to vascular endothelim via Toll-like receptor-2 dependent mechanism. Atherosclerosis 196:59-67, 2008.
15. Shirakata Y, Setoguchi T, Machigashira M, Matsuyama T, Furuichi Y, Hasegawa K, Nakamura T, Izumi Y. Comparison of injectable calcium phosphate bone cement grafting and open flap debridement in periodontal intrabony defects: A randomized clinical trial. J Periodontol 79: 25-32, 2008.
16. Sogabe N, Oda K, Nakamura H, Orimo H, Watanabe H, Hosoi T, Goseki-Sone M. Molecular effects of the tissue-nonspecific alkaline phosphatase gene polymorphism (787T > C) associated with bone mineral density. Biomed Res 29(4):213-219, 2008.
17. Takeuchi H, Setoguchi T, Machigashira M, Kanbara K, Izumi Y. Hydrogen sulfide inhibits cell proliferation and induces cell cycle arrest via an elevated p21Cip1 level in Ca9-22 cells. J Periodontal Res 43: 90-95, 2008.
18. Tancharoen S, Matsuyama T, Abeyama K, Matsushita K, Kawahara K, Sangalungkarn V, Tokuda M, Hashiguchi T, Maruyama I, Izumi Y. The role of water channel aquaporin 3 in the mechanism of TNF-alpha-mediated proinflammatory events: Implication in periodontal inflammation. J Cell Physiol 217: 338-349, 2008.
19. Ushida Y, Koshy G, Kawashima Y, Kiji M, Umeda M, Nitta H, Nagasawa T, Ishikawa I, Izumi Y. Changes in serum IL-6, CRP, and thrombomodulin levels under periodontal ultrasonic debridement. J Clin Periodontol 35:969-975, 2008.
20. Wang D, Nagasawa T, Chen Y, Ushida Y, Kobayashi H, Takeuchi Y, Umeda M, Izumi Y. Molecular mimicry of *Aggregatibacter actinomycetemcomitans* with β2 glycoprotein 1. Oral Microbiol Immnol 23:401-405, 2008.

Review Article

1. Aoki A, Mizutani K, Takasaki AA, Sasaki KM, Nagai S, Schwarz F, Yoshida I, Eguro T, Zeredo JL, Izumi Y. Current status of clinical laser applications in periodontal therapy. General Dent 56(7): 674-687, 2008.
2. Ishikawa I, Aoki A, Takasaki AA. Clinical application of erbium:YAG laser in periodontology. J Int Acad Periodontol 10(1): 22-30, 2008.
3. Schwarz F, Aoki A, Becker J, Sculean A. Laser application in non-surgical periodontal therapy : a systematic review. J Clin Periodontol 35(s8): 29–44, 2008.

Book

1. Aoki A, Takasaki AA, Pourzarandian A, Mizutani K, Ruwanpura SMPM, Iwasaki K, Noguchi K, Oda S, Watanabe H, Ishikawa I, Izumi Y. Photo-bio-modulation laser strategies in periodontal therapy. Waynant R, Tata DB (Eds), Proceedings of Light-Activated Tissue Regeneration and Therapy Conference, Springer, New York, 2008.181-190.

Department of Bioceramics

1. Staffs and Students (April, 2008)

Professor	Kimihiro YAMASHITA	
Associate Professor	Akiko NAGAI	
Assistant Professor	Yumi TANAKA	Miho NAKAMURA
Graduate Student	Rumi OKABAYASHI,	Hideki SAGAWA,
	Yuki IMAMURA,	

2. Purpose of Education

Bioceramics such as hydroxyapatite and tricalcium phosphate have been clinically applied for inorganic substitutions in orthopedic and dental field. Main objective of bioceramics in the graduate course is to provide students opportunity to study ceramic materials science such as structure and synthesis, and also study materials characterization technology. Students are also taught on investigation of osteoconductive mechanism by bioceramics.

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) Local control of electrical space by erectrovector ceramics

The electrical strength and distribution formed by electrovector ceramics are detected by materials scientific, electrochemical and crystal chemical methods. The mechanism of electrical polarization, especially the defect formation and the crystal deformation induced by fluctuation of ionic distribution in electrovector ceramics, and establishment of control technology in electrovector ceramics.

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. Iwasaki T, Tanaka Y, Nakamura M, Nagai A, Katayama K, Yamashita K. Electrovector effect on bone-like apatite crystal growth on inside pores of polarized porous hydroxyapatite ceramics in simulated body fluid. J Ceram Soc Jpn 116: 23-27, 2008.
2. Nagai A, Yamashita K, Imamura M, Azuma H, Hydroxyapatite Electret Accelerates Reendothelialization and Attenuates Intimal Hyperplasia Occurring After Endothelial Removal of the Rabbit Carotid Artery, Life Sci., 82 (23-24): 1162-1168, 2008.
3. Tanaka Y, Takata S, Shimoe K, Nakamura M, Nagai A, Toyama T, Yamashita K. Conduction properties of non-stoichiometric hydroxyapatite whiskers for biomedical use. J Ceram Soc Jpn 116: 815-821, 2008.
4. Okura T, Takahashi T, Monma H, Yamashita K, Effect of Substitution of Si with V and Mo on Ionic Conductivity of

$Na_5YSi_3O_{12}$-type Glass-Ceramics, Solid State Ionics, 179: 1291-1295, 2008.

5. Nagai A, Imamura M, Watanabe T, Azuma H. Involvement of altered arginase activity, arginase I expression and NO production in accelerated intimal hyperplasia following cigarette smoke extract. Life Sci 83:453-459. 2008.
6. Iwasaki T, Tanaka T, Nakamura M, Nagai A, Hashimoto K, Toda Y, Katayama K, Yamashita K. Simulation of Bone Ingrowth on Polarized Porous Hydroxyapatite Ceramics. J Am Ceram Soc., 91 (12): 3943-3949, 2008.

Book

1. Tanaka Y, Yamashita K, Fabrication Process of Bioceramics (Chapter 2 (pp.28-52), Part I), Bioceramics and Their Clinical Applications (ed. By T. Kokubo,Woodhead Publishing Limited, Cambridge, 2008).

Proceeding

1. Yamashita K, Tanaka Y, Robotti P, Bianchi G. Development of polarized hydroxyapatite ceramics and coatings for novel applications. Global roadmap for ceramics & ICC2 proceedings: 6 pages, 2008
2. Ohashi N, Nakamura M, Nagai A, Tanaka Y, Sekijima Y, Yamashita K. Comparison of hydroxyapatite with carbonate apatite in osteoclastic cell resorptive activity. Key Eng Mater 361-363: 1039-1042, 2008.
3. Nakamura M, Ohashi N, Nagai A, Sekijima Y, Tanaka Y, Yamashita K. Regulation of osteoblast-like cell behaviors on hydroxyapatite by electrical polarization. Key Eng Mater 361-363: 1055-1058, 2008.
4. Tanaka Y, Ukai N, Nishio K, Yamashita K, Low-temperature-degradation and biomedical properties of Y-TZP ceramics. Ceramic Engineering and Science Proceedings 29 (7): 239-248, 2008.

Invited presentation

1. Yamashita K. Development pf ceramic hydroxyapatite electret as vector materials. The 9th International Symposium on Ceramic Materials and Components for Energy and Environmental Applications & The 4th Laser Ceramics Symposium: International Symposium on Transparent Ceramics for Laser, Shanghai, China, Nov., 2008.
2. Yamashita K. Past, Present and Future of Ceramic Electrets for Biomedical Applications/ The 25th Korea-Japan International Seminar on Ceramics, Kangnung, Korea, Nov.,2008.
3. Nakamura M, Niwa K, Sekijima Y, Nagai A, Yamashita K. Effects of Novel Bioceramics on a Blood Coagulation Factor. 52nd German Thrombosis and Hematosis (GTH) Congress, Germany, Feb. 2008.
4. Nagai A, Yamashita K. Hydoroxyapatite Electret, Seminar Series at Radboud University Nijmegen Medical Center, The Netherlands, Jun, 2008
5. Nakamura M, Nagai A, Yamashita K. Effects of Polarization *in vivo* and *in vitro*. Seminar series at Department of Biomaterials, University Nijmegen, Netherlands, May 2008.

Presentation

1. Wang W, Itoh S, Yamashita K. Enhanced Osteoconductivity of Hydroxyapatite by Electrical Polarization Processing. The 9th Japan-Korea Congress of Plastic and Reconstructive Surgery, Okinawa, Japan, Feb., 2008
2. Tanaka Y, Nakamura M, Nagai A, Toyama T, Yamashita K. Ion conduction mechanism in Ca deficient hydroxyapatite whisker. Joint Conferences of The 2nd International Conference on the Science and Technology for Advanced Ceramics (STAC) and The 1st International Conference on Science and Technology of Solid Surface and Interface (STSI), Chiba, May, 2008.
3. Nagai A, Azuma H, Ichikawa H, Imamura M, Nakamura M, Kobayashi M, Yamashita K. Hydroxyapatite electret suppresses intimal hyperplasia in a rabbit model of vascular injury, 8th World Biomaterial Congress, The Netherlands, May, 2008
4. Wang W, Itoh S, Nakamura M, Tanaka Y, Nagai A, Yamashita K. Enhanced Bone Ingrowth into Hydroxyapatite with Interconnected Pores by Electrical Polarization. 8th World Biomaterials Congress 2008, Amsterdam, Netherland, May, 2008.
5. Nakamura M, Kaneda M, Morita I, Nagai A, Sekijima Y, Tanaka Y, Yamashita K. Migration and Morphogenesis of Endothelial Cells Cultured on Polarized Hydroxyapatite. 8th World Biomaterials Congress, Amsterdam, Netherland, May, 2008.
6. Okabayashi R, Nakamura M, Okabayashi T, Tanaka Y, Nagai A, Yamashita K. Promotive effects of a silk fibroin and polarized hydroxyapatite on epidermal recovery from full-thickness skin wounds. 8th World Biomaterials Congress, Amsterdam, Netherland, May, 2008.
7. Bakry A, Matin K, Tanaka, Y, Takahash H, Otsuki M, Yamashita K, Tagami J. CO_2 Laser Irradiation Enhances

Interaction of 45S5 Bioglass with Dentin. IADR 86th General Session & Exhibition, Toronto, July, 2008.

8. Tanaka Y, Nakamura M, Wang W, Nagai A, Yamashita K. Electrical and biological properties of polarized hydroxyapatite electrets. 13th International Symposium on electrets (ISE13) Tokyo, Sep, 2008.
9. Wang W, Itoh S, Nakamura M, Tanaka Y, Nagai A, Yamashita K. Electret bioceramics for bone regeneration. 2008CMCEE&LCS conference, Shanghai, China, Nov, 2008
10. Nakamura M, Nagai A, Tanaka Y, Wang W, Sekijima Y, Yamashita K. Morphology and Motility of Osteoblastic Cells Cultured on Polarized Hydroxyapatite. The IUMRS International Conference 2008, Nagoya, Japan, Dec, 2008.

Award

1. Nakamura M, et al. Certificate of Award for Encouragement of Research in Materials Science, Dec, 2008.

Cell Biology

1. Staffs and Students

Professor	Takao NAKATA (from July)
Associate Professor	Akihiro INOUE
Technical Staff	Satoko NAKAMURA (from January)

2. Education

We teach cell biology II to 1st year medical students, cell structure II to 2nd year medical students, and histology to 3rd year medical students. Cell biology II deals with excitatory cells, and serves as introduction to neuroscience. In cell structure II and histology, we deal with histology of human body. The courses are composed of the 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

We are now setting-up our laboratory.

Medical Biochemistry

1. Staffs and Students (April, 2008)

Professor	Yutaka Hata
Assistant Professor	Kentaro Nakagawa
Assistant Professor	Mitsunobu Ikeda

Other two staffs and five students

2. Purpose of Education

1) Undergraduate

We organize "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, to learn why the knowledge of biochemistry is important for understanding how health is maintained, and to understand 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 some 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, and keratinocyte differentiation. We give lectures about our current studies to graduate students and others, and provide graduate students with the opportunity to participate in them, so that they can be interested in this pathway, which should play an important role in various human diseases and could be a new therapeutic target.

3. Research Subjects

1) Study on RASSF proteins
2) Study on mammalian Hippo signaling
3) Study of nuclear Dbf2-related kinases

4. Clinical Services

N/A

5. Publications

Original Article

1) Threonine 74 of MOB1 is a putative key phosphorylation site by MST2 to form the scaffold to activate nuclear Dbf2-related kinase 1. Hirabayashi, S., Nakagawa, K., Sumita, K., Hidaka, S., Kawai, T., Ikeda, M., Kawata, A., Ohno, K., Hata, Y. *Oncogene* 27: 4181-4192 (2008)
2) Co-localization of a novel transcriptional repressor simiRP58 with RP58. Takahashi, A., Hirai, S., Ohtaka-Maruyama, C., Miwa, A., Hata, Y., Okabe, S., Okado, H. *Biochem. Biophys. Res. Commun.* 368: 637-642 (2008)

Section of Orthopedic Surgery

1. Staffs and Students (April, 2008)

Professor	Takeshi MUNETA	
Assistant Professor	Young-Jin JU	
Tokunin Associate Professor	Ichiro SEKIYA	
Tokunin Assistant Professor	Tomoyuki MOCHIZUKI	
Tokunin Junior Associate Professor	Kunikazu TSUJI (from November)	
Hospital Staff	Kenji HARA,	Toshiyuki MORITO
Graduate Student	Masaya HAYASHI,	Yuko SEGAWA,
	Tomohiko TATEISHI,	Hiroshi ASANO,
	Toshifumi WATANABE,	Naoyuki HIRASAWA,
	Junya YAMAZAKI,	Masayuki SHIMAYA,
	Masahumi HORIE,	Toru TAKAHASHI,
	Tomomasa NAKAMURA,	Takashi MIYAMOTO,
	Shigenori YAGI,	Mika YAMAGA,
	Shiro SUZUKI	

2. Purpose of Education

We are working with the section of Orthopedic and Neurosurgery as a department of Orthopaedic Surgery of University Hospital. The doctors start to have education of orthopedic surgery as a member of the department from the staffs of the department of Orthopaedic Surgery according to the orthopaedic education and training program after completing the two-year fundamental education and training program as a junior resident. They experience a lot of traumatic patients and deepen their basic orthopaedic skills for two-year junior orthopaedic training in one of the branch hospitals every year. They expand their skills and obtain orthopaedic specialty educations in the advanced two-year education and training program. After completing a six-year educational program of the orthopaedic surgery, they are recommended to apply to the orthopedic specialist form the Japanese Orthopaedic Association. They usually apply to enter the graduate school program after 4 or 5 years of clinical experience.

We encourage not only orthopedic doctors but doctors of other specialty, veterinarian doctors and physical therapists, etc to work with us.

3. Research Subjects

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

4. Clinical Services

We are dealing with problems of lower extremities caused by sports-related injuries as well as degenerative process. We focus on the treatment with intensive conservative treatment strategy with self-performance, less invasive treatment strategy using synovial mesenchymal stem cells, double-bundle ACL reconstructions and novelly development total joint for patients with end stage knee and hip problems.

5. Publications

Original Articles

1. Asano H, Muneta T. Stiffness of soft tissue complex in total knee arthroplasty. Knee Surg Sports Traumatol Arthropsc 2008 Jan;16(1):51-5.

2. Watanabe T, Muneta T, Ikeda H, Tateishi T, Sekiya I. Visual analog scale assessment after medial patellofemoral ligament reconstruction: with or without tibial tubercle transfer. J Orthop Sci. 2008 Jan;13(1):32-8.
3. Horie M, Sekiya I, Muneta T, Murakami T, Kobayashi E. Establishment of mesenchymal stem cells derivedfrom bone marrow and synovium of transgenic rats expressing dual reporter genes. Progress in Biomedical Optics and Imaging. Vol.9, No27, 2008
4. Hara K, Niga S, Ikeda H, Cho S, Muneta T. Isolated anterior cruciate ligament reconstruction in patients with chronic anterior cruciate ligament insufficiency combined with grade II valgus laxity. Am J Sports Med. 2008 Feb;36(2):333-9.
5. Nimura A, Muneta T, Koga H, Mochizuki T, Suzuki K, Makino H, Umezawa A, Sekiya I. Increased proliferation of human synovial mesenchymal stem cells with autologous human serum: comparisons with bone marrow mesenchymal stem cells and with fetal bovine serum. Arthritis Rheum. 2008 Feb;58(2):501-10.
6. Nagese T, Muneta T, Ju YJ, Hara K, Morito T, Koga H, Nimura A, Mochizuki T, Sekiya I. Analysis of the chondrogenic potential of human synovial stem cells according to harvest site and culture parameters in knees with medial compartment osteoarthritis. Arthritis Rheum. 2008 May;58(5):1389-98.
7. Mochizuki T, Sugaya H, Uomizu M, Maeda K, Matsuki K, Sekiya I, Muneta T, Akita K. Humeral insertion of the supraspinatus and infraspinatus. New anatomical findings regarding the footprint of the rotator cuff. J Bone Joint Surg Am. 2008 May;90(5):962-9.
8. Toita S, Hasegawa U, Koga H, Sekiya I, Muneta T, Akiyoshi K. Protein-conjugated quantum dots effectively delivered into living cells by a cationic nanogel. J Nanosci Nanotechnol. 2008 May;8(5):2279-85.
9. Ju YJ, Muneta T, Yoshimura H, Koga H, Sekiya I. Synovial mesenchymal stem cells accelerate early remodeling of tendon-bone healing. Cell Tissue Res 2008 Jun;332(3):469-78.
10. Morito T, Muneta T, Hara K, Ju YJ, Mochizuki T, Makino H, Umezawa A, Sekiya I. Synovial fluid-derived mesenchymal stem cells increase after intra-articular ligament injury in humans. Rheumatology (Oxford). 2008 Aug;47(8):1137-43.
11. Koga H, Muneta T, Nagase T, Nimura A, Ju YJ, Mochizuki T, Sekiya I. Comparison of mesenchymal tissues-derived stem cells for in vivo chondrogenesis: suitable conditions for cell therapy of cartilage defects in rabbit. Cell Tissue Res. 2008 Aug;333(2):207-15.
12. Zhang S, Muneta T, Morito T, Mochizuki T, Sekiya I. Autologous synovial fluid enhances migration of mesenchymal stem cells from synovium of osteoarthritis patients in tissue culture system. J Orthop Res. 2008 Oct;26(10):1413-8.
13. Asano H, Muneta T, Sekiya I. Knee Surg Sports Traumatol Arthrosc. 2008 Nov;16(11):999-1003. Epub 2008 Aug 30. Soft tissue tension in extension in total knee arthroplasty affects postoperative knee extension and stability. Knee Surg Sports Traumatol Arthrosc. 2008 Nov;16(11):999-1003.
14. Tang T, Muneta T, Ju YJ, Nimura A, Miyazaki K, Masuda H, Mochizuki T, Sekiya I. Serum keratan sulfate transiently increases in the early stage of osteoarthritis during strenuous running of rats: protective effect of intraarticular hyaluronan injection. Arthritis Res Ther. 2008;10(1):R13.
15. Koga H, Shimaya M, Muneta T, Nimura A, Morito T, Hayashi M, Suzuki S, Ju YJ, Mochizuki T, Sekiya I. Local adherent technique for transplanting mesenchymal stem cells as a potential treatment of cartilage defect. Arthritis Res Ther. 2008;10(4):R84.
16. Segawa Y, Muneta T, Makino H, Nimura A, Mochizuki T, Ju YJ, Ezura Y, Umezawa A, Sekiya I. Mesenchymal stem cells derived from synovium, meniscus, anterior cruciate ligament, and articular chondrocytes share similar gene expression profiles. J Orthop Res. 2008 Oct 30. [Epub ahead of print]
17. Hayashi M, Muneta T, Ju YJ, Mochizuki T, Sekiya I. Weekly intra-articular injections of bone morphogenetic protein-7 inhibits osteoarthritis progression. Arthritis Res Ther. 2008;10(5):R118. Epub 2008 Sep 30.

Health Promotion

1. Staffs and Students

Professor	Takehito Takano	
Assistant Professor	Masashi Kizuki,	Masafumi Watanabe
Tokunin Assistant Professor	Asako Igarashi (till November),	
	Tomoko Inose (from April)	
Graduate Student	Miki Watanabe,	Tomoko Inose (till March),
	Le Thi Thu Hien (till September),	
	Satoshi Suyama,	Hemat Shafiqullah,
	Ayako Morita,	Keoprasith Bounserth Serth,
	Pham Luu Hong (from October),	
	Stephen Kibusi Mathew (from October),	
	Chiemi Kajiwara (till March),	Mari Uchimura (from April)
Research 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, 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 research and confirmation on each of their progress.

[PHL (Public Health Leaders) 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.

[Master of Medical Administration : MMA]: The MMA Program provides a highly leveled and broad interdisciplinary educational curriculum that prepares enrolled students for services not only as business professionals, but as qualified specialists in the field of medical administration. The classes for this program are offered during the evening hours because it is designed primarily for employed adults and others alike.

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.

[International Society and 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. Lectures and tutorials are taught by instructors specialized in various fields; such as public health, medical zoology, parasitology, forensic medicine, policy research, and social psychology.

[Social Medicine]: The Social Medicine department 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 may or may not be new, but 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

The courses in the Public Health education program are limited in time, and thus, cannot cover all the topics listed above in full detail. Nonetheless, in demands presented by the national exam for medical practitioners, their post-graduate research, and for their future roles as physicians, students will need to thoroughly study the subjects on their own. 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. Classes are taught by Tokyo Medical and Dental University Graduate School professors in the field of environmental, social, and clinical medicine.

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) End of Life in the community healthcare system

4. Publications

Original Article

1. Inose T, Takano T, Quang NKL, Nakamura K, Watanabe M, Seino K. Bone development in children living on househboats on a river in Vietnam.. J Epidemiol 2008 ; 18 : 265-272
2. Turagabeci AR, Nakamura K, Takano T. Healthy lifestyle behaviour decreasing risks of being bullied, violence and injury. PLoS ONE 2008 ; 3 : e1585. doi:10.1371/journal.pone.0001585

3. Mashal T, Takano T, Nakamura K, Kizuki M, Hemat S, Watanabe M, Seino K. Factors associated with health and nutritional status among children under five years old in Afghanistan: family behaviour related to women and past experience of war-related hardships. BMC Public Health 2008 ; 8 : 301
4. Phoupasong S, Takano T, Nakamura K. Cohabitation with farm animals in urban households with and without occupational farm work associations between participation in educational activities and good hygiene practices in at-risk households cohabiting with farm animals. Environ Health Prev Med 2008 ; 13 : 322-331
5. Seino K, Takano T, Quang NKL, Watanabe M, Inose T, Nakamura K. Bacterial quality of drinking water stored in containers by boat households in Hue City, Vietnam. Environ Health Prev Med 2008 ; 13 : 198-206
6. Seino K, Takano T, Mashal T, Hemat S, Nakamura K. Prevalence of and factors influencing posttraumatic stress disorder among mothers of children under five in Kabul, Afghanistan, after decades of armed conflicts. Health Quality Life Outcomes 2008 ; 6 : 29
7. Hien LT, Takano T, Seino K, Ohnishi M, Nakamura K. Effectiveness of a capacity building program for community leaders in a healthy living environment: a randomized community-based intervention in rural Vietnam. Health Promot Int 2008 ; 23 : 354-364

Environmental Parasitology

1. Staffs and Students (April, 2008)

Professor	Nobuo OHTA	
Associate Professor	Nobuaki AKAO	
Junior Associate Professor	Takashi KUMAGAI	
Assistant Professor	Misato TOMODA	
Secretary	Mariko HATO	
Graduate Student	William Koffin Anyan,	Keisuke NAKAYAMA,
	Takenori SEKI,	Kei KITAMURA,
	Bethel Kwasa-Bentum,	Toshie TANIGUCHI,
	Takashi AKIYAMA,	Zongfan JIN,
	Noriko IMAI	

2. Purpose of Education

Undergraduate course: The range of disciplines represented at the section of Environmental Parasitology is very broad and inter-disciplinary research is a feature of much of our activities. There is a spectrum of diseases that could be studied and a wide range of major topics you could choose from which include: Protozoology, Helminthology, Medical Entomology, Vecto-borne Nosography and Poisonous Zoology. We have close interaction with scientists in different research teams of Tropical Medicine, International Health Care, Preventive Medicine and Public Health not only in the Division of Public Health of the Tokyo Medical and Dental University but are also in collaboration with scientists in other Universities or Institutes across Japan. The Section also has strong overseas links that provide a channel for field studies as well as international collaborations in developed and developing countries.

Graduate course: Along with the advancement and expansion of world transport systems has been an increasing human exchange across borders, and increased awareness to Medical researchers of the day that global view is an important factor for medical sciences that deal with human health development. From international perspective our eventual goal is to establish and disseminate knowledge on environmental health care based on Parasitology and deepen our relationship with developing countries.

3. Research Subjects

1) Infectious Immunity on Schistosomiasis
2) Molecular Epidemiology of Tropical Diseases
3) Pathobiological Studies on Zoonotic Helminthiasis
4) Spatial Epidemiology of Parasitic Diseases

4. Clinical Services

The section has considerable expertise in the diagnosis of human parasites and provides a service to physicians helping to diagnose parasitic infections.

5. Publications

Original Article

1. Chen R, Lu S, Lou D, Lin A, Zeng X, Ding Z, Wen L, Ohta N, Wang J, Fu C. Evaluation of a rapid ELISA technique for detection of circulating antigens of *Toxoplasma gondii*. Microbiology and Immunology, 52:180-7, 2008.
2. Jin Z, Akao N, Ohta N. Prolactin evokes lactational transmission of larvae in mice infected with *Toxocara canis*. Parasitology International. 2008; 57(4): 495-8.
3. Jin ZF, Akao N, Nobuta T, Ohta N. An improved method for recovery of muscle-stage larvae from mice infected with *Toxocara canis*. Journal of Parasitology. 2008;94(5):1164-5.
4. Maeda T, Yamada H, Akao N, Iga M, Endo T, Koibuchi T, Odawara T, Iwamoto A, Fujii T. Unusual radiological findings of Fasciola hepatica infection with a huge cystic and multilocular lesions. Internal Medicine. 2008;47:449-52.
5. Yoshikawa M, Nishiofuku M, Moriya K, Ouji Y, Ishizaka S, Kasahara K, Mikasa K, Hirai T, Mizuno Y, Ogawa S, Maruyama H, Akao N. A familial case of visceral toxocariasis due to consumption of raw bovine liver. Parasitology International. 2008;57(4):525-9.

6. Yoshikawa M, Ouji Y, Nishiofuku M, Moriya K, Kasahara K, Mikasa K-i, Mizuno Y, Ogawa S, Akao N. Visceral toxocariasis from regular consumption of raw cow liver. Internal Medicine. 2008;47:1289-90.

Review Article

1. Zhou X, Ohta N, Ultzinger J, Berquist R, Olveda RM. RNAS(+): a win-win collaboration to combat neglected tropical diseases in Southeast Asia. Parasitology International, 57: 243-245, 2008.

Book

Forensic Medicine

1. Staff and Students

Professor	Koichi UEMURA	
Assistant Professor	Takeshi FUNAKOSHI	
Graduate Student	Kyoko UCHIDA,	Akina NARA,
	Eriko OCHIAI,	Haruka NAKAYAMA

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 (include 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) Medical law

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. Uemura K, Ueyama T, Shintani-Ishida K, Unuma K, Yoshida K. An autopsy report on four sudden cardiac death cases by immobilization. International Medical Journal 15: 301-305, 2008.
2. Uemura K, Takahashi S, Shintani-Ishida K, Nakajima M, Saka K, Yoshida K. A death due to perirenal hematoma complicating extracorporeal shockwave lithotripsy. J Forensic Sci. 53: 469-471, 2008.
3. Uemura K, Shintani-Ishida K, Saka K, Nakajima M, Ikegaya H, Kikuchi Y, Yoshida K. Biochemical blood markers and sampling sites in forensic autopsy. Journal of Forensic and Legal Medicine 15: 312-317, 2008.
4. Aki T, Funakoshi T, Nishida-Kitayama J, Mizukami Y. TPRA40/GPR175 regulates early mouse embryogenesis through functional membrane transport by Sjögren's syndrome-associated protein NA14. J Cell Physiol. 217(1):194-206, 2008.

International Health and Medicine

1. Staffs and Students (April, 2008)

Associate Professor	Keiko Nakamura, MD, PhD
Assistant Professor	Kaoruko Seino, MMs, PhD
Graduate Student	Fujiko Yamada, MD; Dorjsuren Bayarsaikhan, MPH; Rie Nakajima, MMs; [Public Health Leaders Course] Nyambayar Khaliun, MD; Koeut Pichenda, MD, MPH; Sunsanee Mekrungrongwong, MPH; Moala Anaseini Radinakelo, Suresh Babu Munuswamy, MD, MPH

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

- Assess health and well being of the population at local, national, and international settings,
- Assess the evidence to show effectiveness of health interventions, programs and strategies,
- Think strategically to develop local, national, and international policies,
- Manage projects leading to successful completion
- Demonstrate leadership in local, national, or international public health programs
- Communicate properly by 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 socio-culturally diverse environment.

Master Programs

Masters 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 course of 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.

Master of Medical Administration (MMA) Program

The MMA program provides a broad interdisciplinary and high-level curriculum that prepares enrolled students for services not only as business professionals, but as qualified specialists in medical administration. The classes for this program are offered during the evening hours because the program is designed primarily for employed adults.

3. Research

The department's major research interest is to elucidate physical, social, economic and cultural factors determining

inequity in health. The research investigates local, national and international policy 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 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

1) Turagabeci AR, Nakamura K, Takano T. Healthy lifestyle behaviour decreasing risks of being bullied, violence and injury. Plos One 3:e1585, 2008.
2) Seino K, Takano T, Quang NKL, Watanabe M, Inose T, Nakamura K. Bacterial quality of drinking water stored in containers by boat households in Hue City, Vietnam. Environ Health and Prevent Med 13: 198-206, 2008.
3) Seino K, Takano T, Mashal T, Hemat S, Nakamura K. Prevalence of and factors influencing posttraumatic stress disorder among mothers of children under five in Kabul, Afghanistan, after decades of armed conflicts. Health Qual Life Outcomes 6: 29, 2008.
4) Ohnishi M, Nakamura K, Kizuki M, Seino K, Inose T, Takano T. Caregivers' and non-caregivers' knowledge regarding HIV/AIDS and attitude towards HIV/AIDS and orphans in Nigeria. Health Soc Care Community. 2008, 16:483-492.
5) Bayarsaikhan D. Financing health promotion programmes in Japan and Mongolia. Bull World Health Organization 86: 896-897, 2008.
6) Mashal T, Takano T, Nakamura K, Kizuki M, Hemat S, Watanabe M, Seino K. Factors associated with health and nutritional status among children under five years old in Afghanistan: family behaviour related to women and past experience of war-related hardships. BMC Public Health 8: 301, 2008.
7) Hien LT, Takano T, Seino K, Ohnishi M, Nakamura K. Effectiveness of a capacity building program for community leaders in a healthy living environment: a randomized community-based intervention in rural Vietnam. Health Promotion Int 23: 354-364, 2008.
8) Phoupasong S, Takano T, Nakamura K. Cohabitation with farm animals in urban households with and without occupational farm work associations between participation in educational activities and good hygiene practices in at-risk households cohabiting with farm animals. Environ Health and Prevent Med 13: 322-331, 2008.
9) Inose T, Takano T, Quang NKL, Nakamura K, Watanabe M, Seino K. Bone development in children living on househboats on a river in Vietnam. J Epidemiology 18: 265-272, 2008.
10) Takahama N, Nakamura K. Developments of WHO Healthy Cities. Public Health 72: 646-650; 2008. (In Japanese)

[Conferences]

1. Nakamura K. (Chair) Symposium on Mutual Learning from Public Health Research Activities in Asia – Lessons from Healthy Cities/ Healthy Settings and Future Research in Public Health, Tokyo, January 2008.
2. Nakamura K. (Keynote speech) Healthy Cities for a Sustainable Future, Singapore, June 2008.
3. Nakamura K (Summary speech) 3rd Global Conference of the Alliance for Healthy Cities, Ichikawa, October 2008.

[Awards and recognitions]

1. Nakamura K. The Fifth TANITA Health Award, October 2008.
2. Pichenda K, Nakamura K, Watanabe M, Kizuki M, Seino K, Takano T. Factors affecting antenatal care visit in BATI district, Takeov, Cambodia. Poster Award: The 67th Annual conference of Japanese Society of Public Health, Fukuoka, November 2008.
3. Bounserth K, Phoupasong S, Watanabe M, Morita A, Kizuki M, Takano T. Expansion of health care services using Village Drug Kit in Phongsaly province, Lao PDR. Poster Award: The 67th Annual conference of Japanese Society of Public Health, Fukuoka, November 2008.

[International collaboration programs]

1. Nakamura K, Ohnishi M. International Forum on Education Alliance in This Age of Globalization of Medicine Competencies for Public Health Leaders Healthy Cities Research through Community Participation and Capacity Building, Tokyo, January 2008.
2. Nakamura K. Secretariat of the Alliance for Healthy Cities. January – December 2008.
3. Nakamura K. Scientific Committee of the Alliance for Healthy Cities, Tokyo, January 2008.
4. Nakamura K. 2nd Joint Research Project on health and living conditions of people living on boat in Hue, Vietnam, January-February 2008.
5. Nakamura K. WHO/UN-HABITAT/UNESCO Joint proposal for improving the living conditions of the boat people in Hue City, February 2008.
6. Nakamura K. CITYNET Seminar on Connecting Our Urban Core to the Global Agenda, Yokohama, March 2008.
7. Nakamura K. Program to overview Healthy Cities for Bangkok Metropolitan Administration, May 2008.
8. Nakamura K. UN-HABITAT/WHO Joint Meeting on Urbanization and Health. Kobe, July 2008.
9. Nakamura K. Capacity building program for public health leaders, WHO and University of the Philippines, Manila, August 2008.
10. Nakamura K. Health Security in the City, Scientific Meeting of the Alliance for Healthy Cities, Ichikawa, October 2008.
11. Nakamura K. 3rd General Assembly of the Alliance for Healthy Cities. Ichikawa, Japan, October 2008.
12. Nakamura K. 7th/8th Steering Committee Meeting of the Alliance for Healthy Cities. Ichikawa, Japan, October 2008.
13. Nakamura K. Urban HEART Ad-hoc Advisory Group, WHO Centre for Health Development, October – December 2008
14. Seino K. Health workforce migration, Department of Health, UK, WHO, November 2008.
15. Nakamura K. Joint Research Project on cost of illness of tuberculosis in Cambodia, Phnom Penh, December 2008.

[Collaboration with local and national public health programs]

1. Nakamura K. Statistics Committee, Expert Member, Cabinet Office, Japanese Government
2. Nakamura K. Member of Tokyo Metropolitan Government Urban Planning Council
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. Commission on optimal application of Healthy Cities in Owariasahi City, Owariasahi City
5. Nakamura K. Community lecture, WHO Healthy Cities Wayo-kai, Ichikawa City
6. Nakamura K. Special lecture, Japan Chapter of the Alliance for Healthy Cities, Tajimi City
7. Nakamura K. Evaluation Committee of Specific Program of Health Guidance, Ichikawa City

Oral Health Promotion

1. Staffs and Students (April,2008)

Professor	Yoko KAWAGUCHI	
Associate Professor	Norio Shimura(until March)	
Junior Associate Professor	Kayoko SHINADA(from April)	
Assistant Professor	Kayoko SHINADA(until March)	
	Masayuki UENO(from April)	
Hospital Staff	Masayuki UENO(until March)	
	Tomohito YANAGISAWA(from April)	
Graduate Student	Tomohito YANAGISAWA,	Chiyoko HAKUTA(until March)
	Aki KANAYAMA,	Ryoko ITO
	Sayaka YOKOYAMA,	Chisato MORI
	Mari OHNUKI,	Takashi ZAITSU
	Pham Anh Vu THUY,	Patcharaphol SAMNEING
	Akiko OHSHIRO,	Susumu TAKEUCHI
	Melissa ADIATMAN	
Research Student	Motoko ARIAKE,	Sachiko TAKEHARA

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. Shinada K, Ueno M, Konishi C, Takehara S, Yokoyama S, Kawaguchi Y: A randomized double blind, crossover, placebo-controlled clinical trail to assess the effects of a mouthwash containing chlorine dioxide on oral malodor, Trials, 9:71, doi:10.1186/1745-6215-9-71,2008
2. Ueno M, Shinada K, Yanagisawa T, Mori C, Yokoyama S, Furukawa S, Takehara S, Kawaguchi Y: Clinical oral malodor measurement with a portable sulfide monitor, Oral Diseases, 14,264-269,2008
3. Ueno M, Yanagisawa T, Shinada K, Ohara S, Kawaguchi Y: Masticatory ability and function tooth units in Japanese adults, Journal of Oral Rehabilitation ,35,337-344,2008
4. Furukawa S, Ueno M, Itoh R, Shinada K, Kawaguchi Y: Coverage of Tobacco-related Oral Diseases in Japanese Newspapers, The International Journal of Oral Health,4,3-11,2008.
5. Furukawa S, Mori C, Ueno M, Shinada K, Kawaguchi Y: Association of Smoking Status with Oral-health-related Daily Life Difficulties among Japanese Male Workers, Journal of Dental Health,58(1):33-43, 2008

Sports Medicine/Dentistry

1. Staffs and Students (April. 2008)

Associate Professor	Toshiaki UENO	
Assistant Professor	Toshiyuki TAKAHASHI,	Hiroshi CHUREI
Hospital Staff	Atsushi OISHI	
Graduate Student	Chie IHARA,	Shiho NAKANO,
	Sachiko FUJINO,	Tomofumi TAKAHATA,
	Keisuke ABE,	Atsushi OISHI
Research Student	Kayoko YOKOTA,	Naoko OTABE

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, 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
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) Relations between mastication and occlusion and brain functions

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) Mizumachi M, Sumita Y, Ueno T : Effect of wearing a mouthguard on the vestibulocollic reflex. J Sci Med Sport 11 : 191－197, 2008.
2) Ueno T, Churei H : Fabrication technique for custom faceguard with thermoforming material. Int J Sports Dent 1 : 67-71, 2008.

Review Articles

1) Ueno T : Sports dentistry through physiological approach - its past and present-. Int J Sports Dent 1 : 31-45, 2008.

6. Presentations

1) Fujino S, Takahashi T, Yamanaka T, Churei H, Sumita Y, Ueno T: Influence of voluntary teeth clenching on

stabilization of posture stance. IADR/CADR 86th general session, Toronto, Canada. July 2-5th, 2008.

2) Ihara C, Yamanaka T, Matsui R, Saito S, Isoyama E, Takahashi H, Ueno T: Adhesion behavior of laminated thermoforming materials underwater environment. IADR/CADR 86th general session, Toronto, Canada, July 2-5th, 2008.
3) Churei H, Takahashi H, Ueno T: Fundamental physical-properties evaluation of face guard materials. Sino-Japanese Conference on Stomatology 2008, Xean, China, Sep 28-29th, 2008.

7. Grants and Fellowships

1) Aquarius Grant (Japanese Olympic Committee & Coca-Cola Grant, 2008). Ueno T, Nakano S, Takahashi T, Toyoshima Y, Kawahara T.

8. Awards and Honors

1) JASD Award (Japanese Academy of Sports Dentistry, 2008). Fujino S, Takahashi T, Ueno T.

Molecular Epidemiology

1. Staffs and Students (April, 2008)

Professor	Masaaki MURAMATSU	
Associate Professor	Noriko SATO	
Assistant Professor	Shinobu IKEDA	
Adjunct Instructor	Koichi MIYAKI, Jun KANNO	
Secretary	Hiroko BABA	
Graduate Student	Kako TAKEI,	Thang OO,
	Koichi FUJIMOTO,	Hiroshi MATSUKURA,
	Akiko HORI, Kohei TAMURA,	
	Kenta FUKUSHIMA	
Research Resident	Yixuan SONG	

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 been 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-Jhonson's Syndrome) and HLA genotypes.
5. The role of epigenetic regulation and fetal programming in common diseases.

4. Publications

Original Article

1. Zhang L, Miyaki K, Nakayama T, Muramatsu M. Cell death-inducing DNA fragmentation factor alpha-like effector A (CIDEA) gene V115F (G-->T) polymorphism is associated with phenotypes of metabolic syndrome in Japanese men. Metabolism 57:502-505, 2008.
2. Takei K, Ikeda S, Arai T, Tanaka N, Muramatsu M, Sawabe M. Lymphotoxin-alpha polymorphisms and presence of cancer in 1,536 consecutive autopsy cases. BMC Cancer 8:235-240, 2008.
3. Yoshimura M, Kimura T, Ishii M, Ishii K, Matsuura T, Geshi E, Hosokawa M, Muramatsu M. Functional polymorphisms in carboxylesterase1A2 (CES1A2) gene involves specific protein 1 (Sp1) binding sites. BBRC 369:939-942, 2008.
4. Takeo C, Ugai K, Araki J, Zhang L, Baba M, Ohashi W, Ueno K, Suzuki Y, Amano K, Hirai A, Muramatsu, M. Pharmacogenetics of hormone replacement therapy for climacteric symptoms. BBRC 374:604-608, 2008.
5. Song Y, Miyaki K, Araki J, Zhang L, Takahashi Y, Nakayama T, Muramatsu M. Influence of CYP11B2 Gene Polymorphism on the Prevalence of Hypertension and the Blood Pressure in Japanese Men: Interaction with Dietary Salt Intake. J Nutrigenet Nutrigenomics 1:252-258, 2008.
6. Yokoyama K, Shigematsu T, Miyaki K, Hara S, Ohkido I, Hosoya T, Kono T, Yoshida T, Muramatsu M. Low blood osteoprotegerin levels are a predictor to poor prognosis in Japanese patients on hemodialysis due to diabetic nephropathy. Ther Apher Dial 12:259-260, 2008.
7. Kaniwa N, Saito Y, Aihara M, Matsunaga K, Tohkin M, Kurose K, Sawada JI, Furuya H, Takahashi Y, Muramatsu M, Kinoshita S, Abe M, Ikeda H, Kashiwagi M, Song Y, Ueta M, Sotozono C, Ikezawa Z, Hasegawa R. HLA-B locus in Japanese patients with anti-epileptics and allopurinol- related Stevens-Johnson syndrome and toxic epidermal necrolysis. Pharmacogenomics. 9:1617-1622, 2008.
8. Shi L, Ogata S, Yu JK, Ohashi J, Yu L, Shi L, Sun H, Lin K, H XQ, Matsushita M, Horai S, Muramatsu M, Chu JY, Tokunaga K. Distribution of HLA alleles and haplotypes in Jinuo and Wa populations in Southwest China. Hum Immunol 69: 58-65, 2008.

9. Daimon M, Sato H, Oizumi T, Toriyama S, Saito T, Karasawa S, Jimbu Y, Wada K, Kameda W, Susa S, Yamaguchi H, Emi M, Muramatsu M, Kubota I, Kawata S, Kato T. Association of the PIK3C2G gene polymorphisms with type 2 DM in a Japanese Population. BBRC 365:466-471, 2008.
10. Susa S, Daimon M, Sakabe J, Sat H, Oizumi T, Karasawa S, Wada K, Jimbu Y, Kameda W, Emi M, Muramatsu M, Kato T. A functional polymorphism of the TNF-α gene that is associated with type 2 DM. BBRC 369:943-947, 2008.
11. Daimon M, Sato H, Sasaki S, Toriyama S, Emi M, Muramatsu M, Hunt SC, Hopkins PN, Karasawa S, Wada K, Jimbu Y, Kameda W, Susa S, Oizumi T, Fukao A, Kubota I, Kawata S, Kato T. Salt consumption-dependent association of the GNB3 gene polymorphism with type 2 DM. BBRC 374:576-580, 2008.

Health Care Management and Planning

1. Staffs and Students (April, 2008)

Professor	Kazuo KAWAHARA	
Graduate Student	Atsuhumi KAWAUCHI	Motohiro SHIMIZU
	Katsumi FUJITANI	Lagrada Leizel Paalan (～September)
	Koffi Kouakou Alain	Ahmed Mohammad Munsure
	Takako SANO	Kohei AOSHIMA
	Hidehito TAKENAKA	Youichi SHIMA
	Daiske IKEDA	Eiko SHIMIZU
	Ayano KUNIMITSU	Souichirou MOCHIZUKI
	Takeo NAKADA	Takeo NIGA
	Sayori FUJIMOTO	Mutsumi UESUGI
	Kenjiro IDE	Toru NAKAMURA
	Sawako OKAMOTO	Keiko YOSHIDA
	Takashi KAWAI	Ayako IDE
Research Student	Wakako KUSHIRO	Yuri KINOSHITA

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 toshare 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. Leizel P. LAGRADA, Naruo UEHARA, and Kazuo KAWAHARA. ANALYSIS OF FACTORS OF TREATMENT COMPLETION IN DOTS HEALTH FACILITIES IN METRO MANILA, PHILIPPINES: A CASE-CONTROL STUDY. Kekkaku Vol.83, No.12: 765-772, 2008.
2. KOFFI AK, KAZUO K. Sexual abstinence behavior among never-married youths in a generalized HIV epidemic country: Evidence from the 2005 Côte d'Ivoire AIDS indicator survey. BMC Public Health 2008, 8:408 doi:10.1186/1471-2458-8-408.
3. Y. Tokuda, S. Okamoto, Y. Yoshiokaa, M. Aizawa, M. Tanaka, K. Motomura, K. Hayano. "The influence of medical jargon mixed with foreign terminology in the Japanese clinical environment," Internal Medicine, IM-O-08-Dec-0862, R1

Review Article

None

Book

None

Health Care Economics

1. Staffs and Students (April, 2008)

Professor	Koichi KAWABUCHI	
Assistant Professor	Isao IGARASHI	
Graduate Student	Taeko FUKUOKA,	Seisuke FUKUOKA,
	Tewarit SOMKOTRA,	Xian Xiu LIU,
	Diah Ayu Maharani,	Shinichi SEKI,
	Takanori TSUCHIYA,	Thunthita WISAIJOHN,
	Hironori INOUE,	Toshifumi KAWAHARA

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 evaluation of heavy ion radiotherapy
2) Economical analysis of the prevention program for metabolic syndrome and counter-programs against onset and progress of age-related conditions
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 Article

1. Tewarit Somkotra, Leizel P. Lagrada: Payments for health care and its effect on catastrophe and impoverishment: Experience from the transition to Universal Coverage in Thailand, Social Science & medicine, 67(12), 2027-2035, 2008.

Review Article

1. Koichi Kawabuchi, Keiko Kajitani: A New Elderly Care System-Introduction of the Healthcare System for Long Life Healthcare, Japan Hospitals, 27, 43-49, 2008.
2. Koichi Kawabuchi: What's Wrong with the New System of Elderly Medical Care?, Japan Echo, 35(5), 15-19, 2008.
3. Koichi Kawabuchi: Les faiblesses du nouveau régime pour les personnes âgées, Cahiers du Japon, 115, 41-47, 2008.

Dental Education Development

1. Staff and Students

Professor	Ikuko MORIO
Junior Associate Professor	Jun TSURUTA
Graduate Student	Daisuke MATSUYAMA (till March 2008)

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. Publications

Original Article

1. Nunn J, Freeman R, Anderson E, Carneiro L C, Carneiro M S A, Formicola A, Frezel R, Kayitenkore J, Luhanga C, Molina G, Morio I, Nartey N O, Ngom P I, de Lima Navarro M F, Segura A, Oliver S, Thompson S, Wandera M, Yazdanie N. Inequalities in access to education and healthcare. Eur J Dent Educ 2008; 12 (Suppl. 1): 30-39.
2. Mattheos N, Stefanovic N, Apse P, Attstrom R, Bushanan J, Brown P, Camilleri A, Care R, Fabrikant E, Gundersen S, Honkala S, Johnson L, Jonas I, Kavadella A, Moreira J, Peroz I, Perryer D G, Seemann R, Tansy M, Thomas H F, Tsuruta J, Uribe S, Urtane I, Walsh T F, Zimmerman J, Walmsley A D. Potential of information technology in dental education. Eur J Dent Educ 2008; 12 (Suppl. 1): 85-92.

Division of Research Development

1. Staffs and Students (April, 2008)

Professor	Kozo TAKASE	
Graduate Students		
Doctor course	Yuko UCHIDA	Hiromasa SAKAGUCHI
	Yuji HIGASIDE	Naoko MIAKE
Master course (Master of Medical Administration)		
	Keisuke IWASE	Katsunori KUBOTA
	Naoko TAKASIMA	Kei YASUDA
	Ayumi YAMAGUCHI	Keisuke YOSIHARA
	Koji IKEDA	

2. Education

1) Hospital Information Management
2) Medical Informatics
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) Development of Medical Information System
2) Introduction of Clinical Pathway in hospital
3) Medical law suit and professional information
4) Quality management of medical law suit
5) Organizational logic for hospital
6) Health care policy and rational
7) Management of medical information and privacy
8) Safety management in dental practice

4. Clinical Services

Department of Medical Informatics in University Hospital
Logistics management in University Hospital
Information Safety in the University

5. Publications etc.

<All publications written in Japanese>

Health Care Informatics

1. Staffs and Students (April, 2008)

Associate Professor	Kiyohide FUSHIMI	
Graduate Student	Hidenori IMAI,	Emi SATO,
	Sayuri SHIMIZU,	Daisuke SATO,
	Shinobu KAMATA,	Chihiro TAKAHASHI,
	Hiroyo KUWABARA,	Ayako ODA,
	Takahiro INOUE	

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., Imanaka, Y., Matsuda, S., Fushimi, K., Hashimoto, H., Ishikawa, K.B., Horiguchi, H., Hayashida, K., Fujimori, K. Impact of age and procedure on resource use for patients with ischemic heart disease. Health Policy 85: 196–206, 2008.
2. Kuwabara K. Matsuda S. Imanaka Y. Fushimi K. Hashimoto H. Ishikawa K. The effect of age and procedure on resource use for patients with cerebrovascular disease. J Health Serv Res Pol 13:26-32, 2008.
3. Kamata, T., Fushimi. K. Prevalence of Prostate Cancer in End-Stage Renal Disease Patients. Urologia Internationalis 80：419-424, 2008.

Educational System in Dentistry

1. Staffs and Students (April,2008)

Professor	Kouji ARAKI	
Junior Associate Professor(non-full time)		
	Hiroki KATAOKA	
Secretary	Satomi ITOH	
Graduate Student	Yuriko YASUKAWA	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

5. Publication

Original Article

1. Tomohiro Tamura, Ken-ichi Tonami, Hidekazu Takahashi, Shiro Mataki, Kouji Araki and Norimasa Kurosaki : Tensile strength of dentin after bleaching treatment Journal of Medical and Dental Sciences Vol.55 No.1,March 2008

Gerodontology

1. Stuff and Students(April,2008)

Professor	Hiroshi Uematsu	
Asociate Professor	Tsuneto Ohwatari	
Lecturer	Ken-ichi Kobayashi	Toshiaki Sekita
Reserch Associate	Kazuo Motomura	Akiko Kojyo
	Ayako Nakane	Kentarou Kunimori
	Shino Murata	Shinya Mikushi

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. Reserch Subjects

1) Medical management during dental treatment in elderly patients
2) Dysphagia screening
3) Evaluation method of eating disorders and dysphagia
4) Dental approach to dysphagia
5) Coordination of mastication and swallowing
6) Addressing dysphagia during house visits

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 hospital' s 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 Article

1. Screening Test for Silent Aspiration at the Bedside.
   Yoko Wakasugi1 , Haruka Tohara1, 2, Fumiko Hattori3, Yasutomo Motohashi4, Ayako Nakane1, Shino Goto1,

Yukari Ouchi1, Shinya Mikushi1, Syuhei Takeuchi1 and Hiroshi Uematsu1　Dysphagia.23:364-370,2008
2. Yoko Wakasugi, Haruka Tohara, et al.: Screening Test of Silent Aspiration at the Bedside. Dysphagia 23:364-370, 2008
3. Inokuchi N, Tohara H, Uematsu H ,The Effect of Lateral Shift of Cricoid Cartilage on pharyngeal Swallowing. Dysphagia .2008.

Comprehensive Pathology

1. Staffs and Students

Professor	Masanobu KITAGAWA	
Assistant Professor	Morito KURATA, Kouhei YAMAMOTO	
Labolatory Technician	Sachiko SEKI,	Miori INOUE
Technical Assistant	Sachiko ISHIBASHI	
Graduate Students	Masahiro KOYAMA,	Emiko SUGAWARA,
	Shiho SUZUKI,	Shigeaki UMEDA,
	Nobuo KUNINAKA,	Yuko MOCHIMARU,
	Satoshi ASANO	

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. Matsumoto T, Kumagai J, Hasegawa M, Ohno K, Mizusawa H, Kitagawa M, Eishi Y. Expression patterns of metalloproteinase in primary central nervous system lymphoma differs from those in nodal lymphoma. Neuropathology 28:277-285, 2008.
2. Chiba T, Shinozaki S, Nakazawa T, Kawakami A, Ai M, Kaneko E, Kitagawa M, Kondo K, Chait A, Shimokado K. Leptin deficiency suppresses progression of atherosclerosis in apoE-deficient mice. Atherosclerosis 196:68-75, 2008.
3. Kurata M, Nakagawa Y, Yamamoto K, Suzuki K, Kitagawa M. Induction of integrin expression in bone marrow cells after chemotherapy correlates with the overexpression of lung resistance protein (LRP) and poor outcome in patients with multiple myeloma. Am J Hematol 83:755-757, 2008.
4. Shiraishi J, Nakagawa Y, Kurata M, Yamamoto K, Abe Y, Toyoda Y, Suzuki K, Kitagawa M, Takemura T. Follicular lymphoma with marked infiltration of eosinophils. Pathol Int 58:701-705, 2008
5. Hirokawa K, Utsuyama M, Ishikawa T, Kikuchi Y, Kitagawa M, Fujii Y, Nariuchi H, Uetake H, Sugihara K. Decline of T cell-related immune functions in cancer patients and an attempt to restore them through infusion of activated autologous T cells. Mech Ageing Dev 2008 May 8. [Epub ahead of print]
6. Hasegawa M, Kurata M, Yamamoto K, Yoshida K, Aizawa S, Kitagawa M. A novel role for acinus and MCM2 as host-specific signaling enhancers of DNA-damage-induced apoptosis in association with viral protein gp70. : A novel role for acinus and MCM2 as host-specific signaling enhancers of DNA-damage-induced apoptosis in association with viral protein gp70. Leuk Res 2008. [Epub]

Book・Review Article

1. Hirokawa K, Utsuyama M, Kikuchi Y, Kitagawa M. Proper assessment and restoration of immunological function for the improvement of QOL and elongation of healthy lifespan in the elderly. In The Impact of Ageing edited by Sinigoj G et al., pp363-372, 2008.
2. Kitagawa M, Hirokawa K. Aging, cancer and apoptosis in animal models and clinical settings. In Handbook on Immunosenescence: basic understanding and clinical applications. Springer, Fulop T et al. Eds. pp1165-1188, 2008.
3. Utsuyama M, Kikuchi Y, Kitagawa M, Hirokawa K. Age-related changes in subpopulations of peripheral blood

lymphocytes in healthy Japanese population. In Handbook on Immunosenescence: basic understanding and clinical applications. Springer, Fulop T et al. Eds. pp203-218, 2008.

4. Hirokawa K, Utsuyama M, Kikuchi Y, Kitagawa M, Assessment of age-related decline of immunological function and possible methods for immunological restoration in elderly. In Handbook on Immunosenescence: basic understanding and clinical applications. Springer, Fulop T et al. Eds. pp1547-1570, 2008.

Integrated Pulmonology

1. Staffs and Students (April, 2008)

Professor	Yasuyuki YOSHIZAWA	
Junior Associate Professor	Naohiko INASE	
Assistant Professor	Yosio OHTANI,	Yasunari MIYAZAKI,
	Meiyo TAMAOKA,	Masashi FURUIE
Research Student	Jin KURAMOCHI,	Torahiko JINTA,
	Keiko MITAKA,	Koji TAKAYAMA,
	Haruhiko FURUSAWA,	Takehiko OHBA,
	Koji UNOURA,	Makito YASUI,
	Hiroshi ONO,	Kaori OKAYASU,
	Tomoya TATEISHI,	Ryutaro SHIRAHAMA,
	Satoshi TAKAYAMA	

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 associated with collagen vascular disease
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, support for ceasing smoke, management of sleep apnea, and arrange of clinical studies are provided.

5. Publications

Original Article

1. Kishi M, Miyazaki Y, Jinta T, Furusawa H, Ohtani Y, Inase N, Yoshizawa Y: Pathogenesis of cBFL in common with IPF? Correlation of IP10/TARC ratio with histological pattern. Thorax 63: 810-816, 2008.
2. Ohtani Y, Ochi J, Mitaka K, Takemura T, Jinta T, Kuramochi J, Miyazaki Y, Inase N, Yoshizawa Y: Chronic summer-type hypersensitivity pneumonitis initially misdiagnosed as idiopathic pulmonary fibrosis. Intern Med 47: 857-862, 2008.
3. Tamaoka M, Hassan M, McGovern T, Ramos-Barbon D, Jo T, Yoshizawa Y, Tolloczko B, Hamid Q, Martin JG: The epidermal growth factor receptor mediates allergic airway remodeling in the rat. Eur Respir J 2008;32:1213-1223
4. Hanada S, Maeshima A, Matsuno Y, Ohta T, Ohki M, Yoshida T, Hayashi Y, Yoshizawa Y, Hirohashi S, Sakamoto M:Expression profile of early lung adenocarcinoma: identification of MRP3 as a molecular marker for early progression. J Pathol 2008;216:75-82
5. Tsuchiya K, Isogai S, Tamaoka M, Inase N, Akashi T, Martin JG, Yoshizawa Y: Depletion of CD8(+) T cells enhances airway remodeling in a rodent model of asthma. Immunology 126: 45-54, 2008.
6. Miyazaki Y, Tateishi T, Akashi T, Ohtani Y, Inase N, Yoshizawa Y: Clinical predictors and hitologic appearance of acute exacerbation in chronic hypersensitivity pneumonitis. Chest 134: 1265-1270, 2008

Review Article

1. Takemura T, Akashi T, Ohtani Y, Inase N, Yoshizawa Y: Pathology of hypersensitivity pneumonitis. Curr Opin Pulm Med 14: 440-454, 2008.

Geriatrics and Vascular Medicine

1. Staffs and Students (April, 2008)

Professor	Kentaro SHIMOKADO, MD	
Junior Associate Professor	Eiji KANEKO, MD	
Assistant Professor	Akio KAWAKAMI, MD	
Hospital Staff	Yasuko ABE, MD,	Masumi AI, MD.
Graduate Student	Daisuke IIZUKA,	Haruaki ITAKURA,
	Takashi KUBO,	Yusuke KOMI,
	Hideki TATSUKAWA,	Sumihiko HAGITA,
	Yasuko ABE,	Yasuko USHIO,
	Mizuki IWAMA	

2. Purpose of Education

1) Undergraduate education of geriatrics for medical students
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) Development of new diagnostic procedures and treatments of atherosclerosis

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 Article

1. Ai M, Otokozaawa S, Asztalos BF, Nakajima K, Stein E, Jones PH, Schaefer EJ. Effect of maximal doses of atorvastain versus rosuvastain on small dense low-density lipoprotein cholesterol levels. Am J Cardiol. 2008;101:315-318
2. Chiba T, Shinozaki S, Nakazawa T, Kawakami A, Ai M, Kaneko E, Kitagawa M, Kondo K, Chait A and Shimokado K. Leptin deficiency suppresses progression of atherosclerosis in apoE-deficient mice. Atherosclerosis 2008;196:68-75
3. Furusawa H, Sato Y, Tanaka Y, Inai Y, Amano A, Iwama M, Kondo Y, Handa S, Murata A, Nishikimi M, Goto S, Maruyama N, Takahashi R and Ishigami A. Vitamin C is not essential for carnitine biosynthesis in vivo: Verification in vitamin C-depleted SMP30/GNL knockout mice. Biol. Pharm. Bull. 2008;31:1673-1679
4. Hagita S, Osaka M, Shimokado K, Yoshida M. Oxidative stress in mononuclear cells plays a dominant role in their adhesion to mouse femoral artery after injury. Hypertension 2008;51:797-802
5. Kawakami A, Osaka M, Aikawa M, Uematsu S, Akira S, P.Libby, Shimokado K, FM. Sacks, Yoshida M. Toll-like 2 receptor mediates apolipoprotein CIII-induced monocyte activation.Circ. Res. 2008;103:1402-1409
6. Kawakami A, Osaka M, Tani M, Azuma H, Frank M Sacks, Shimokado K, Yoshida M. Apolipoprotein CIII links hyperlipidemia with vascular endothelial cell dysfunction. Circulation 2008;118:731-742
7. Kondo Y, Sasaki T, Sato Y, Amano A, Iwama M, Handa S, Shimada N, Fukuda M, Akita M, Lee J, Jeong KS, Maruyama N, Ishigami A. Vitamin C depletion increases superoxide generation in brains of SMP30/GNL knockout mice. Biochem Biophys Res Commun 2008;377: 291-296

Vascular and Applied Surgery

1. Staffs and Students (April, 2008)

Professor		
Associate Professor	Tatsuyuki KAWANO	
Tokunin Associate Professor	Masatoshi JIBIKI	
Junior Associate Professor	Yoshinori INOUE	
Assistant Professor	Kagami NAGAI,	Norihide SUGANO,
	Tetsuro NISHIKAGE,	
Tokunin Assistant Professor	Toshifumi KUDO	
Hospital Staff	Kazuo OGIYA,	Hiroaki TERASAKI,
	Tkakahiro TOYOFUKU,	Shigeo HARUKI,
	Hiroyuki NOTANI,	Akihito MITSUOKA,
	Tomoyoshi SUZUKI,	Akihiro HOSHINO,
	Yutaka MIYAWAKI,	Hidetoshi UCHIYAMA
	Shinya KOIZUMI,	Koji YONEKURA
Secretary	Yuri ENDO,	Kae YOSHIZAWA
Graduate Student	Rieko NAKAJIMA,	Hiroaki TERASAKI,
	Mime ASAHINA,	Takahiro TOYOFUKU,
	Shigeo HARUKI,	Hiroko KUME,
	Hiroyuki NOTANI,	Akihito MITSUOKA,
	Tomoyoshi SUZUKI,	Akihiro HOSHINO,
	Yutaka MIYAWAKI,	Hidetoshi UCHIYAMA,
	Shinya KOIZUMI,	Koji YONEKURA,
	Nuttawut SERMSATHANASAVAD,	
	Tuerxun REXIATI	
Research Student	Dilixiati JIAMALI	

2. Purpose of Education

This department started as the First Department of Surgery of TMDU, and many surgeons and researchers in various specialties have since achieved and have maintained a high level of activity. Our educational gods are to assist the post-graduate physicians to develop into excellent surgeons and to contribute to the development of medical/surgical sciences. Surgeons with high-level medical knowledge and techniques are expected to thrive in this department. Moreover, the department strives to nurture the humanity of the surgeous as well. The department has a peaceful atmosphere and stands as a symbol of active work in solving difficult medical problems.

3. Research Subjects

1) Development of esophago-gastric surgery.
2) Development of vascular and transplantation surgery.
3) Development of colo-rectal surgery.
4) Development of breast and endocrine surgery.

4. Clinical Services

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

5. Publications

1. Nakajima Y, Suzuki T, Haruki S, Ogiya K, Kawada K, Nishikage T, Nagai K, Kawano T. A pilot trial of docetaxel and nedaplatin in cisplatin-pretreated relapsed or refractory esophageal squamous cell cancer. Hepato-Gastroenterology 2008; 55: 1631-1635.
2. Mitake C, Kudo T, JIbiki M, Sugano N, Inoue Y, Makita K, Imai T. Effects of human atrial natriuretic peptide on

renal function in patients undergoing abdominal aortic aneurysm repair. Crit Care Med. 2008: 36: 745-751.
3. Inoue Y, Sugano N, Jibiki M, Kitamura S, Iwai T. Cuffed anastomosis for above-knee femoropopliteal bypass with stretch expanded polytetrafluoroethylene graft.Surg Today. 2008: 38: 679-684.
4. Inoue Y, Sugano N, Jibiki M, Kudo T, Iwai T. Effects of cilostazol and k-134 on reconstructive surgery using prosthetic grafts in the abdominal aorta of beagle dogs. Thromb Res. 2008: 123: 122-129
5. Mitaka C, Kudo T, Jibiki M, Sugano N, Inoue Y, Makita K, Imai T.Effects of human atrial natriuretic peptide on renal function in patients undergoing abdominal aortic aneurysm repair.Crit Care Med. 2008;36:745-51.
6. Lehtola A, Oinonen A, Sugano N, Alback A, Lepantalo M.Deep venous reconstructions: long-term outcome in patients with primary or post-thrombotic deep venous incompetence.Eur J Vasc Endovasc Surg. 2008 ;35:487-93.
7. Nakamura H, Inoue Y, Kudo T, Kurihara N, Sugano N, Iwai T.Detection of venous emboli using Doppler ultrasound. Eur J Vasc Endovasc Surg. 2008 ;35:96-101.
8. Nakajima Y, Suzuki T, Haruki S, Ogiya K, Kawada K, Nishikage T, Nagai K, Kawano T. A pilot trial of docetaxel and nedaplatin in cisplatin-pretreated relapsed or refractory esophageal squamous cell cancer. Hepato-Gatroenterology, 2008; 55:1631-1635
9. Kusano M Kouzu T, Kawano T, Ohara S. Nationwide epidemiological study on gastroesophageal reflux disease and sleep disordores in Japanese population. J Gastroenterology 2008; 43:833-841
10. Hayashi M, Inokuchi M, Takagi Y, Yamada H, Kojima, Kawano T, Sugihara K. High expression of HER3 is associated with a decreased survival in gastric cancer. Clin Cancer Res, 2008; 14: 7843-7849
11. Wanajo A, Sasaki A, Nagasaki H, Shimada S, Otsubo T, Owaki S, Shimizu Y, Eishi Y, Kojima K, Nakajima Y, Kawano T, Yuasa Y, Akiyama Y. Methylation of the calcium channel-related gene, CACNA2D3, is frequent and an poor prognostic factor in gastric cancer. Gastroenterology, 2008; 135：580-590
12. Ogiya K, Kawano T, Itoh E, Nakajima Y, Kawada K, Nishikage T, Nagai K. Lower esophageal palisade vessels and the definition of the Barrett's esophagus. Dis　Esophagus, 2008; 21:21:645-649
13. Kawada K, Kawano T, Nagai K, Nishikage T, Nakajima Y, Ogiya K, Suzuki T, Haruki S, Kawachi H. Argon plasma coagulation for local recurrence of squamous cell carcinoma of the esophagus after endoscopic mucosal resection : technique and outcome. Esophagus, 2008; 5: 27-32
14. Yamada H, Kojima K, Inokuchi M, Kawano T, Sugihara K, Nihei Z. Preliminary experience using a computer-mediated flexible circular stapler in laparoscopic esophagogastrostomy. Surg Laparosc Endosc Percutan Tech 2008; 18: 59-63
15. Kojima, Yamada H, Inokuchi M, Kawano T, Sugihara K Functional evaluation after vagus-nerve sparing laparoscopically assisted distal gastrectomy. Surg Endosc, 2008; 22:2003-2008, DOI 10.1007/s00464-008-0016-8
16. Kojima, Yamada H, Inokuchi M, Kawano T, Sugihara K　A comparison of Roux-en-Y　and Billroth－I reconstruction after laparoscopy-assisted distal gastrectomy. Ann Surg, 2008; 247: 962-967
17. Kawano T, Haruki S, Ogiya K, Kawada K, Nakajima Y, Nishikage T, Kojima K, Nagai K, Kawachi H. Reliability of endoscopic esophageal mucosectomy using TxHood, a multipurpose treatment hood. Surg Endosc 2008; 22:2466-2469
18. Kawano T, Nishikage T. Open jaw technique in laparoscopic knot tying. Surg Endosc, 2008; DOI 10.1007/s00464-007-9637-6
19. Kojima, Yamada H, Inokuchi M, Hayashi M, Kawano T, Sugihara K. Current status and evaluation of laparoscopic surgery for gastric cancer. Digestive Endoscopy, 2008; 20: 1-5

Rehabilitation Medicine

1. Staffs and Students (April, 2008)

Associate Professor	Sadao MORITA	
Graduate Student	Kiyoshi SAKATA,	Kohsei SON,
	Kazuhisa INOUE,	Akihito KUBOTA,
	Tomoko ARAKI,	Junya AIZAWA,
	Keisuke KAJI	Tomokazu MASAOKA

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

Original Article

1. Takayuki Koyama, Ken Yanagisawa , Osamu Nitta , Jun-ya Aizawa: Effects of joint traction and position changing of upper limb on the reaction time of quadriceps femoris. The Journal of Japan Academy of Health Science 11(3): 138-144, 2008.
2. Masuda Tadashi, Ishida Akimasa , Cao Lili , Morita Sadao. A proposal for a new definition of the axial rotation angle of the shoulder joint. Journal of Electromyography and Kinesiology 18: 154-159, 2008.

General Dentistry

1. Staffs and Students (April,2008)

Graduate Student	Syuhei NAKAMURA,	Risa TAMURA,
	Kazunobu SANO,	Hirono KIKUCHI,
	Sachi UMEMORI	

Oral Diagnosis and General Dentistry

Chief	Shiro MATAKI	
Associate Professor	Ikumi SHIOZAWA	
Lecturer	Chie SHIMIZU,	Satoko OHARA
Assistant Professor	Hideya HAMANO,	Kenichi TONAMI,
	Atsushi OHYAMA	
Hospital Staff	Tomohiro ISHIDA,	Fumihiko TAKAHASHI,
	Kaori HARADA,	Akiko TAKASHIMA,
	Ayaka INAKAZU	

2. Purpose of Education

General Dentistry is a branch of dental science which deals with oral diagnosis and general dentistry. Education objective of General Dentistry is to acquire comprehensive patient care methods from medical interview to periodic maintenance after dental treatment. Therefore, General dentistry provides practical training course of medical interview, oral examination, oral diagnosis, writing dental records, and simulation education.

3. Research Subject

1) Study on Implementation and assessment of new dental clinical education systems
2) Study on application of ArF excimer laser to teeth preparation
3) Study of oral appliance therapy in obstructive sleep apnea
4) Study on dentin tensile strength and matrix collagen
5) Study on diagnostic system of dental caries using digital images

4. Clinical Services

In our dental hospital, most new patients consult dentists in our clinic of general dentistry and oral diagnosis to receive suitable treatment for their chief complaints. Dentists of our clinic decide where to refer each case for the optimal clinic in our hospital for their needs. If new patient is suitable for treatment in general dentistry, dentists of our clinic ask them to receive treatments from students or residents.

Clinic of general dentistry and oral diagnosis also provides patient-centered general practice, oral care by dental hygienists, and oral appliance therapy of obstructive sleep apnea syndrome (OSAS).

5. Publications

1) Ishida T, Tonami K, Araki K, and Kurosaki N : Properties of human dentin surface after ArF excimer laser irradiation. J Med Dent Sci 2008, 55 : 155-162.
2) Tamura T,Tonami K, Araki K, Mataki S and Kurosaki N : Tensile strength of dentin after bleaching treatment. J Med Dent Sci 2008, 55 : 175-180.
3) Tokunaga R, Takahashi H, Iwasaki N, Kobayashi M, Tonami K, Kurosaki N : Effect of polymorphism of SiO2 addition on mechanical properties of feldspathic porcelains, Dental Material Journal 2008, 27 : 347-355.
1) Sato M, Suzuki M, Suzuki J, Mataki S, Kurosaki N, Hasegawa M : Overweight patients with severe sleep apnea experience deeper oxygen desaturation at apneic events. J Med Dent Sci 2008, 55 : 43-47.
5) Endo Y, Suzuki M, Inoue Y, Sato M, Namba K, Hasegawa M, Matsuura M : Prevalence of Complex Sleep Apnea Among Japanese Patients with Sleep Apnea Syndrome. The Tohoku Journal of Experimental Medicine 2008, 215 : 349-354.
6) Ueno M, Yanagisawa T, Shinada K, Ohara S, Kawaguchi Y: Masticatory ability and functional tooth units in Japanese adults. J Oral Rehabil 2008, 35: 337-344.

Head and Neck Psychosomatic Medicine

1. Staffs and Students (April, 2008)

Professor	Akira Toyofuku	
Assistant Professor	Satoshi Ishida	
Hospital Staff	Junya Ogami	Tatsuya Yoshikawa
Graduate Student	Miho Takenoshita	Yuuichi Kato
	Tomoko Sato	

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 600 new outpatients per year, and almost of them were referred from other specialists not only in dentistry but also internal medicine, otorhinolaryngology, dermatology, psychosomatic medicine, and psychiatry. They

come from the Metropolitan area, of course, Osaka, Kyushu, Hokkaido and so on. We take fine-grained care and follow up, total number of patients is up to 7000 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. Natsuko Ashida, Psychoanalytic study of psychosomatic dental problems, Jpn J Psycosom Dentist22, p 53～62, 2007.

Abstract

1. Miho Takenoshita, Akira Toyofuku, Three Cases of Atypical Odontalgia, The 13th Congress of the Asian College of Psychosomatic Medicine, 2008,8.31~9.1, Korea.
2. Tomoko Sato, Yuichi Kato, Miho Takenoshita, Tatsuya Yoshikawa, Junya Ogami, Akira Toyofuku, Psychosomatic Treatment of Phantom Bite Syndrome, The 13th Congress of the Asian College of Psychosomatic Medicine, 2008,8.31~9.1, Korea.

Behavioral Dentistry

1. Staffs and Students (April, 2008)

Professor	Shiro Mataki	
Associate Professor	Hiroshi Nitta	
Graduate Student	Fumihiko Takahashi	Keiko Kondo
	Tohru Ozaki	Yuji Ito

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) U Ushida Y, Koshy G, Kawashima Y, Kiji M, Umeda M, Nitta H, Nagasawa T, Ishikawa I, Izumi Y. Changes in serum interleukin-6, C-reactive protein and thrombomodulin levels under periodontal ultrasonic debridement. J Clin Periodontol 35: 969-75, 2008.
2) Tamura T, Tonami K, Araki K, Mataki S, Kurosaki N. Tensile strength of dentin after bleaching treatment. J Med Dent Sci 55: 175-180, 2008.

Temporomandibular Joint and Occlusion

1. Staffs (April, 2008)

Associate Professor	Koji KINO	
Assistant Professor	Akira NISHIYAMA	
Hospital Staff	Michiko TAKAOKA,	Takenobu OHTA,
	Kaori TUKAGOSHI	

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.

5. Publications

Original Article

1.Itho H, Baba K, Aridone K, Okada D, Tokuda A, Nishiyama A, Miura H, Igarashi Y . Effect of direct retainer and major connector designs on RPD and abutment tooth movement dynamics. JOR,35-11, 810-815:2008.

Laboratory Medicine

1. Staffs and Students (April, 2008)

Professor	Nobuo NARA
Associate Professor	Shuji TOHDA
Research Associate	Mai ITOH
Graduate Students	Lu FU, Noriko KAWAGUCHI, Yuki OKUHASHI

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
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. Kawaguchi-Ihara N, Murohashi I, Nara N, Tohda S. Promotion of the self-renewal capacity of human acute leukemia cells by Wnt3A. Anticancer Research 2008; 28: 2701-2704.
2. Kobayashi T, Terada Y, Kuwana H, Tanaka H, Okado T, Kuwahara M, Tohda S, Sakano S, Sasaki S. Expression and function of the Delta-1/Notch-2/Hes-1 pathway during experimental acute kidney injury. Kidney Int 2008;73:1240-50.
3. Nemoto Y, Kanai T, Tohda S, Totsuka T, Okamoto R, Tsuchiya K, Nakamura T, Sakamoto N, Fukuda T, Miura O, Yagita H, Watanabe M. Negative feedback regulation of colitogenic CD4+ T cells by increased granulopoiesis. Inflamm Bowel Dis 2008;14:1491-503.
4. Morita-Hoshi Y, Heike Y, Kawakami M, Sugita T, Miura O, Kim SW, Mori SI, Fukuda T, Tanosaki R, Tobinai K, Takaue Y. Functional analysis of cytomegalovirus-specific T lymphocytes compared to tetramer assay in patients undergoing hematopoietic stem cell transplantation. Bone Marrow Transplant. 2008; 41:515-521
5. Morita-Hoshi Y, Tohda S, Miura O, Nara N. An autopsy case of multicentric Castleman's disease associated with interstitial nephritis and secondary AA amyloidosis. Int J Hematol 2008;87:69-74.
6. Fuji S, Kim SW, Fukuda T, Mori S, Yamasaki S, Morita-Hoshi Y, Ohara-Waki F, Heike Y, Tobinai K, Tanosaki R, Takaue Y. Preengraftment serum C-reactive protein (CRP) value may predict acute graft-versus-host disease and nonrelapse mortality after allogeneic hematopoietic stem cell transplantation. Biology of Blood and Marrow Transplantation. 2008; 14(5):510-517.

Critical Care Medicine

1. Staffs and Students (April, 2008)

Professor	Takasuke IMAI
Associate Professor	Chieko MITAKA
Assistant Professor	Yasuaki NAKAJIMA (Critical Care Medicine) (2005.7.1～)
	Kenro KAWADA (Intensive Care Unit) (2007.4.1～)
	Naoki TSUCHIDA (Intensive Care Unit) (2008.3.1～2009.3.31)
Trainee	Toshiya MOMOSE (Intensive Care Unit) (2006.5.1～2008.10.31)
	Hirokazu NAGASAKI (Intensive Care Unit) (2008.11.1～)
Graduate Students	Kazuya HIRABAYASHI, Chenging ZHU, Aishan BILALI
JSPS Postdoctoral Fellowship for Foreign Researcher	
	Gabriela Spasova Georgieva (2006.9.21～2009.3.31)

2. Purpose of Education

Undergraduate education

Lectures: Fourth-year medical students

1) Shock (Imai)
2) Resuscitation (Ootomo)
3) Mechanical ventilation (Mitaka)
4) Burn (Aikawa, Keio University)
5) Acute respiratory failure (Imai)
6) Treatment of trauma (Ootomo)
7) Sepsis (Imai)
8) Hypothermia (Maekawa, Yamaguchi University)
9) Acid base balance/Chronic respiratory failure (Mitaka)
10) Pathophysiology and treatment of acute respiratory failure (Imai)
11) Traumatology (Ootomo)
12) Examination of critical care medicine

Clinical clerkship III: 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) Relationship between 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 of septic shock by inhibition of (ADP-lipose) synthetase
6) Clinical study of atrial natriuretic peptide

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 physicians. 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. Go Haraguchi, Hisanori Kosuge, Yasuhiro Maejima, Jun-Ichi Suzuki, Takasuke Imai, Masayuki Yoshida, Mitsuaki Isobe, Pioglitazone reduces systematic inflammation and imprves mortality in apolipoprotein E knockout mice with sepsis, Intensive Care Med 2008;34:1304-12
2. Gabriela S Georgieva, Shunichi Kuata, Aisan Bilari, Chenting Zhu, TakasukeImai, Unilateral ischemic lung induces contralateral lung injury by liberating mediators in circulation, Journal of Japanese Society of Intensive Care Medicine 2008;15(Supply):146, 2008
3. Aishan Bilali, Chenting Zhu, Gabriela S Georgieva, Takasuke Imai, Injury of CAPA lung by mediators from isolated perfused unilateral hyperventilated rat lung, Society of Critical Care Medicine's 37th Critical Care Congress, Hawaii Convention Center, Honolulu, Hawaii, USA, Feb 3, 2008
4. Chieko Mitaka, Yumi Fujii, Yasuaki Nakajima, Kenrou Kawada, Takasuke Imai, Polymyxin B-immobilized fiber column hemoperfusion has the possibility to reduce endothelial activation in patients with septic shock, Society of Critical Care Medicine's 37th Critical Care Congress, Hawaii Convention Center, Honolulu, Hawaii, USA, Feb 3, 2008
5. Mitaka C, Kudo T, Jibiki M, Sugano N, Inoue Y, Makita K, Imai T. Effects of human atrial natriuretic peptide on renal function in patients undergoing abdominal aortic aneurysm repair Crit Care Med 2008;36:745-751
6. Iyoko Katoh, Shingo Sato, Nahoko Fukunishi, Hiroki Yoshida, Takasuke Imai, Shun-ichi Kurata. Apaf-1-deficient fog mouse cell apoptosis involves hypo-polarization of the mitochondrial inner membrane, ATP depletion and citrate accumulation, Cell Res 2008;18:1210-1219
7. Chenging Zhu, Aishan Bilali, Gabriela S Georgieva, Shunichi Kurata, Chieko Mitaka, Takasuke Imai. Salvage of nonischemic control lung from injury by unilateral ischemic lung with apocynin, a nicotinamide adenine dinucleotide phosphate (NADPH) oxidase inhibitor, in isolated perfused rat lung. Translational Research 2008;152:273-282
8. Nakajima Y, Suzuki T, Haruki S, Ogiya K, Kawada K, Nishikage T, Nagai , K, Kawano T A pilot trial of docetaxel and nedaplatin in cisplatin-pretreated relapsed or refractory esophageal squamous cell cancer, Hepato-Gastroenterology 55(86-87) 1631-1635, 2008
9. Kawano T, Haruki S, Ogiya K, Kawada K, Nakajima Y, Nishikage T, Kojima, K, Nagai K, Kawachi H, Reliability of endoscopic esophageal mucosectomy using TxHood, a multipurpose treatment hood. Surg Endosc 22(11):2466-2469, 2008
10. Ogiya K, Kawano T, Ito E, Nakajima Y, Kawada K, Nishikage T, Nagai K. Lower esophageal palisade vessels and the definition of Barrett's esophagus. Dis Esophagus 21(7): 645-649, 2008
11. Wanajo A, Sasaki A, Nagasaki H, Shimada S, Otsubo T, Owaki S, Shimizu, Y, Eishi Y, Kojima K, Nakajima Y, Kawano T, Yuasa Y, Akiyama Y. Methylation of the calcium channel-related gene, CACNA2D3, is frequent and a poor prognostic factor in gastric cancer. Gastroenterology 135(2):580-590, 2008
12. Kawada K, Kawano T, Nagai K, Nishikage T, Nakajima Y, Ogiya K, Haruki S, Suzuki T, Kawachi H. Argon plasma coagulation for local recurrence of squamous cell carcinoma of the esophagus after endoscopic mucosal resection: technique and outcome. Esophagus 5:27-32, 2008

Liaison Psychiatry and Palliative Medicine

1. Staffs and Students (April, 2008)

Associate Professor	Eisuke MATSUSHIMA	
Junior Associate Professor		
Assistant Professor	Kenji ODA,	
Tokunin Assistant Professor		
Hospital Staff		
Secretary	Kyoko CHIGIRA	
Graduate Student	Aya KOIZUMI,	Hinako MURATA,
	Mai MOTOSHITA,	Kazuho HISAMURA,
	Mika KOBAYASHI,	Ai TAKEUCHI,
	Keiai SAI,	Motonori KIMURA,
	Noriyuki KINOSHITA,	Yohko NAKAJIMA,
	Ayako MATSUDA,	Toshiyuki MARUTANI,
	Hirofumi NAKAMURA,	Chieko KANAI,
	Makiko KOIKE,	Taeko SASAI,
	Ako HANEKAWA,	Mare NISHIURA,
	Mariko KOBAYASHI,	Miho MIYAJIMA,
	Naoko TUJI,	Tsuguo IWATANI,
	Yuhko KOHNO,	Nao NAKAYAMA,
	Michi BABA.	
Research Student	Okihiko AIHARA,	Ryuho IBARAKI.

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. Takahashi S, Tanabe E, Sakai T, Matsuura M, Matsushima E, Obayashi S, Kojima T: Relationship between exploratory eye movement, P300, and reaction time in schizophrenia. Psychiatry and Clinical Neurosciences 62(4): 366-403, 2008.
2. Takahashi S, Tanabe E, Yara K, Matsuura M, Matsushima E, Kojima T: Impairment of exploratory eye movement in schizophrenia patients and their siblings. Psychiatry and Clinical Neurosciences 62(5): 487-493, 2008.
3. Kobayashi M, Sugimoto T, Matsuda A, Matsushima E, Kishimoto S: Association between self-esteem and depression

among patients with head and neck cancer: a pilot study. Head Neck 30(10): 1303-1309, 2008.
4. Kanaka N, Matsuda T, Tomimoto Y, Noda E, Matsushima Y, Matsuura M, Kojima T: Measurement of development of cognitive and attention functions in children using continuous performance test. Psychiatry and Clin Neurosci. 62,135-141,2008
5. Abe N, Okuda J, Suzuki M, Sasaki H, Matsuda T, Mori E, Tsukada M, Fujii T : Neural correlates of true memory, false memory, and deception. Cerebral Cortex, 2008.
6. Miyajima M, Matsumoto T, Ito S: 2C-T-4 intoxication: acute psychosis caused by a designer drug. Psychiatry Clin Neurosci 62(2):243, 2008
7. Inouchi M, Kubota M, Ohta K, Matsushima E, Ferrari P, Scovel T: Neuromagnetic mismatch field (MMF) dependence on the auditory temporal integration window and the existence of categorical boundaries: comparisons between dissyllabic words and their equivalent tones. Brain research 1232:155-162, 2008.

Pharmacokinetics and Pharmacodynamics

1. Staffs and Students (April, 2008)

Professor	Masato YASUHARA	
Graduate Student	Yutaka TAKAHASHI,	Tohru ARINO,
	Yuko KOJIMA	

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. Hoshino A, Nagao T, Nagi-Miura N, Ohno N, Yasuhara M, Yamamoto K, Nakayama T, Suzuki K:MPO-ANCA induces IL-17 production by activated neutrophils in vitro via classical complement pathway-dependent manner. J. Autoimmun., 31, 79-89 (2008).
2. Hoshino A, Manabe N, Fujioka K, Hanada S, Yasuhara M, Kondo A, Yamamoto K: GFP expression by intracellular gene delivery of GFP-coding fragments using nanocrystal quantum dots. Nanotechnology, 19, Article number 495102 (2008).

General Medicine

The Department of General Medicine was established in 2000, when Professor 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 introduced in the department of medicine and its affiliated hospital in order to promote advanced medicine in our university. Accordingly, we launched the following projects to meet this prime objective: 1) a postgraduate clinical training program over the network of TMDU affiliated hospitals, 2) a patient support system including social casework, 3) the Center for Cell Therapy, and 4) the reform of undergraduate medical education. In response to the expansion of our activities, we have had some organizational changes. 1) The Center for Postgraduate Education was founded in 2002. The members belonging to this center were Prof. Yujiro Tanaka, Dr. Atsushi Okawa, and Dr. Masanaga Yamawaki. 2) In 2002 the Center for Health and Welfare was also established, and two years later in 2004, it separated from the Department of Medicine when Dr. Masayoshi Shichiri was appointed as the Director of the center. 3) The Center for Cell Therapy, which was first established as a part of the Blood Transfusion Department of the hospital in March, 2001, became an independent department in 2003 and Dr. Tomohiro Morio became the chair of the center. 4) Prof. Tanaka became a member of the Board of Education and worked on the committee for curriculum improvement in the department of medicine. He became the chair of the Education Committee from 2004. In addition to the basic design of the new curriculum, this department has been in charge of early clinical training, PBL implementation, training in medical interview techniques, 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. On the other hand, new sections were established in the department. The Working Group for Ward Management (Tanaka, Yamawaki) and the Safety Management Committee (Okawa) were set up in 2004. The Department of General Medicine also worked on the development of an evaluation system for the residency training program (EPOC), and later this became a national online evaluation system for postgraduate clinical training.

1. Education

As a division responsible for the education of students and residents, our chief aim is to foster doctors who have both a 'patient-centered perspective as a specialist' and 'up-to-date knowledge as a generalist'. To achieve these aims, we are designing and offering a continuing medical educational (CME) program for clerkship students, with its emphasis put on educational systems that span multiple departments. Since we think it is important to foster a patient-centered perspective in medical professionals, 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", which are designed to meet 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, in cooperation with the International Center for Medical Education at the University of Tokyo. To improve the quality of clinical training, we are also currently working with an evaluation system for tutors and trainers.

Our department has offered 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 universities nationwide in the past three years (124 residents in 2006 (full match), 123 in 2007 (full match), 115 in 2008 (full match)).

2. Research

In the field of research, we are carrying out projects including:

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.

Research on medical education with SPs (Yamawaki)

We developed a training course based on simulated patients (SPs) through collaboration with the University of Tokyo. In cooperation with SPs, we are performing research on the educational effects of simulation on clinical techniques such as medical interviewing and physical examination, as well as clinical reasoning.

A comprehensive study of dysphagia and inter-professional education (IPE) of its treatment (Yamawaki)

Dysphagia is common worldwide. We are conducting research on educational systems for its treatment for medical professionals in other fields, so-called inter-professional education (IPE), as well as quantitative risk analysis using HAZOP. In addition, clinical research and basic research are carried out in collaboration with domestic and foreign facilities.

Randomized control trial for the surgical treatment of lumbar hernia (Okawa)

Since RCTs for surgery are not easy, the advantages and disadvantages of many surgical techniques remain unclear. In this study, one of three operative procedures was selected randomly for patients with lumbar hernia, who will be followed for 10 years to evaluate outcomes and improve prognosis.

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

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, Okawa, Yamawaki)

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 study on medical education (Tanaka, Okawa, Yamawaki, Momohara)

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

3. Clinical Practice

Second Opinion (Okawa)

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 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 a network of specialists in TMDU.

Patient Safety (Okawa)

Dr. Okawa 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, 2008)

Professor	Yasuhiro OTOMO	
Junior Associate Professor	Eiji ISOTANI,	Junichi AIBOSHI
Assistant Professor	Masahito KAJI,	Tomohisa SHOUKO,
	Naoki TOSAKA,	Atsushi SHIRAISHI,
	Yutaka SEKI,	Kiyoshi MURATA,
Graduate Student	Koji MORISHITA	

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 subarachnoid hemorrhage and cerebral apoplexy 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. Kushimoto S, Otomo Y, et.al: Clinical course and outcome of disseminated intravascular coagulation diagnosis by Japanese Association for Acute Medicine criteria Thromb Haemost 100: 1099-1105, 2008.
2. Matsuoka Y, Otomo Y, et.al: Incidence and prediction of psychiatric morbidity after a motor vehicle accident in Japan Crit Care Med 36:74-80, 2008.
3. Gando S, Otomo Y, et.al: The natural history of disseminated intravascular coagulation diagnosed based on the newly established diagnostic criteria for critically ill patients: Results of a multicenter, prospective survey. Crit Care Med 36:145-150, 2008.
4. Mizuno Y, Isotani E, Ohno K, Nagai A, Imamura M, Azuma H.: Involvement of accumulated nos inhibitors and endothelin-1, enhanced arginase, and impaired DDAH activities in pulmonary dysfunction following subarachnoid hemorrhage in the rabbit. Vasc Pharmacol 48; 21-31, 2008.
5. Mizuno Y, Isotani E, Huang J, Ding H, Stull JT, Kamm KE.: Myosin light chain kinase activation and calcium sensitization in smooth muscle in vivo. Am J Physiol Cell Physiol. Aug; 295(2):C358-64, 2008.

Neuroanatomy and Cellular Neurobiology

1. Staffs and Students (April, 2008)

Professor	Sumio TERADA	
Assistant Professor	Masahiko KAWAGISHI,	Mitsunobu HOSHINO
Technician	Mie TAGUCHI	
Graduate Student	Hiroaki HORI	

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 a 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

Original Article

1. Hori H, Ozeki Y, Terada S, Kunugi H. Functional near-infrared spectroscopy reveals altered hemispheric laterality in relation to schizotypy during verbal fluency task. Prog Neuropsychopharmacol Biol Psychiatry 32:1944-1951, 2008

Systems Neurophysiology

1. Staffs and Students

Professor	Yoshikazu Shinoda (~2008.3)
Associate Professor	Izumi Sugihara
Lecturer	Yuriko Sugiuchi
Assistant Professor	Yoshiko Izawa
MD-PhD Course Graduate Student	Mayu Takahashi (~2008.3)

2. Education

"Basic Neuroscience" course, which our department participates in, consists of integrated lectures and laboratory works of neuroanatomy, neurophysiology and neuropharmacology. The goal of this course is for the students to understand the pathophysiological states of the central and peripheral nervous systems caused by various diseases, based on understanding of normal functions of the nervous system. The neurophysiology part of the course covers wide varieties of topics from the sensory system (somatosensory, visual, auditory), voluntary motor control system (motor cortex, cerebellum, basal ganglia), spatial orientation (vestibular, visual) and postural reflex. A hand-made computer simulation program has been developed for students to self-learn basic matters such as generation and transmission of excitation in nerve cells.

3. Research

Our main interest is on neural mechanisms of motor control. We analyze neural networks of the central nervous system (mainly the cerebellum, brainstem and cerebrum) for controlling initiation and cessation of various kinds of eye movements by combining morphological, electrophysiological, and cell-biological method.

Morphology and function of neural networks for motor control in the central nervous system

1) 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 determine the direction of the gaze, target position in the retina should be detected first and then transformed into motor signals for eye and head movements, the process of which is considered to be executed via the occipital, parietal, and frontal cerebral cortices. Understanding of these neural mechanisms of signal transformation in eye and head movement systems will also open up a door to understanding the mechanism of limb-movement control in general. To understand the mechanism of this signal 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 eye movement systems from the frontal and parietal cortices to the superior colliculus and the brainstem. So far we have identified a localized area involved in inhibiting saccade (rapid eye movements) initiation in the frontal eye field in the monkey, and characterized properties of activity of neurons there. We also have found an area in the frontal cortex receiving strong vestibular inputs, which shows that the head movement signal contributes to eye movements.

2) Cerebellar function in generation and control of voluntary movements

A neural network that consists of the loop-shaped connection among the cerebrum-precerebellar nuclei-cerebellum-thalamus-cerebrum is important for initiation, execution and control of movements. At the moment we are focused on the input/output connections within this loop. By using electrophysiological recording and extracellular microinjection technique, we systematically analyze single-axonal and topographic projection patterns of various input systems from the brainstem and the spinal cord to the cerebellum and also output systems of the cerebellum. Analysis of such projection patterns revealed the structural and functional correlations of cerebellar input/output systems (climbing and mossy fiber systems and Purkinje cell axons) with the compartmentalization (microzone) of the cerebellar cortex and nuclei that was determined by different expression of marker molecules such as aldolase C.

4. Publications

Original Articles

1. Sugihara I, Fujita H, Na J, Quy PN, Li BY, Ikeda D : Projection of reconstructed single Purkinje cell axons in

relation to the cortical and nuclear aldolase C compartments of the rat cerebellum. *J. Comp. Neurol.* 512: 282-304. (Published Online: 10 Nov 2008)

2. Heitz S, Gautheron V, Lutz Y, Rodeau JL, Zanjani HS, Sugihara I, Bombarde G, Richard F, Fuchs JP, Vogel MW, Mariani J, Bailly Y : BCL-2 counteracts Doppel-induced apoptosis of prion-protein-deficient Purkinje cells in the Ngsk $Prnp^{0/0}$ mouse. *Dev. Neurobiol.* 68:332-348, 2008.
3. Shinoda Y, Sugiuchi Y, Izawa Y, Takahashi M : Neural circuits for triggering saccades in the brainstem. *Prog. Brain Res.* 171:79-85, 2008.

Department of Ophthalmology and Visual Science

1. Staff and students (April, 2008)

Professor;	Manabu Mochizuki	
Associate Professor;	Kyoko Ohno-Mastui	
Assistant Professor;	Sunao Sugita,	Yoshiharu Sugamoto
Hospital staff;	Akiko Tanaka,	Takeshi Yoshida,
	Hiroshi Takase,	Kouju Kamoi
Graduate student;	Qinggeletu,	Noriaki Shimada,
	Shintaro Horie,	Jiying Wang,
	Yukiko Yamada,	Kengo Hayashi,
	Megumi Shimizu,	Manabu Ogawa

2. Purpose of education

Ophthalmology and Visual Science deals 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. Hayashi K, Ohno-Matsui K, Teramukai S, Shimada N, Moriyama M, Hara W, Yoshida T, Tokoro T, Mochizuki M. Photodynamic therapy with verteporfin for choroidal neovascularization of pathologic myopia in Japanese patients:Comparison with nontreated controls. Am J Ophthalmol 145:518-526. 2008.
2. Hsiang HW, Ohno-Matsui K, Shimada N, Hayashi K, Moriyama M, Yoshida T, Tokoro T, Mochizuki M. Clinical

characteristics of posterior staphyloma in eyes with patologic myopia. Am J Ophthalmol 146:102-110, 2008.
3. Kamoi K, Mochizuki M. Phaco dislocation technique in young patients with uveitis. J Cataract Refract Surg, 34:1239-1241, 2008.
4. Kido S, Sugita S, Horie S, Miyanaga M, Miyata K, Shimizu N, Morio T, Mochizuki M. Association of varicella zoster virus load in the aqueous humor with clinical manifestations of anterior uveitis in herpes zoster ophthalmicus and zoster sine herpete. Br J Ophthalmol, 92:505-508, 2008.
5. Kojima A, Nakahara K, Ohno-Matsui K, Shimada N, Mori K, Iseki S, Sato T, Mochizuki M, Morita I. Connexin 43 contributes to differentiation of retinal pigment epithelial cells via cyclic AMP signaling. Biochem Biophys Res Commun, 366:532-538, 2008.
6. Shimada N, Ohno-Matsui K, Yoshida T, Futagami S, Tokoro T, Mochizuki M. Development of macular hole and macular retinoschisis in eyes with myopic choroidal neovascularization. Am J Ophthalmol, 145:154-161, 2008.
7. Shimada N, Ohno-Matsui K, Yoshida T, Sugamoto Y, Tokoro T, Mochizuki M. Progression from macular retinoschisis to retinal detachment in highly myopic eyes is associated with outer lamellar hole formation. Br J Ophthalmol 92:762-4, 2008.
8. Suzuki Y, Horie C, Kiyosawa M, Nariai T, Mochizuki M, Oda K, Kimura Y, Ishiwata K, Ishii K. Measurement of the 11C-flumazenil binding in the visual cortex predicts the prognosis of hemianopia. J Neurol Sci, 268:102-107, 2008.
9. Sugita S, Shimizu N, Watanabe K, Mizukami M, Morio T, Sugamoto Y, Mochizuki M. Use of multiplex PCR and real-time PCR to detect human herpes virus genome in ocular fluids of patients with uveitis. Br J Ophthalmol, 92:928-932, 2008.
10. Sugita S, Horie S, Nakamura O, Futagami Y, Takase H, Keino H, Aburatani H, Katunuma N, Ishidoh K, Yamamoto Y, Mochizuki M. Retinal pigment epithelium-derived CTLA-2α induces TGFβ-Producing T regulatory cells. J Immunol, 181:7525-7536, 2008.
11. Takahashi H, Sugita S, Shimizu N, Mochizuki M. A high viral load of epstein-barr virus DNA in ocular fluids in an HLA-B27-negative acute anterior uveitis patient with psoriasis. Jpn J Ophthalmol, 52:136-138, 2008.
12. Tobita H, Ohno-Matsui K, Ogawa M, Kaneko Y, Shimada N, Mochizuki M. Transient serous retinal detachment after photodynamic therapy for polypoidal choroidal vasculopathy. Jpn J Ophthalmol, 52:518-20, 2008.
13. Usui Y, Okunuki Y, Hattori T, Kezuka T, Keino H, Ebihara N, Sugita S, Usui M, Goto H, Takeuchi M. Functional expression of B7H1 on retinal pigment epithelial cells. Exp Eye Res, 2008;86:52-59.
14. Wang J, Ohno-Matsui K, Yoshida T, Kojima A, Shimada N, Nakahara K, Safranova O, Iwata N, Saido TC, Mochizuki M, Morita I. Altered function of factor I caused ly amyloid beta: implication for pathogenesis of age-related macular degeneration from Drusen. J Immunol 181:712-20, 2008.
15. Yamamoto S, Sugita S, Sugamoto Y, Shimizu N, Morio T, Mochizuki M. Quantitative PCR for the detection of genomic DNA of epstein-barr virus in ocular fluids of patients with uveitis. Jpn J Ophthalmol, 52:463-476, 2008.

[Review Article]

1. Kawaguchi T, Spencer D B, Mochizuki M. Therapy for acute retinal necrosis. Semin Ophthalmol, 23:285-290, 2008.

[Presentation]

1. Yoshida T, Ohno-Matsui K, Wang J, Shimada N, Morita I, Mochizuki M. Amyloid-β regulates the Gene expression profile of matrix metalloproteinases in human retinal pigment epithelial cells. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2008.4.27.
2. Shimada N, Ohno-Matsui K, Wang J, Yoshida T, Mochizuki M, Morita I. Reduced retinal and choroidal neovascularlation in cathepsin L Gene-Deficient mice. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2008.4.27.
3. Sugita S, Futagami Y, Yamada Y, Horie S, Takase H, Mochizuki M. The role of cytotoxic T lymphocyte antigen-2a in suppression of mechanism of retinal pigment epithelial cells. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2008.4.29.
4. Horie S, Sugita S, Futagami Y, Kawaguchi T, Shirato S, Mochizuki M. Human iris pigment epithelium suppresses activation of bystander T cells via TGFβ-TGFβ receptor interaction. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2008.4.29.
5. Takase H, Chan C.C., Muffley S, Tuo J, Vistica B. P., Mochizuki M, Gery I. Microarray analysis of gene expression in light exposed mouse retina: A comparison between light-damage susceptible and resistant strains. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2008.4.30.

6. Yamada Y, Sugita S, Kamoi K, Iwanaga Y, Yokota M, Tanaka H, Takase H, Mochizuki M. Efficacy of infliximab treatment in Behcet's Disease with refractory uveoretinitis. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2008.4.30.
7. Miyanaga M, Shimizu K, Kawaguchi T, Miyai T, Osakabe Y, Miyata K, Mochizuki M. A clinical survey of uveitis in HTLV-1 endemic area of Japan. Association for Research in Vision and Ophthalmology(ARVO) 2008 Annual Meeting, Fort Lauderdale(U.S.A.), 2008.5.1.
8. Yoshida T, Ohno-Matsui K, Shimada N, Kojima A, Hayashi K, Tokoro T, Mochizuki M. Correlation with the subtypes and the long-term visual outcome of myopic choroidal neovascularization. 31st World Ophthalmic Congress, HognKong, 6.28.2008.
9. Shimada N, Ohno-Matsui K, Yoshida T, Sugamoto Y, Tokoro T, Mochizuki M. Progression from macular retinoschisis to retinal detachment in highly myopic eyes is associated with outer lamellar hole formation. 31st World Ophthalmic Congress, HognKong, 6.28.2008.
10. Hayashi K, Ohno-Matsui K, Moriyama M, Yoshida T, Shimada N, Hayashi W, Tokoro T, Mochizuki M. Intravitreal bevacizumab (Avastin) for choroidal neovascularization secondary to pathologic myopia. 31st World Ophthalmic Congress, HongKong, 6.28.2008.
11. Hara W, Shimada N, Ohno-Matsui K, Hayashi K, Yoshida T, Tokoro T, Mochizuki M. Retinal angiographic change of myopic posterior retinoschisis. 31st World Ophthalmic Congress, HongKong, 6.28.2008.

[Invited lecture]

1. Kyoko Ohno-Matsui. Age-related macular degeneration -molecular mechanism and pathogenesis. 12th Alcon Ophthalmic Winter Symposium, Fims-Laax, Switzerland, 2008.1.25.
2. Kyoko Ohno-Matsui. Cases with pathologic myopia. 12th Alcon Ophthalmic Winter Symposium, Fims-Laax, Switzerland, 2008.1.25.
3. Kyoko Ohno-Matsui. Update in the management of myopic choroidal neovascularization. 31st World Ophthalmic Congress, HongKong, 2008.6.28.
4. Mochizuki M. Progress in the nomenclature of ocular sarcoidosis. 7th International Symposium on Uveitis, Constance(Germany), 2008.9.9.
5. Mochizuki M. Role of RPE in regional immunity in the eye. 7th International Symposium on Uveitis, Constance(Germany), 2008.9.11.
6. Mochizuki M. The role of ocular pigment epithelial cells in local defense system in the eye. The 11th Taipei International Symposium of Ophthalmology, Taipei, 2008.11.29.
7. Mochizuki M. Keynote Lecture. Regional immunity of the Eye: T lymphocytes and ocular pigment epitherial cells. European Association for Vision and Eye Research 2008, Portoroz(Slovenia), 2008.10.3.
8. Sugita S, Mochizuki M. Regional ocular immunity and immune priviledge. Role of ocular pigment epithelial cells in regional ocular immunity. European Association for Vision and Eye Research 2008, Portoroz(Slovenia), 2008.10.3.

Oto-Rhino-Laryngology

1. Staffs and Students(April, 2008)

Professor	Ken KITAMURA	
Associate Professor	Atsunobu TSUNODA	
Assistant Professor	Yasuhiro SUZUKI,	Taku ITO,
	Yoshiyuki KAWASHIMA,	Kazuchika ONO,
	Yousuke ARIIZUMI	
Hospital Staff	Taro SUGIMOTO,	Yoshihiro NOGUCHI,
	Akemi IWASAKI,	Yuji NAKAMURA,
	Koji HAGINO,	Takao TOKUMARU,
	Naoto TAKAHASHI	
Research Student	Yoshimi TAMEKUCHI,	Katsura YAMAMOTO

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 third clinical clerkship, 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
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, dizziness, otitis media, tumor, deafness, and tinnitus clinic.

5. Publications

Original Articles

1. Ishige T, Okamura H, Kitamura K. Immunohistochemical localization of phospholipase A2 in the guinea pig nasal mucosa. J Med Dent Sci 55: 29-32, 2008.
2. Hatanaka A, Ariizumi Y, Kitamura K. Pros and cons of tinnitus retraining therapy. Acta Otolaryngol 128: 365-8, 2008.
3. Koda H, Kimura Y, Iino Y, Eishi Y, Murakami Y, Kitamura K. Bilateral sudden deafness caused by diffuse metastatic leptomeningeal carcinomatosis. Otol Neurotol 29: 727-9, 2008.

4. Kobayashi M, Sugimoto T, Matsuda A, Matsushima E, Kishimoto S. Association between self-esteem and depression among patients with head and neck cancer: pilot study. Head Neck 30: 1303-9, 2008.
5. Fujii H, Mori Y, Kayamori K, Igari T, Ito E, Akashi T, Noguchi Y, Kitamura K, Okado T, Terada Y, Kanda E, Rai T, Uchida S, Sasaki S. A familial case of mitochondrial disease resembling Alport syndrome. Clin Exp Nephrol 12: 159-63, 2008.
6. Kawashima Y, Sumi T, Sugimoto T, Kishimoto S. First-bite syndrome: a review of 29 patients with parapharyngeal space tumor. Auris Nasus Larynx 35: 109-13, 2008.
7. Ito T, Ishikawa N, Negishi T, Ohno K. Cardiac metastasis of tongue cancer may cause sudden death. Auris Nasus Larynx 35: 423-5, 2008.

Conference Presentations

1. Sumi T, Tsunoda A, Nishio A, Kitamura K, Watanabe I. Long-term Clinical Outcome of Patients with Meniere's Disease (10 to 43-year-follow-up). XXV Barany Society Meeting. Kyoto, April, 2008.
2. Tsunoda A, Sumi T, Shirakura S, Kitamura K : The anatomy of the middle cranial fossa : ontogenic aspect and relationship to the dysequilibrium. XXV Barany Society Meeting, Kyoto, April, 2008
3. Fujikawa T, Takago H, Takago T, Ariizumi Y, Murakoshi T, Kitamura K. A new insight of central mechanism of salicylate-induced tinnitus by patch clamp technique. Collegium Oto-Rhino-Laryngologicum Amicitiae Sacrum. Berlin, August, 2008.
4. Tsunoda A, Kamiyama R, Sumi T, Kitamura K, Kishimoto S, Tsunoda K. Digital image enhancement for detailed endoscopic observation. 15th World Congress on Bronchology & Bronchoesophacology. Tokyo, March, 2008
5. Tsunoda A, Kamiyama R, Sumi T, Kitamura K, Kishimoto S, Tsunoda K. Digital image enhancement for detailed endoscopic observation: possibility of the early detection for otolaryngological lesion. 12th Japan-Korea Joint Meeting of Otolaryngology- Head and Neck Surgery. Nara, April, 2008.
6. Tsunoda A, Kamiyama R, Sumi T, Kitamura K, Kishimoto S, Tsunoda K. Digital image enhancement for detailed endoscopic observation: possibility of the early detection of Head & Neck lesion. 7th International Conference on Head & Neck Cancer, American Head and Neck Cancer Society. San Francisco, July, 2008.
7. Shirakura S, Kishimoto K, Tsunoda A. The surgical treatment of pediatric sarcoma in the head and neck region. 7th International Conference on Head and Neck Cancer. San Francisco, July, 2008.
8. Hsu C, Murtie J, Tokano H, Samad T, Woolf C, Arber S, Edge A, Corfas G. Exploring the roles of DRAGON (RGMb), a BMP co-receptor, in the Ear. ARO Winter Meeting. Phoenix, February, 2008.
9. Tokano H, Edge AS. Cell Transplantation in the Cochlea. Cells and Molecular Meeting at Massachusetts Eye and Ear infirmary. Boston, April, 2008.
10. Fujikawa T, Takago H, Ohshima-Takago T, Ariizumi Y, Murakoshi T, Kitamura K. A New Insight of Central Mechanism of Salicylate-induced Tinnitus by Patch Clamp Technique. CORLAS, Berlin, August, 2008.
11. Takahashi M, Kimura Y, Sawabe M, Koda H, Kato T, Kitamura K. Immunohistochemical localization of prestin in the paraffin-embedded human cochlea. ARO Winter Meeting. Baltimore, February, 2009.

Invited Lectures

1. Takago H, Nakamura Y, Oshima-Takago T, Kitamura K, Takahashi T. Presynaptic AMPARs & NMDARs regulate synaptic transmission by inhibiting the voltage-gated Ca^{2+} channels at the Calyx of Held. Advanced theoretical and practical training course on hearing in mammals. Göttingen, Germany, January, 2008.
2. Kitamura K. Molecular Histological Analysis of the Archival Human Temporal Bones. Inner Ear Lab Seminars, Göttingen, Germany, August 29, 2008

Molecular and Cognitive Neuroscience (Molecular Neuroscience)

1. Staffs and Students (April, 2008)

Professor	Kohichi Tanaka
Associate Professor	Hiroko Ohki-Hamazaki
Assistant Professor	Okiru Komine
Assistant Professor	Tomomi Aida
Assistant Professor	Yasuyuki Shiobara

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 Notch-dependent and –independent RBP-J signaling pathway in the cerebellar development.
3) Neural basis for memory and learning during infancy.
4) Regulation of sexual differentiation of the brain and behavior.

4. Publications

Original Article

1. Kiryk, A., Aida, T., Tanaka, K., Banerjee, P., Wilczynski, G.M., Meyza, K., Knapska, E., Filipkowaski, R.K., Kaczmarek, L., Danysz, W. Behavioral characterization og GLT1(+/−) mice as a model of mild glutamatergic hyperfunction. Neurotox Res 13:19-30, 2008
2. Takasaki, C., Okada, R., Mitani, A., Fukaya, M., Yamasaki, M., Fujihara, Y., Shirakawa, T., Tanaka, K., Watanabe, M. Glutamate transporters regulate lesion-induced plasticity in the developing somatosensory cortex. *J* Neurosci 28: 4995-5006, 2008.
3. Karlsson, RM., Tanaka, K., Heilig, M., Holmes, A. Loss of Glial Glutamate and Aspartate Transporter (Excitatory Amino Acid Transporter 1) Causes Locomotor Hyperactivity and Exaggerated Responses to Psychotomimetics: Rescue by Haloperidol and Metabotropic Glutamate 2/3 Agonist. Biol Pschiatry 64:810-814, 2008.
4. Karlsson, RM., Tanaka, K., Saksida, LM., Bussey, TJ., Heilig, M., Holmes, A. Assessment of glutamate transporter GLAST (EAAT1) deficient mice for phenotypes relevant to the negative and executive/cognitive symptoms of schizophrenia. Neuropsychopharmacology (in press)
5. Soma, M., Aizawa, H., Ito, Y., Maekawa, M., Osumi, N., Nakahira, E., Okamoto, H., Tanaka, K., Yuasa, S. Development of the mouse amygdala as revealed by enhanced green fluorescent protein gene transfer by means of in utero electroporation. J Comp Neurol 513: 113-128, 2009.

Biosystem Regulation

Professor	Hiroshi AZUMA
Tokunin Professor	Kazuki HONDA (~June, 2008)
Assistant Professor	Masatoshi IMAMURA
Tokunin Assistant Professor	Kaori IGARASHI (April, 2008~)
Engineer Official	Shukan OKANO
Secretary	Rumiko ONITSUKA
Research Assistant	Naoko IWASAKI (~June, 2008)
Adjunct Instructor	Takeshi SAKURAI
Graduate Student	Emiko ITOH

1. Education

Our objectives of education are to analyze mechanisms of various diseases. Graduate students, research students, and medical doctors are educated by carrying out various kind of animal experimental models.

2. Research Subjects

1) Investigation of the mechanisms regulating vascular remodeling
2) Investigation of benign prostate hypertrophy and research/development of novel drugs
3) Investigation of the mechanisms of the erectile dysfunction and urinary obstruction
4) Investigation for the development of intelligent stent
5) Analysis for mechanism(s) of complication caused by smoking with using novel animal model.
6) Research about pulmonary circulation

3. Publications

Original Articles

1. Sakurada M, Shichiri M, Imamura M, Azuma H and Hirata Y. Nitric oxide upregulates dimethylarginine dimethylaminohydrolase-2 via cyclic GMP induction in endothelial cells. *Hypertension* 52: 903-909, 2008.
2. Nagai A, Imamura M, Waranabe T and Azuma H. Involvement of altered arginase activity, arginase I expression and NO production in accelerated intimal hyperplasia following cigarette smoke extract. *Life Sci* 83: 453-459, 2008.
3. Kawakami A, Osaka M, Tani M, Azuma H, Sacks FM, Shimokado K and Yoshida M. Apolipoprotein CIII links hyperlipidemia with vascular endothelial cell dysfunction. *Circulation* 118: 731-742, 2008.
4. Nagai A, Yamashita K, Imamura M and Azuma H. Hydroxyapatite electret accelerates reendothelialization and attenuates intimal hyperplasia occurring after endothelial removal of the rabbit carotid artery. *Life Sci* 82: 1162-1168, 2008.
5. Marinova GV, Loyaga-Rendon RY, Obayashi S, Ishibashi T, Kubota T, Imamura M and Azuma H. Possible involvement of altered arginase activity, arginase type I and type II expressions, and nitric oxide production in occurrence of intimal hyperplasia in premenopausal human uterine arteries. *J Pharmacol Sci* 106: 385-393, 2008.
6. Mizuno Y, Isotani E, Ohno K, Nagai A, Imamura M and Azuma H. Involvement of accumulated NOS inhibitors and endothelin-1, enhanced arginase, and impaired DDAH activities in pulmonary dysfunction following subarachnoid hemorrhage in the rabbit. *Vasc Pharmacol* 48: 21-31, 2008.
7. Homma N, Nagaoka T, Karoor V, Imamura M, Taraseviciene-Stewart L, Walker LA, Fagan KA, McMurtry IF and Oka M. Involvement of RhoA/Rho kinase signaling in protection against monocrotaline-induced pulmonary hypertension in pneumonectomized rats by dehydroepiandrosterone. *Am J Physiol Lung Cell Mol Physiol* 295: L71-78, 2008.

4. Proceedings

1. Nagai A, Azuma H, Ichikawa H, Imamura M, Nakamura M, Kobayashi M and Yamashita K. Hydroxyapatite electret suppresses intimal hyperplasia in a rabbit model of vascular injury. The 8th World Biomaterials Congress, Amsterdam, The Netherland, May 2008.
2. Nagai A, Yamashita K, Imamura M and Azuma H. Hydroxyapatite electret accelerates reendothelialization and suppress intimal hyperplasia occurring after endothelial removal of the rabbit carotid artery. J Pharmacol Sci 106 (Suppl I): 166P, 2008.

3. Imamura M, Waseda Y, Marinova GV, Ishibashi T, Obayashi S, Sasaki A, Nagai A and Azuma H. Possible involvement of altered neuronal NOS, arginase and dimethylarginine dimethylaminohydrolase (DDAH) I proteins expression in inducing erectile dysfunction with cigarette smoke extract (CSE). J Pharmacol Sci 106 (Suppl I): 249P, 2008.

Pharmacology and Neurobiology

1. Staffs and Students (April, 2008)

Professor	Tsutomu TANABE	
Assistant Professor	Hironao SAEGUSA,	Takashi KURIHARA,
	Shuqin ZONG	
Graduate Student	Li LI, Eri SAKURAI	

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

International meeting:

1. T. Tanabe, D. Kondo, R. Yabe, I. Takasaki, T. Kurihara, H. Saegusa and S. Zong: Co-administration of ATP attenuates peripheral type benzodiazepine receptor antagonist-induced antinociception of neuropathic pain. The 38th Annual Meeting of the Society for Neuroscience, Washington DC, USA 2008.
2. T. Tanabe, D. Kondo, R. Yabe, I. Takasaki, T. Kurihara, H. Saegusa and S. Zong: Enhanced expression of peripheral-type benzodiazepine receptor induces neuropathic pain through the activation of microglia. Third Asian Pain symposium, Fukuoka, Japan 2008.

Neurology and Neurological Science

1. Staffs and Students

Professor	Hidehiro Mizusawa	
Associate Professor	Takanori Yokota	
Junior Associate Professor	Kinya Ishikawa	
Assistant Professor	Nobuo Sanjo,	Hiroyuki Tomimitsu,
	Mutsufusa Watanabe,	Takashi Irioka (~September),
	Satoru Ishibashi (October~)	
Hospital Staff	Yuichi Fumimura,	Masaki Kobayashi,
	Ayaka Yamanami,	Kokoro Ozaki,
	Maya Ohara,	Takaaki Hattori
Senior Resident	Yoshiyuki Numasawa	
Post-doctorial Fellow	Takayuki Kubodera,	Takeshi Amino
Graduate Student	Osamu Tao,	Hirotaka Sasaguri,
	Nozomu Sato,	Masaki Hidume,
	Taro Ishiguro,	Kenji Ishibashi,
	Yoshitaka Uno,	Toshiro Kanazawa,
	Tamako Misawa,	Miho Akaza,
	Xu Han Yan,	Mayra Azat,
	Jin Hai Feng,	Zen Kobayashi,
	Hiroya Kuwahara,	Makoto Takahashi,
	Piao Wen Ying,	Toshiki Unno,
	Masato Ohbayashi,	Yusuke Niimi,
	Masaki Kobayashi,	Takumi Hori,
	Takaaki Hattori,	Yuki Yamamoto,
	Azusa Watanabe	

2. Purpose of Education

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

Department of Neurology and Neurological Science at Tokyo Medical and Dental University offers the unique “clinical neurological training for specialists” 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 investigation such as electrophysiology, neuromuscular pathology, neuroimaging, or neurobiology and so on. The faculty and staff are committed to facilitating resident education and training.

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

3. Research Subjects

1) Gene identification and investigation of pathomechanisms of hereditary diseases such as spinocerebellar ataxias
2) Development of gene therapies using RNAi
3) Basic and clinical researches for neurodegenerative diseases such as spinocerebellar ataxia, amyotrophic lateral sclerosis, Parkinson’s disease and Alzheimer’s disease
4) Development of neuroregenerative therapy using stem cells for cerebrovascular diseases and neurodegenerative diseases
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 using biopsy materials of peripheral nerve and muscle

4. Clinical Services

We see about 100 out-patients and 40 in-patients in a day, and offer in and out-patient consultation services through the day 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 ongoing, or chronic. We also have an out-patient clinic specialized to patients with dementia corresponding to needs of the aging society. Our patients will be reliably evaluated and diagnosed with various skillful techniques, such as the electrophysiological, neuroradiological, and neuropsychological tests and pathological diagnosis of nerve and muscle biopsy.

5. Publications

Original Article

1. Kobayashi Z, Tsuchiya K, Takahashi M, Yokota O, Sasaki A, Bhunchet E, Arai T, Akiyama H, Kamoshita M, Kotera M, Mizusawa H. An autopsy case of chronic active Epstein-Barr virus infection (CAEBV) : distribution of central nervous system (CNS) lesions. J Neurol Sci 2008 ; 275 : 170-7.
2. Kobayashi Z, Miake H, Fujigasaki H. Brain perfusion abnormalities in a sibship with parkin-linked parkinsonism. Parkinsonism Relat Disord 2008 ; 14 : 581-3.
3. Shintani S, Hino T, Ishihara S, Mizutani S, Shiigai T. Reversible brainstem hypertensive encephalopathy (RBHE) : clinicoradiologic dissociation. Clin Neurol Neurosurg 2008 ; 110 : 1047-1053.
4. Ishida K, Mitoma H, Mizusawa H. Reversibility of cerebellar GABAergic synapse impairment induced by anti-glutamic acid decarboxylase autoantibodies. J Neurol Sci 2008 ; 271 : 186-190.
5. Kitayama H, Miura Y, Ando Y, Koyanagi Y. Human immunodeficiency virus type 1 vulnerates nascent neuronal cells. Microbiol Immunol 2008 ; 52 : 78-88.
6. Yoshida T, Kawano Y, Sato Y, Ando Y, Aoki J, Miura Y, Komano J, Tanaka Y, Koyanagi Y. A CD63 mutant inhibits T-cell tropic human immunodeficiency virus type 1 entry by disrupting CXCR4 trafficking to the plasma membrane. Traffic ; 9 : 540-558.
7. Kitayama H, Miura Y, Ando Y, Hoshino S, Ishizaka Y, Koyanagi Y. Human immunodeficiency virus type 1 Vpr inhibits axonal outgrowth through induction of mitochondria dysfunction. J Virol 2008 ; 82 : 2528-2542.
8. Nishina K, Unno T, Uno Y, Kubodera T, Kanouchi T, Mizusawa H, Yokota T. Efficient In Vivo Delivery of siRNA to the Liver by Conjugation of α-Tocopherol. Molecular Therapy 2008 ; 16 : 734-740.
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of astrocytes in amyotrophic lateral sclerosis. Cell Death Differ 2008；15：1691-1700.
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22. Tsunemi T, Ishikawa K, Jin H, Mizusawa H. Cell-type-specific alternative splicing in spinocerebellar ataxia type 6. Neurosci Lett. 2008；447：78-81.
23. Watase K, Barrett CF, Miyazaki T, Ishiguro T, Ishikawa K, Hu Y, Unno T, Sun Y, Kasai S, Watanabe M, Gomez CM, Mizusawa H, Tsien RW, Zoghbi HY. Spinocerebellar ataxia type 6 knockin mice develop a progressive neuronal dysfunction with age-dependent accumulation of mutant CaV2.1 channels. Proc Natl Acad Sci U S A. 2008；105：11987-92.
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Book

1. Ishikawa K, Flanigan K, Mizusawa H. 16q-ADCA and SCA4, the two distinct disorders linked to the same locus. In, Spinocerebellar ataxias. Y. Takiyama, M. Nishizawa, editors. Research Signpost Publishers, 2008：57-68.

Psychiatry and Behavioral Sciences

1. Staff members and students

Professor	Toru NISHIKAWA	
Associate Professor	Akeo KURUMAJI	
Junior Associate Professor	Naoki YAMAMOTO,	Atsushi KASHIWA
Assistant Professor	Kazunari OSHIMA,	Takashi TAKEUCHI
	Tomoaki YUKIZANE,	Hidenori ATSUTA
	Hidekazu MASAKI (～2008.3),	Masaki NISHIDA (2008.4～)
Graduate Student	Akihito UEZATO,	Junko SATO (～2008.3)
	Akiko SHIOIRI,	Hironao TAKEBAYASHI (～2008.3)
	Yuichiro ABE,	Eriko HARA
	Daisuke JITOKU,	Takeshi SASAKI

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 receptors in neuropsychiatric diseases with PET/Focal epilepsy with MRS:

We are working together with the National Institute of Radiological Sciences to study dopamine receptors in schizophrenic patients.

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

A study is being carried out to examine sleep behavior using an originally developed automatic analysis device (polysomnography) and fMRI.

(iv) A study employing the dipole tracing method and 3D-MRI:

A study using 3D-MRI is being performed to extrapolate epileptic discharges, alpha waves, and other dipoles.

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 center 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 live comfortably in social situations.

5. Publications (in English)

1. Kurumaji A, Ito T, Ishii S, Nishikawa T. Effects of FG7142 and immobilization stress on the gene expression in the neocortex of mice. Neurosci Res. 62: 155-159, 2008.
2. Sato J, Shimazu D, Yamamoto N, Nishikawa T. An association analysis of synapse- associated protein 97 (SAP97) gene in schizophrenia. J Neural Transm. 115:1355-1365, 2008.
3. Yamamoto N, Tsutsui, K, Yamamoto M, Arakaki H, Kurumaji A, Nishikawa T. Sliding doors (but not with beans or tofu). Lancet 372(9651): 1782, 2008.
4. Inoue A, Tsugawa K, Tokunaga K, Takahashi KP, Uni S, Kimura M, Nishio K, Yamamoto N, Honda K, Watanabe T, Yamane H, Tani T. S1-1 nuclear domains: characterization and dynamics as a function of transcriptional activity. Biol Cell. Sep;100 (9): 523-35, 2008.
5. Okazaki M, Kaneko Y, Yumoto M, Arima K. Perceptual change in response to a bistable picture increases neuromagnetic beta-band activities. Neurosci Res. 61: 319-28, 2008.
6. Davis L. Uezato A, Newel JM, Frazier E. Major depression and comorbid substance use disorders. Curr Opin Psychiatry 21: 14-18, 2008.
7. Uezato A, Meador-Woodruff JH, McCullumsmith RE. Vesicular glutamate transporter mRNA expression in the medial temporal lobe in major depressive disorder, bipolar disorder, and schizophrenia. Biol Psychiatry 63: 88S, 2008.

Neurosurgery

1. Staffs and Students (April 2008)

Professor:	Kikuo Ohno	
Associate Professor:	Masaru Aoyagi	
Assistant Professors:	Tadashi Nariai	Taketoshi Maehara
Hospital stuffs:	Masashi Tamaki,	Kazuhiko Nakagawa,
	Yoji Tanaka,	Kuniyasu Saigusa,
	Yohei Satoh,	Kyoko Sumiyoshi,
	Maki Mukawa,	Hirokazu Nagasaki,
	Takahiro Ogishima	Kenji Yamada.
Secretary:	Mariko Tasumi	Mayako Tokunaga.
Graduate Students:	Mutsuya Hara,	Takeko Nojiri,
	Toshiki Tomori,	Shougo Imae,
	Youhei Satoh,	Keigo Shigeta,
	Toshiyuki Inoue,	Tomoaki Okada,
	Yoshiyuki Matsuoka,	Takashi Sugawara,
	Yoshihisa Kawano,	Toshiya Momose,
	Kaoru Tamura,	Yu Iwae,
	Oltea Sampetrean,	Mutsumi Fujii,
	Shin Hirota,	Tomoyuki Kino,
	Takumi Kudoh,	Kohtaro Kumagai,
	Tomoyuki Nakamura,	Takashi Shigematsu,
	Atsuko Ishibashi,	Ritsu Nishimura,
	Chihiro Hosoda,	Mullah Saad Habib-E-Rasul

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

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. Arnaud C, Tamura K, Chen H-m, Nishimura K, Wang Z, Morishita Y, Takeda K, Yagita H, Yanai H, Taniguchi T, and Tamura T：A cell-type-specific requirement for IFN regulatory factor 5 (IRF5) in Fas-induced apoptosis. Proc Natl Acad Sci USA 105: 2556–2561, 2008
2. Ayer RE, Sugawara T, Chen W, Tong W, Zhang JH：Melatonin decreases mortality following severe subarachnoid hemorrhage. J Pineal Res 44:197-204, 2008
3. Hirabayashi S, Nakagawa K, Sumita K, Hidaka S, Kawai T, Ikeda, M, Kawata A, Ohno K, Hata Y：Threonine 74 of MOB1 is a putative key phosphorylation site by MST2 to form the scaffold to activate nuclear Dbf2-related kinase 1.Oncogene 2008 Mar 24; [Epub ahead of print]
4. Jadhav V, Sugawara T, Zhang JH, Jacobson P, Obenaus A：Magnetic Resonance Imaging Detects and Predicts Early Brain Injury after Subarachnoid Hemorrhage in a Canine Experimental Model. J Neurotrauma. 25:1099-106, 2008
5. Matsumoto T, Kumagai J, Hasegawa M, Tamaki M, Aoyagi M, Ohno K, Mizusawa H, Kitagawa M, Eishi Y, Koike M：Significant increase in the expression of matrix metalloproteinase 7 in primary CNS lymphoma. Neuropathology 28:277-85, 2008
6. Mukai T, Shirahama N, Tominaga B, Ohno K, Koyama Y, Takakuda K：Development of watertight and bioabsorbable synthetic dural substitutes. Artif Organs 2008 Apr 16; [Epub ahead of print]
7. Nakano I, Saigusa K, Kornblum HI：BMPing Off Glioma Stem Cells. Cancer Cell 13:3-4, 2008
8. Nojiri T, Nariai T, Aoyagi M, Senda M, Ishii K, Ishiwata K, Ohno K：Contributions of biological tumor parameters to the incorporation rate of L: -[methyl-(11)C] methionine into astrocytomas and oligodendrogliomas.J Neuro-oncol 2008 Dec 20. [Epub ahead of print]
9. Ohta Y, Nariai T, Ishii K, Ishiwata K, Mishina M, Senda M, Hirakawa K, Ohno K：Voxel- and ROI-based statistical analyses of PET parameters for guidance in the surgical treatment of intractable mesial temporal lobe epilepsy. Ann Nucl Med 22:495-503, 2008 Epub 2008 Aug 1.
10. Sugawara T, Ayer R, Zhang JH：Role of statins in cerebral vasospasm. Acta Neurochir (Suppl) 104:287-90, 2008
11. Sugawara T, Wang A, Jadhav V, Tsubokawa T, Obenaus A, Zhang JH：Magnetic resonance imaging in the canine double-haemorrhage subarachnoid haemorrhage model. Acta Neurochiru (Suppl) 104:235-9, 2008
12. Sugawara T, Ayer R, Jadhav V, Zhang JH：A New Grading System Evaluating Bleeding Scale in Filament Perforation Subarachnoid Hemorrhage Rat Model. J Neurosci Methods 30:167:327-34, 2008
13. Sugawara T, Ayer R, Jadhav V, Chen W, Tsubokawa T, Zhang JH：Simvastatin attenuation of cerebral vasospasm after subarachnoid hemorrhage in rats via increased phosphorylation of Akt and endothelial nitric oxide synthase. J Neurosci Res 86:3635-3643, 2008
14. Sugawara T, Jadhav T, Zhang JH：Simvastatin Attenuates Cerebral Vasospasm and Improves Outcome by Upregulation of PI3K/Akt Pathway in a Rat Model of Subarachnoid Hemorrhage. Acta Neurochir (Suppl) 2008
15. Sugawara T, Jadhav V, Ayer R, Chen W, Suzuki H, Zhang JH：Thrombin Inhibition By Argatroban Ameliorates Early Brain Injury AndImproves Neurological Outcomes After Experimental Subarachnoid Hemorrhage In Rat. Stroke (in press)
16. Suzuki Y, Horie C, Kiyosawa M, Nariai T, Mochizuki M, Oda K, Kimura Y, Ishiwata K, Ishii K：Measurement of the (11)C-flumazenil binding in the visual cortex predicts the prognosis of hemianopia. J Neurol Sci 268: 102-107, 2008
17. Tanaka Y, Nariai T, Momose T, Aoyagi M, Maehara T, Tomori T, Yoshino Y, Nagaoka T, Ishiwata K, Ishii K, Ohno K：Glioma surgery using a multimodal navigation system with integrated metabolic images. J Neurosurg 2008 Oct

10. [Epub ahead of print]

Review Article

1. Ayer R, Cahill J, Sugawara T, Jadhav V, Zhang JH: Rodent Surgical Procedures and Tissue Collection. Animal Models of Acute Neurological Injury. Ed: J. Chen, X. Xu, J. Xu, J. Zhang. Humana 2008

Book

1. Ishiwata K, Kubota K, Nariai T, Iwata R : Whole-body tumor imaging: [O-11C]methyl-L-tyrosine/positron emission tomography., in Cancer Imaging: Instrument and Application, M. Hayat, Editor. 2008, Elsevier: Amsterdam. p. 175-179.

Neuropathology

1. Staff and Students (April, 2008)

Professor:	Hitoshi OKAZAWA	
Associate Professor:	Yasushi ENOKIDO	
MTT Lecturer:	Masaki SONE	
Assistant Professor:	Takuya TAMURA	
Tokunin Assistant Professor:	Akihiko KOMURO	
Graduate Students:	Hikaru ITO,	Hiroki SHIWAKU,
	Olga GODA,	Ayaka YOSHITAKE,
	Wakana ITO,	Mayumi YAMASHITA
Research Student:	Sainawer MAIMAITI,	Li CHAN

2. Education

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

3. Research Subjects

1) Elucidation of molecular mechanisms underlying neurodegenerative diseases and development of effective therapeutic approaches based on the information obtained.
2) Analysis of the mechanisms of mental retardation influenced by a key regulator of neurodegenerative diseases, PQBP-1.
3) Study of the mechanisms of stem cell differentiation through characterization of a transcription factor, Oct-3/4.

4. Clinical Services

5. Publications

Original Articles

1. Inagaki R, Tagawa K, Qi ML, Enokido Y, Ito H, Tamura T, Shimizu S, Oyanagi K, Arai N, Kanazawa I, Wanker EE, and Okazawa H. (2008) Omi / HtrA2 is relevant to the selective vulnerability of striatal neurons in Huntington's disease. Eur. J. Neurosci. 28, 30-40
2. Enokido Y, Yoshitake A, Ito H, and Okazawa H. (2008) Age-dependent change of HMGB1 and DNA double-strand break accumulation in mouse brain. Biochem Biophys Res Commun. 376, 128-133.
3. Morimoto N, Nagai M, Miyazaki K, Kurata T, Takehisa Y, Ikeda Y, Kamiya T, Okazawa H, and Abe K. (2008) Progressive decrease in the level of YAPdeltaCs, pro-survival isoforms of YAP, in the spinal cord of transgenic mouse carrying a mutant SOD1 gene. Journal of Neuroscience Research. Oct 24. [Epub ahead of print]
4. Takahashi K, Yoshina S, Maekawa M, Ito W, Inoue T, Shiwaku H, Arai H, Mitani S, and Okazawa H (2009) Nematode Homologue of PQBP1, a Mental Retardation Causative Gene, Is Involved in Lipid Metabolism. PLoS One 4(1), e4104 .
5. Tamura T, Sone M, Yamashita M, Wanker EE, and Okazawa H (2009) Glial cell lineage expression of mutant ataxin-1 and huntingtin induces developmental and late-onset neuronal pathologies in Drosophila models. PLoS One 4(1), e4262 .
6. Sone M, Uchida A, Komatsu A, Suzuki E, Ibuki I, Asada M, Shiwaku H, Tamura T, Hoshino M, Okazawa H, and Nabeshima Y (2009) Loss of yata, a novel gene regulating the subcellular localization of APPL, induces deterioration of neural tissues and lifespan shortening. PLoS One, in press

Immune Regulation

1. Staffs and Students (April, 2008)

Professor	Hajime KARASUYAMA
Associate Professor	Yoshiyuki MINEGISHI
Research Associate	Shingo SATO
Research Associate	Yohei KAWANO
Technical Official	Toshiyuki KOJIMA
JSPS Research Fellow	Kaori MUKAI
Graduate Student	Kazushige OBATA, Soichiro YOSHIKAWA, Takeshi WADA, Hideto NISHIKADO, Hiromi OGAWA, Ryosuke ISHIKAWA, Masako SAITO, Mayumi EGAWA

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. Reseach 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 Article

1. Yasuda T, Sanjo H, Pagès G, Kawano Y, Karasuyama H, Pouysségur J, Ogata M and Kurosaki T: Erk kinases link pre-B cell receptor signaling to transcriptional events required for early B cell expansion. *Immunity* 28: 499-508, 2008.
2. Tsujimura Y, Obata K, Mukai K, Shindou H, Yoshida M, Nishikado H, Kawano Y, Minegishi Y, Shimizu T and Karasuyama H: Basophils play a pivotal role in immunoglobulin G- but not immunoglobulin E-mediated systemic anaphylaxis. *Immunity* 28: 581-589, 2008.
3. Watanabe M, Satoh T, Yamamoto Y, Kanai Y, Karasuyama H and Yokozeki H: Overproduction of IgE induces macrophage-derived chemokine (CCL22) secretion from basophils. *J. Immunol.* 181: 5653-5659, 2008.
4. Takada T, Shitara H, Matsuoka K, Kojima E, Ishii R, Kikkawa Y, Karasuyama H, Kohno K and Yonekawa H: A novel hairless mouse model on an atopic dermatitis-prone genetic background generated by receptor-mediated transgenesis. *Transgenic Res.* 17(6):1155-1162, 2008.

Review Article

1. Minegishi Y and Karasuyama H: Genetic origins of hyper-IgE syndrome. *Curr. Allergy Asthma Rep.* 8(5): 386-91, 2008.

Book

Molecular Virology

1. Staff and Students (April 2008)

Professor	Shoji YAMAOKA	
Assistant Professor	Yasunori SAITOH	
Laboratory Engineer	Yoshio INAGAKI	
Secretary	Kumiko THORPE-MATSUI	
Students (Ph.D. course)	Yuya MITSUKI	Kei MIYAGAWA
	Shin UOTA	Yasunori HORI
	Hisayuki MIYAMORI	

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 of the man. 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 resulting 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 complementation of components essential for virus replication in mammalian cell.

4. Publications: Original articles

1. Amet, T., M. Nonaka, M. Z. Dewan, Y. Saitoh, X. Qi, S. Ichinose, N. Yamamoto and S. Yamaoka: Statin-induced inhibition of HIV-1 release from latently infected U1 cells reveals a critical role for protein prenylation in HIV-1 replication. Microbes Infect. 10:471-480, 2008.
2. Feng, W. Y., R. Tanaka, Y. Inagaki, Y. Saitoh, M. O. Chang, T. Amet, N. Yamamoto, S. Yamaoka and Y. Yoshinaka: Pycnogenol, a procyanidin-rich extract from French maritime pine, inhibits intracellular replication of HIV-1 as well as its binding to host cells. Jpn J Infect Dis. 61:279-285, 2008.
3. Mitsuki, Y. Y., K. Ohnishi, H. Takagi, M. Oshima, T. Yamamoto, F. Mizukoshi, K. Terahara, K. Kobayashi, N. Yamamoto, S. Yamaoka and Y. Tsunetsugu-Yokota: A single amino acid substitution in the S1 and S2 Spike protein domains determines the neutralization escape phenotype of SARS-CoV. Microbes Infect. 10:908-915, 2008.
4. Saitoh, Y., N. Yamamoto, M. Z. Dewan, H. Sugimoto, V. J. Martinez Bruyn, Y. Iwasaki, K. Matsubara, X. Qi, T. Saitoh, I. Imoto, J. Inazawa, A. Utsunomiya, T. Watanabe, T. Masuda and S. Yamaoka: Overexpressed NF-kappaB-inducing kinase contributes to the tumorigenesis of adult T-cell leukemia and Hodgkin Reed-Sternberg cells. Blood. 111:5118-5129, 2008.
5. Zhang, J., O. Yamada, K. Kawagishi, H. Araki, S. Yamaoka, T. Hattori and K. Shimotohno: Human T-cell leukemia virus type 1 Tax modulates interferon-alpha signal transduction through competitive usage of the coactivator CBP/p300. Virology. 379:306-313, 2008.
6. Kobayashi, S., A. Wada, S. Shibasaki, M. Annaka, H. Higuchi, K. Adachi, N. Mori, T. Ishikawa, Y. Masuda, H. Watanabe, N. Yamamoto, S. Yamaoka and T. Inamatsu: Spread of a large plasmid carrying the cpe gene and the tcp locus amongst Clostridium perfringens isolates from nosocomial outbreaks and sporadic cases of gastroenteritis in a geriatric hospital. Epidemiol Infect. 137:108-113, 2009.
7. Nonaka, M., S. Uota, Y. Saitoh, M. Takahashi, H. Sugimoto, T. Amet, A. Arai, O. Miura, N. Yamamoto and S. Yamaoka: Role for protein geranylgeranylation in adult T-cell leukemia cell survival. Exp Cell Res. 315:141-150, 2009.

Immunotherapeutics

1. Staffs and Students (April, 2008)

Professor	Mari KANNAGI	
Associate Professor	Takao MASUDA	
Assistant Professor	Atsuhiko HASEGAWA	
Postdoctoral Position	Hironori NISHITSUJI,	Yukiko SHIMIZU
Graduate Student	Saemi OBITSU,	Takaya HAYASHI,
	Ayako TAKAMORI,	Nursarat Ahmed,
	Yuki IWASAKI,	Fumi MIURA,
	Yuichi ISHII,	Satoru TAKATSU,
	Natsuko TAKATSUKA,	Shuichi KINPARA

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 mechanisms of infectious disease and develop immunological therapeutics.

Viral infection causes various diseases including immunodeficiency, malignancy, autoimmunity, and inflammation. Human immunodeficiency virus (HIV) causes acquired immunodeficiency syndrome (AIDS), Human T-cell leukemia virus type-I (HTLV-I) causes adult T-cell leukemia (ATL) and various chronic inflammatory autoimmune-like diseases, and severe acute respiratory syndrome corona virus (SARS-CoV) causes SARS resembling acute respiratory distress syndrome. 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 research in our department is elucidation of the role of host immunity in the diseases and development of effective immunotherapy. We also investigate intracellular mechanisms of viral replication to target direct molecules for therapy.

3. Research Projects

1. Analysis of immunological risks for ATL development in HTLV-I-carriers.
2. Development of anti-tumor vaccine using experimental animal model system for ATL.
3. Immunological and molecular mechanism of HTLV-1 induced tumorgenesis.
4. Molecular mechanism of HIV replication especially related to HIV-1 integrase.
5. Experiments based on gene therapy to suppress HIV-1 replication.
6. Immunological suppressive mechanisms on HIV-1 replication.
7. Molecular mechanisms of SARS-CoV-induced fatal inflammatory responses.

4. Publications

Original article

1. Shimizu Y, Takamori A, Utsunomiya A, Kurimura M, Yamano Y, Hishizawa M, Hasegawa A, Kondo F, Kurihara K, Harashima N, Watanabe T, Okamura J, Masuda T, Kannagi M. Impaired Tax-specific T-cell responses with insufficient control of HTLV-1 in a subgroup of individuals at asymptomatic and smoldering stages. Cancer Sci, *100*: 481-9, 2009
2. Kinpara S, Hasegawa A, Utsunomiya A, Nishitsuji H, Furukawa H, Masuda T, Kannagi M. Stromal cell-mediated suppression of human T-cell leukemia virus type 1 expression in vitro and in vivo by type I interferon. J Virol, *83*: 5101-8, 2009
3. Saitoh, Y., N. Yamamoto, M. Z. Dewan, H. Sugimoto, V. J. Martinez Bruyn, Y. Iwasaki, K. Matsubara, X. Qi, T. Saitoh, I. Imoto, J. Inazawa, A. Utsunomiya, T. Watanabe, T. Masuda, N. Yamamoto, and S. Yamaoka. Overexpressed NF-kappaB-inducing kinase contributes to the tumorigenesis of adult T-cell leukemia and Hodgkin Reed-Sternberg cells. Blood *111*:5118-29, 2008.
4. R. Tanosaki, N. Uike, A. Utsunomiya, Y. Saburi, M. Masuda, M. Tomonaga, T. Eto, M. Hidaka, M. Harada, I. Choi, T. Yamanaka, M. Kannagi, M. Matsuoka, J. Okamura. Allogeneic Hematopoietic stem cell transplantation using reduced-intensity conditioning for adult T cell leukemia/lymphoma: Impact of antithymocyte glogulin on clinical outocome. Biology of Blood and Marrow Transplantation, 14:702-708, 2008.

5. Washiyma, K. Nishigaki, N. Ahmed, S. Kinpara, Y. Ishii, N. Kanzawa, T. Masuda, and M. Kannagi. IL-2 withdrawal induces HTLV-1 expression through p38 activation in ATL cell lines. FEBS Letters, 581: 5207-12, 2007.

Review Article

1. M. Kannagi. Immunologic control of HTLV-I and adult T-cell leukemia. (Review). Int. J. Hematol.86: 113-117, 2007.

International Scientific Meetings

1. Masuda T. Interaction of HIV-1 integrase with Gemin2 stimulates reverse transcription. US-Japan AIDS Meeting. Sep.2008, Tokyo.
2. Masuda T. Functional evaluation of the interaction between HIV-1 integrase and its interactor Gemin2. The 3rd International Conference on Retroviral Integrase. Sep. 2008, Woodshall, U.S.A.
3. Nishitsuji H. Kannagi M, Masuda T. Augmentation of reverse transcriptase (RT) activity by HIV-1 integrates through interaction with a host factor, Gemin2, is critical for HIV-1 infectivity. The 4th GERMAN-JAPANESE AIDS SYMPOSIUM. Mar. 2009, Bochum, Germany.
4. Kannagi M. Immune control of Adult T-cell leukemia. 6th Japan-China Joint Conference for Cancer Research, Oct. 2007 Toya.
5. Y. Shimizu, K. Kurihara, A. Takamori, N. Harashima, A. Utsunomiya, J. Okamura, K. Nishigaki, T. Masuda, M. Kannagi. : Diversity in Tax specific T-cell responses among asymptomatic HTLV-I carriers. 13th International Conference on Human Retrovirology, May 2007, Hakone.
6. K. Komori, A. Hasegawa, K. Kurihara, T. Masuda, M. Kannagi. HTLV-I proviral load at equilibrium in orally infected rats can be reduced by restoration of HTLV-I-specific T-cell response following re-immunization.13th International Conference on Human Retrovirology, May 2007, Hakone.
7. N. Harashima, Y. Shimizu, A. Takamori, K. Kurihara, A. Utsunomiya, R. Tanosaki, M. Masuda, J. Okamura, M. Kannagi. : Positive conversion of Tax-specific CTL response in ATL patients after hematopoietic stem cell transplantation. 13th International Conference on Human Retrovirology, May 2007, Hakone.

Domestic Scientific Meeting (extraction)

1. M. Kannagi. T-cell immune responses against HTLV-I and diseases. 29th Meeting of Japanese Society of Inflammation and Regeneration. (Symposium) July 2008, Tokyo.
2. M. Kannagi, A. Hasegawa, N. Takatsuka. Host immune response and disease development in HTLV-I infection. "Joint Conference in Sapporo 2008" of 73rd Japanese society of Interferon & cytokine research symposium/19th meeting of Host Defence/45th complement Symposium (Workshop), July 2008, Sapporo
3. A. Hasegawa, N. Takatsuka, T. Masuda, and M. Kannagi. Restoration of HTLV-I Tax-specific $CD8^+$ T cell responses by bone marrow-derived dendritic cells in HTLV-I-infected rats. 67th meeting of Japanese Cancer Association. Oct. 2008, Nagoya.
4. N. Takatsuka, A. Hasegawa, T. Amagasa, T. Masuda, and M. Kannagi. Auto-reactive T-cell activation in HTLV-I infection and their potential for induction of regulatory T-cells. 67th meeting of Japanese Cancer Association. Oct. 2008, Nagoya.
5. Y. Shimizu, A. Takamori, A. Utsunomiya, M. Kurimura, Y.Yamano, M. Hishizawa, A. Hasegawa, F. Kondo, K. Kurihara, N. Harashima, T. Watanabe, J. Okamura, T. Masuda, and M. Kannagi. Low T-cell responsiveness against human T-cell leukemia virus type I as an immunological risk factor of adult T-cell leukemia.38th meeting of Japanese Society of Immunology, Dec. 2008, Kyoto.

Pathological Cell Biology

1. Staffs and Students (April, 2008)

Professor	Shigeomi SHIMIZU	
Associate Professor	Norio SHIMIZU	
Assistant Professor	Satoko ARAKAWA	
Tokunin Assistant Professor	Ikuko NAKANOMYO,	Reishuku LI
Secretary	Mimi SAKAGUCHI,	Tomomi HAKUYA
Graduate Student	Yuya NISHIDA,	Hirofumi YAMAGUCHI,
	Kenji FUJITANI,	Tohru SATOH,
	Sawako SUZUKI	

2. Purpose of Education

Main objective in the graduate course is to provide students opportunity to study the molecular mechanisms of cell death, the cell death-related diseases, the mitochondrial bioenergetics, 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 role of cell death in mammals
4) Pathological role of cell death in mammals
5) Analysis of mitochondrial diseases
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. Kajitani K, Fujihashi M, Kobayashi Y, Shimizu S, Tsujimoto Y, Miki K. Crystal structure of human cyclophilin D in complex with its inhibitor, cyclosporin A at 0.96-A resolution *Proteins*. 70, 1635-9 (2008).
2. Suzuki C, Isaka Y, Shimizu S, Tsujimoto Y, Takabatake Y, Ito T, Takahara S, Imai E: Bcl-2 protects tubular epithelial cells from ischemia reperfusion injury by inhibiting apoptosis. *Cell Transplant*.17,223-9 (2008).
3. Inagaki R, Tagawa K, Qi ML, Enokido Y, Ito H, Tamura T, Shimizu S, Oyanagi K, Arai N, Kanazawa I, Wanker EE, Okazawa H. Omi / HtrA2 is relevant to the selective vulnerability of striatal neurons in Huntington's disease. *Eur J Neurosci*. 28,30-40 (2008).
4. Young ARJ, Narita M, Ferreira M, Kirschner K, Sadaie M, Darot JFJ, Tavaré S, Arakawa S, Shimizu S, Watt FM and Narita M. Autophagy mediates the mitotic-senescence transition. *Genes & Dev.,in press*
5. Takahashi H, Sugita S, Shimizu N, Mochizuki M. A high viral load of Epstein-Barr virus (EBV) DNA in ocular fluids in a HLA-B27 negative acute anterior uveitis patient with psoriasis. *Jap.J.Ophthalmol*., 52(2):136-138, 2008
6. Sugita S, Shimizu N, Watanabe K, Mizukami, Morio T, Sugamoto Y and Mochizuki M. Use of multiplex PCR and real-time PCR to detect human herpes virus genome in ocular fluids of patients with uveitis. *Br.J.Ophthalmol*., 92(7): 928-932, 2008.
7. Kido S, Sugita S, Horie S, Miyanaga M, Miyata K, Shimizu N, Morio T and Mochizuki M. Association of varicella zoster virus load in the aqueous humor with clinical manifestations of anterior uveitis in herpes zoster ophthalmicus and zoster sine herpete. *Br.J.Ophthalmol*., 92(4):505-8. 2008.
8. Nakamura H, Ishii C, Suehiro M, Iguchi A, Kuroda K, Shimizu K, Shimizu N, Imadome K, Yajima M and Fujiwara S. The latent membrane protein 1 (LMP1) encoded by Epstein-Barr virus induces expression of the putative oncogene Bcl-3 through activation of the nuclear factor-kappaB. Virus res., 131(2):170-179, 2008.
9. Yajima M, Imadome K, Nakagawa A, Watanabe S, Terashima K, Nakamura H, Ito M, Shimizu N, Honda M,

Yamamoto N, Fujiwara S. A new humanized mouse model of Epstein-Barr virus infection that reproduces persistent infection, lymphoproliferative disorder, and cell-mediated and humoral immune responses. J.Infect.Dis., 198(5):673-82, 2008.

10. Kanno H, Watabe D, Shimizu N, Sawai T. Adhesion of Epstein-Barr virus-positive natural killer cell lines to cultured endothelial cells stimulated with inflammatory cytokines. Clin.Exp.Immunol., 151(3):519-527, 2008.
11. Imadome K, Shimizu N, Yajima M, Watanabe K, Nakamura H, Takeuchi H, Fujiwara S. CD40 signaling activated by Epstein-Barr virus promotes cell survival and proliferation in gastric carcinoma-derived human epithelial cells. Microbes Infect. , in press

Review Article

1. Kaneda T, Minami M, Kurabayashi T. Benign odontogenic tumors of the mandible and maxilla. Neuroimag Clin N Am 13: 495-507, 2008.

Book

1. Imaizumi A, Kurabayashi T. Oral squamous cell carcinoma. comparison of computed tomography with magnetic resonance imaging. In: Cancer imaging: Instrumentation and applications. Volume 2, Hayat MA ed., Elsevier, Amsterdam, p 437-444, 2008.

Pediatrics and Developmental Biology

1. Staffs and Students (April, 2008)

Professor	Shuki Mizutani	
Associate Professor	Tomohiro Morio	
Junior Associate Professor	Shozaburo Doi,	Masayuki Nagasawa
Assistant Professor	Satoshi Araki,	Masami Kameda,
	Masatoshi Takagi,	Kenichi Kashimada,
	Akihito Sasaki,	Makoto Ono,
	Eriko Tanaka,	Toshihiko Nishida,
Tokunin Assistant Professor	Fumiaki Watanabe	
Graduate Student	Yaeko Motoyoshi,	Kentaro Miyai,
	Rie Miyata,	Atsuko Taki,
	Naoko Ishibashi,	Kimiko Hamano,
	Wakana Furushima,	Daisuke Tomizawa,
	Kenji Wakabayashi,	Naomi Takahashi,
	Masaki Sato,	Junya Unno,
	Fumiko Honda,	Kenji Isoda,
	Norimasa Ihara,	Masaobu Takahashi
Special Study Student	Hiromi Kameda,	Kouichi Kamei,
	Yoshihiro Fukawatase	
Collaborator	Kimitoshi Imamura (Institute of Biomaterials and Bioengineering, TMDU)	
	Minoru Asada (Department of Pharmacology, Nippon Medical School)	
	Hatsume Uno (Sony Life Science Laboratories)	

2. The goal of Education

The Department of Pediatrics and Developmental Biology plays a central role for education of pediatrics at the medical school. A comprehensive lecture course for 30 themes of main pediatric diseases is provided for the 3rd to 4th grade medical students. Opportunities of training in scientific research are provided for elective 4th graders, One month practice in clinical trainings is provided for 5th to 6th graders, where every student belongs to one of the professional clinical teams and studies clinical practice as one of the team members. During this course of clinical training, each student is expected to learn skills for differential diagnosis, planning of examination schedule and description of clinical records. Junior clinical fellows who are in the training course of pediatric practice under the supervision of senior staffs are also expected to supervise these medical students. Another mission of this department is to provide lecture course on general pediatrics for the students of Dental School and School of Health Science.

The main goal of the education provided by us is to support the students to strengthen their knowledge in fundamental pediatrics with the view for total care, which can be achieved only by mutual cooperation with subspecialties in various fields of pediatrics.

3. Research Subjects

The final goal of our research is to find molecular mechanisms for development of intractable diseases in children, which may enable us to find novel ways to cure. We are interested in a broad spectrum of subjects in life science field as follow.

1. Defects in DNA repair system and Gene-environment interactions for the development of childhood leukemia.
2. Molecular mechanisms for chromosomal translocation
3. Novel role of ATM in cell differentiation
4. Novel role of Artemis in DNA repair system
5. Systematic search for genes responsible for the development of immunodeficiency diseases
6. Development of advanced techniques for cell therapy and gene therapy
7. Molecular mechanisms for development of pulmonary arterial hypertension

We collaborate with Institute of Cancer Research in London (Prof. Mel Greaves), Istitute Nazionale Tumori (Dr. D. Delia), Sony Life Science Laboratories, Medical Research Institute at TMDU, Institute of Biomaterials and Bioengineering,

TMDU (Prof. Azuma), Tokai University (Prof. Ichikawa), National Institute for Longevity Sciences, National Research Institute for Child Health and Development, Tokyo Metropolitan Institute for Neuroscience, Nihon Medical University and many other laboratories.
The research projects of each subspecialty group in the department are as follow.

○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.

Our research interest involves development of the leukemogenesis model *in vitro* and *in vivo* that stemmed from defective tumor surveillance system and in-depth analysis of DNA damage response (DDR) cascades. Among the molecules involved in DDR, we focus on ATM, Artemis, and Mre11. The functions of those molecules in health and diseases have been studied at molecular, cellular, and individual level. The topics include impaired ATM function and infantile leukemia, role of Artemis in replication fork stall, regulation of Artemis stability by its associated protein. The function of mutant Mre11, XLF1, and LIGIV have been analyzed with using materials obtained from the patients deficient in each molecule. Our approach also led to the work that elucidated the function of ATM in adipocyte differentiation, which would potentially explain why the patients with Ataxia telangiectasia suffer from emaciation and from diabetes mellitus.

In the field immunodeficiency, we work on the role of btk in production of reactive oxygen species and apoptosis, maintenance of effector T-cells by ICOS, development of immunodeficiency & autoimmunity by defective ICOS function, and development of protein therapy with the use of protein transduction domain-based intracellular delivery system. We also work on the protean functions of those molecules in the non-immunological system in collaboration with other laboratories.

We aim to establish techniques that would help in our clinical field. We have recently developed a novel method to detect DDR by a flow cytometry, and continuously work to develop a novel system to detect multiple microbes rapidly and economically.

○Cardiology Group

1) Elucidation of mechanisms how pulmonary hypertension (PH) occurs and development of concrete evaluation method of PH, followed by new therapeutics for PH
2) Establishment of the methods for functional evaluations in left and right ventricles by using 2D speckle tracking echocadiogram
3) Clarification of judgment methodology in severity of fatal arrhythmias
4) Analyses of relationships between changes in ventricular function during cardiac developmental stages, and myocardial intracellular Ca^{2+} transient

○Neurology Group

1) Mechanism of neurodegeneration and therapeutic approach in xeroderma pigmentosum
2) Role of oxidative stress in childhood neurodegenerative diseases

○Endocrinology Group

1) *In vitro* assay of mutated 21-hydroxylase enzyme activity
2) Factors that influence BMP2 signaling pathway in osteoblasts
3) Genetic control of human sex determination

○Neonatology group

1) Relationship between neoangiogenesis in fetuses and complication of preterm infants
2) Effectiveness of neonatal cardio-pulmonary resuscitation program in JAPAN

○Nephrology Group

1) Mechanism of renal tubular injury and progression to renal failure due to nonselective proteinuria.
2) Efficacy of Rituximab for severe idiopathic nephrotic syndrome: correlation of B cells, T cells, and activating markers in those with
   Rituximab administration and relapse of nephrotic syndrome.

3) Inulin clearance: study of efficacy and safety for children.

4) Analysis of lymphocyte subset in patients with nephrotic syndrome.

We work on these research in cooperation with Tokai University (1) and National Center of Health and Development (2,3,4).

○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 focus on the regulatory T cells which inhibit Th2 type immune response. 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. 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.

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 3 senior and 3 junior staff, and care both inpatients and outpatients cooperatively.

In collaboration with international 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.

New inpatients in 2008 include 6 ALL (acute lymphocytic leukemia), 7 AML (acute ,myelogenous leukemia), one CML (chronic myelogeneous leukemia), 4 malignant lymphoma, one medulloblastoma, one intracranial germinal tumor, one ovarian tumor, one synovial tumor, 4 SCID (severe combined immunodeficiency), two WAS (Wiskott-Aldrich syndrome), two bone marrow failure syndrome, one EB virus hemophagocytic syndrome, one immune thrombocytopenic purpura, two unclassified immunodeficiency and so on. We performed seven HSCT, which include five unrelated cord blood , one related, and one autologous HSCT in 2008.

We have performed more than 120 HSCT so far, which includes more than 40 cases with primary immunodeficiency. With these experiences, we are leading this field in Japan.

○Cardiology Group

Pediatric cardiology group provides an original concrete judgment and evaluation using pulmonary vascular pressure-flow relationships for severe pulmonary hypertensive (PH) patients, which is followed by active treatment such as surgical operation, NO inhalation and another medications for PH patients. We try an earlier application of percutaneous cardiopulmonary support for fulminant myocarditis patients, and cardiac resynchronization therapy for medication-resistant severe cardiomyopathy patients by utilizing a new method of echocardiogram. Moreover, we participate in Raise study for severe Kawasaki diseases, which compares two kinds of treatments, immunoglobulin only or combination of immunoglobulin and prednisolon,.

○Neurology Group

Child neurology Group provides highly specialized diagnostic and medical care for neurological disorders such as epilepsy, neuromuscular disorders, infections of nervous system and other neurodegenerative diseases. In particular, we provide therapeutic approach of xeroderma pigmentosum by using of clinicopathological analysis.

○Endocrinology Group

Endocrinology group provides diagnosis and treatment for patients with pediatric endocrine disorders, such as growth disorders, pubertal disorders, hypopituitarism, Turner syndrome, thyroid disorders, adrenal disorders, problems of calcium and phosphate metabolism, diabetes mellitus and so on.

Our department is one of the neonatal mass-screening centers for congenital adrenal hyperplasia and congenital hypothyroidism in Tokyo Metropolis.

We hold summer camp program for children with type 1 diabetes mellitus in every August.

○Neonatology group

Neonatal and Infantile High Care Unit (NIHCU) for severely ill neonates and infants has started since July 2008. NIHCU treats 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. We provide comprehensive care for critically ill newborns and infants, using various medical devices, such as blood gas analyzer, artificial respirators, NO inhalation system, fiberoptic bronchoscopes and brain function monitor.

○Nephrology Group

Nephrology Group provides diagnosis and treatment for patients with in school urjnary analysis screening, acute nephritis, chronic nephritis, nephrotic syndrome, congenital kidney diseases and proteinuria or hematuria found. We have specialized pediatric nephrology section for outpatients in our hospital and in some cooperative hospitals.

○Allergy Group

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

5. Publications

Original Article

1. Morio T, Kim H. Ku, Artemis, and ataxia-telangiectasia-mutated: Signalling networks in DNA damage. ***Int J Biochem Cell Biol.*** 2008; 40:598-603.
2. Nagasawa M, Yi Z, Imashuku S, Nonoyama S, Ogawa K, Okumura K, Mizutani S. Soluble TWEAK is markedly elevated in hemophagocytic lymphohistiocytosis. ***Am J Hematol.*** 2008; 83(3):222-5.
3. Katsuki Y, Nakada S, Yokoyama T, Imoto I, Inazawa J, Nagasawa M, Mizutani S. Caffeine yields aneuploidy through asymmetrical cell division caused by misalignmentof chromosomes. ***Cancer Sci.*** 2008;99(8):1539-45.
4. Suzuki K, Tsugawa K, Oki E, Morio T, Ito E, Tanaka H. Vesical varices and telangiectasias in a patient with ataxia telangiectasia. ***Ped. Nephrol*** 2008; 23:1005-8.
5. Shinohara M, Koga T, Okamoto K, Sakaguchi S, Arai K, Yasuda H, Takai T, Kodama T, Morio T, Geha RS, Kitamura D, Kurosaki T, Ellmeier W, Takayanagi H, Tyrosine kinases Btk and Tec regulate osteoclast differentiation by linking RANK and ITAM signals. ***Cell.*** 2008; 32:794-806.
6. Kido S, Sugita S, Horie S, Miyanaga M, Miyata K, Shimizu N, Morio T, Mochizuki M, Association of varicella zoster virus load in the aqueous humor with clinical manifestations of anterior uveitis in herpes zoster ophthalmicus and zoster sine herpete. ***Br J Ophthalmol.*** 2008:92:505-8.
7. Hasegawa D, Fukushima M, Hosokawa Y, Takeda H.,Kawasaki K, Mizukami T, Nunoi H, Ochiai H, Morio T, Kosaka Y. Successful treatment of chronic granulomatous disease with fludarabine-based reduced-intensity conditioning and unrelated bone marrow transplantation. ***Int J Hematol.*** 2008; 87:88-90.
8. Sugita S, Iwanaga Y, Kawaguchi T, Futagami Y, Horie S, Usui T, Yamamoto S, Sugamoto Y, Mochizuki M, Shimizu N, Watanabe K, Mizukami M, Morio T. Detection of herpesvirus genome by multiplex polymerase chain reaction (PCR) and real-time PCR in ocular fluids of patients with acute retinal necrosis. ***Nippon Ganka Gakkai Zasshi.*** 2008; 112:30-8.
9. Sugita S. Shimizu N. Watanabe K. Mizukami M. Morio T. Sugamoto Y. Mochizuki M. Use of multiplex PCR and real-time PCR to detect human herpes virus genome in ocular fluids of patients with uveitis. ***Br J Ophthalmol.*** 2008; 92:928-32.
10. Yamamoto S, Sugita S, Sugamoto Y, Shimizu N, Morio T, Mochizuki M. Quantitative PCR for the detection of genomic DNA of Epstein-Barr virus in ocular fluids of patients with uveitis. ***Jpn J Ophthalmol.*** 2008; 52(6):463-7.
11. Sato E, Ohga S, Kuroda H, Yoshiba F, Nishimura M, Nagasawa M, Inoue M, Kawa K. Allogeneic hematopoietic stem cell transplantation for Epstein-Barr virus-associated T/natural killer-cell lymphoproliferative disease in Japan. ***Am J Hematol.*** 2008; 83(9):721-7.
12. Kawagishi H, Wakoh T, Uno H, Maruyama M, Moriya A, Morikawa S, Okano H, Sherr CJ, Takagi M, Sugimoto M. Hzf regulates adipogenesis through translational control of C/EBPalpha. ***EMBO J.*** 2008; 27(10):1481-90.
13. Tauchi H, Tomizawa D, Eguchi M, Eguchi-Ishimae M, Koh K, Hirayama M, Miyamura N, Kinukawa N, Hayashi Y, Horibe K, Ishii E. Clinical features and outcome of MLL gene rearranged acute lymphoblastic leukemia in infants with additional chromosomal abnormalities other than 11q23 translocation. ***Leuk Res.*** 2008; 32(10): 1523-29.
14. Kashimada K, Omori T, Takizawa F, Mizutani S. Two cases of transient pseudohypoaldosteronism due to group B

streptococcus pyelonephritis. ***Pediatr Nephrol.*** 2008; 23(9):1569-70.

15. Ono M, Kashimada K, Miyai K, Onishi T, Takagi M, Honma S, Mizutani S. In vitro enzyme assay of CYP21A2 Mutation (R483Q) by A novel method using liquid chromatography-electrospray inization tandem mass spectrometry (LC-ESI-MS/MS). ***Clin Pediatr Endocrinol.*** 2008;17(2):49-56.
16. Kashimada K, Ono M, Onishi T, Koyama S, Toyoura T, Imai K, Saisho S, Mizutani S. Clinical course of patients with nonclassical 21-hydroxylase deficiency (21-OHD) diagnosed in infancy and childhood. ***Endocr J.*** 2008; 55(2):397-404.
17. Shibayama Y, Higashi T, Shimada K, Kashimada K, Onishi T, Ono M, Miyai K, Mizutani S. Liquid chromatography-tandem mass spectrometric method for determination of salivary 17alpha-hydroxyprogesterone: a noninvasive tool for evaluating efficacy of hormone replacement therapy in congenital adrenal hyperplasia. ***J Chromatogr B Analyt Technol Biomed Life Sci.*** 2008; 867(1):49-56.
18. Miyata R, Hayashi M, Tanuma N, Shioda K, Fukatsu R, Mizutani S. Oxidative stress in neurodegeneration in dentatorubral-pallidoluysian atrophy. ***J Neurol Sci.*** 2008; 264(1-2):133-9.
19. Hamano K, Hayashi M, Shioda K, Fukatsu R, Mizutani S. Mechanisms of neurodegeneration in mucopolysaccharidoses II and IIIB: analysis of human brain tissue. ***Acta Neuropathol.*** 2008;115(5):547-59.
20. Tanuma N, Miyata R, Hayashi M, Uchiyama A, Kurata K. Oxidative stress as a biomarker of respiratory disturbance in patients with severe motor and intellectual disabilities. ***Brain Dev.*** 2008; 30: 402-09.
21. Hamano K, Kumada S, Hayashi M, Uchiyama A, Kurihara E, Tamagawa K, Enomoto S, Chou H. Hemorrhage due to tracheoarterial fistula with severe motor and intellectual disability. ***Pediatr Int.*** 2008; 50: 337-40.
22. Nakayama M, Kamei K, Nozu K, Matsuoka K, Nakagawa A, Sako M, Iijima K. Rituximab for refractory focal segmental glomerulosclerosis. ***Pediatr Nephrol.*** 2008; 23 : 481-85,
23. Motoyoshi Y, Matsusaka T, Saito A, Pastan I, Willnow TE, Mizutani S, Ichikawa I. Megalin contributes to the early injury of proximal tubule cells during nonselective proteinuria. ***Kidney Int.*** 2008; 74: 1262-69.

Congress

1. Mizutani S, Unno J, Watanabe F, Takagi M, Morio T, Teraoka H, Domenico D. Regulation of Artemis/ATM-related DNA damage response network. Ataxia-Telangiectasia Workshop 2008.Otsu, Shiga, Apr.2008.
2. Morio T, Watanabe F, Takahashi N, Sato M, Sato R, Takagi M, Imadome K, Miyawaki T, Delia D, Nakamura K, Richard Gatti, Mizutani S. Ataxia-Telangiectasia in Japan:Phenotypic variations in affected siblings with Ataxia-Telangiectasia. Ataxia-Telangiectasia Workshop 2008. Otsu, Shiga, Apr.2008.
3. Morio T. Ataxia telangiectasia: Involement of ATM in immunodeficiency and Leukemogenesis. Symposium on Recent Advances in Cell Function and Defense Mechanisim. Yonsei Univeristy, Seoul, Korea, 18 Apr. 2008.
4. Morio T. Immunodefiencies with impaired DNA damage response. Recent Advances in DNA Damage Response. Yonsei Univeristy, Seoul, Korea, 18 Apr. 2008.
5. Takagi M, Uno H, Sugimoto M, Yasuda A, Mizutani S. ATM regulates adipocyte differentiation, and contributes glucose metabolism in vivo. Ataxia-Telangiectasia Workshop 2008. Otsu, Shiga, Apr.2008.
6. Watanabe F, Morio T, Ogigami N, Kiyono T, Delia D, Mizutani S. Stability of Artemis protein is regulated by Hsp72, Ataxia-Telangiectasia Workshop 2008. Otsu, Shiga, Apr.2008.
7. Unno J, Takagi M, Watanabe F, Sato M, Takahashi N, Morio T, Teraoka H, Mizutani S. Generation of DNA double-stranded breaks in stalled DNA replication forks: an essential step initiated by Artemis toward a second wave of DNA damage response and ATM activation. Ataxia-Telangiectasia Workshop 2008. Otsu, Shiga, Apr.2008.
8. Nakamura K, Morio T, Mizutani S, Richard A Gatti. Identification of Novel Mutation in Japanese Patients with Ataxia Telangiectasia ; Absence of Founder Mutations. Ataxia-Telangiectasia Workshop 2008. Otsu, Shiga, Apr.2008.
9. Kashimada K, Koopman P. "Does Sox9 suppress Foxl2 expression directly?". 2nd Australian Sex Summit, Flowerdale Estate Victoria, Australia, 3-5 Dec. 2008
10. Miyai K, Izu Y, Hemmi H, Hayata T, Nakamoto T, Ezura Y, Pawson T, Mizutani S, Noda M. Deficiency of NCK1, an Actin Cytoskeletal Modulator with SH2/SH3 Motifs, Induces Bone Loss via Suppression of Bone Formation and Induction of Biochemical High Bone Turnover State. The ASBMR(The American Society for Bone and Mineral Research) 30th Annual Meeting, Montreal, Canada, 12-16 Sep. 2008
11. Tomizawa D, Tauchi H, Eguchi M, Eguchi-Ishimae M, Koh K, Hirayama M, Miyamura N, Kinukawa N, Hayashi Y, Horibe K, Ishii E. Complex chromosomal abnormalities in infant acute lymphoblastic leukemia with MLL gene rearrangements. 48th Annual Scientific Meeting of British Society of Haematology incorporating the 6th Bi-annual I-BFM Leukaemia Symposium, Glasgow, UK, 7-9 Apr. 2008.
12. Ogawa C, Ohara A, Manabe A, Kikuchi A, Koh K, Tomizawa D, Fujimura J, Inoue H, Sunami S, Ishii E, Shiohara M,

Mori T, Takahashi H, Hayashi Y, Hanada R, Tsuchida M. Successful reduction of cranial irradiation in children with B cell precursor acute lymphoblastic leukemia (ALL) through four consecutive ALL studies: Long-term follow-up of ALL in Tokyo Children's Cancer Study Group (TCCSG) L89-12, 92-13, 95-14 and 99-15 studies. 50th Annual Meeting of the American Society of Hematology, San Francisco, USA, 6-9 Dec. 2008.

13. Miyamura T, Koh K, Tomizawa D, Sugita K, Kato K, Sato T, Takahashi Y, Ogawa A, Hirayama M, Kikuchi A, Oda M, Hasegawa D, Koike K, Saikawa Y, Hatanaka M, Horibe K, Ishii E. Nation-Wide Survey of Infant Leukemia in Japan: A Report from the Japanese Pediatric Leukemia/Lymphoma Study Group (JPLSG). 50th Annual Meeting of the American Society of Hematology, San Francisco, USA, 6-9 Dec. 2008.
14. Dorr AD, Wilson MR, Wakabayashi K, O'Dea KP, Tatton LE, Takata M. High-stretch injurious ventilation increases soluble TNF receptors in both the alveoli and plasma in mice. Winter Meeting of the British Thoracic-Society, London, England. Dec. 2008.
15. Dorr AD, Wilson MR, Wakabayashi K, O'Dea KP, Tatton LE, Takata M. High-stretch injurious ventilation increases soluble TNF receptors in both the alveoli and plasma in mice. International Conference of American Thoracic Society, Toronto, CA. May 2008.
16. Kamei K, Iijima K, Honda M, Nakanishi K, Yoshikawa N. Long term prognosis of severe childhood IgA nephropathy showing diffuse mesangial proliferation. The American Society of Nephrology, Renal Week 2008. 2008.11.4-9, Philadelphia, PA, USA
17. Kamei K, Nakayama M, Sako M, Nozu K, Ito S, Fujinaga S, Saito M, Iijima K. Treatment of refractory steroid-dependent nephrotic syndrome with a single dose of rituximab, a multicenter prospective study. The American Society of Nephrology, Renal Week 2008. Philadelphia, PA, USA, 4-9 Nov. 2008.
18. Oku K, Taki A, Shimoda A, Tanaka T, Watanabe S. Questionnaire for Home Mechanical Ventilation in NICU Facilities in Japan, Second Report : Analysis of Patients with Long- Term Artificial Respiration in NICU and the Possibility of Staying at Home, Faops, Nagoya, 22 May 2008.
19. Oku K, Taki A, Shimoda A, Tanaka T, Watanabe S. Questionnaire for Home Mechanical Ventilation in NICU Facilities in Japan, First Report : Reality of Home Mechanical Ventilation after Discharge from NICU, Faops, Nagoya, 22 May 2008.
20. Taki A, Oku K, Mizutani S, Abe M, Morita I. Expression of angiogenesis-related factors in placenta and umbilical vessels in complicated pregnancies, 6th Korea-Japan Joint Symposium on Vascular Biology, Kanazawa 3-5 Dec. 2008.

Medicine and Rheumatology

1. Staffs and Students (April, 2008)

Professor	Nobuyuki MIYASAKA	Masayoshi HARIGAI
Associate Professor	Hitoshi KOHSAKA	Tetsuo KUBOTA
	Ryuji KOIKE	Toshihiro NANKI
Juninor Associate Professor	Kazuki TAKADA	
Assistant Professor	Fumihito SUZUKI	Fumitaka MIZOGUCHI
	Michi TANAKA	Yukiko KOMANO
Graduate Student	Akito TAKAMURA	Kaori WATANABE
	Kayoko KANEKO	Masayasu TOYOMOTO
Research Student	Yousuke MURAKAMI	
Resident	Shinya HIRATA	Hisanori HASEGAWA
	Tadashi HOSOYA	Hayato YAMAZAKI

2. Purpose of Education

We have provided medical students with the opportunity to obtain the ability to find important clinical problems and to solve it voluntarily in the diagnosis and treatment of rheumatic diseases. We have also aimed to purse the concept of 'from clinic to bench' through our holistic medicine.

3. Research Subjects

1) The development of new treatments for rheumatoid arthritis using cell cycle regulators.
2) The investigation of immunopathology and the development of new treatments for the polymyositis.
3) The function analysis of chemokines / chemokine receptors in rheumatoid arthritis and the therapeutic applications of it.
4) The establishment of evidence-based medicine of rheumatic diseases.

4. Clinical Services

We have examined the patients with various rheumatic diseases. In 2008, 243 patients were admitted into our hospital. We have aimed to practice evidence-based medicine and to provide high quality care. In addition, we have actively participated in the clinical trials for the biological agents including infliximab, etanercept, adalimumab, tocilizumab, abatacept and so on. Furthermore, we have greatly contributed to the pharmacovigilance in Japan through the REAL and the SECURE study.

5. Publications

Original Article

1. Miyasaka N. Clinical investigation in highly disease-affected rheumatologic arthritis patients in Japan with adalimumab applying standard and general evaluation: the CHANGE study. Mod. Rheumatol. 18(3): 252-262, 2008
2. Sekine C, Sugihara T, Miyake S, Hirai H, Yoshida M, Miyasaka N, Kohsaka H. Successful treatment of animal models of rheumatoid arthritis with small-molecule cyclin-dependent kinase inhibitors. J. Immunol. 180: 1954-1961, 2008
3. Nakamoto T, Seo S, Sakai R, Kato T, Kutsuna H, Kurokawa M, Noda M, Miyasaka N, Kitagawa S. Expression and tyrosine phosphorylation of Crk associated substrate lymphocyte type (Cas-L) protein in human neutrophils. J. Cell. Biochem. 105: 121-128, 2008
4. Saito E, Koike T, Hashimoto H, Miyasaka N, Ikeda Y, Hara M, Yamada H, Yoshida T, Harigai M, Ichikawa Y. Efficacy of high-dose intravenous immunoglobulin therapy in Japanese patients with steroid-resistant polymyositis and dermatomyositis. Additional members of the GB-0998 Study Group. Mod. Rheumatol. 18: 34-44, 2008
5. Mizoguchi F, Mizuno A, Hayata T, Nakashima K, Heller S, Ushida T, Sokabe M, Miyasaka N, Suzuki M, Ezura Y, Noda M. Transient receptor potential vanilloid 4 deficiency suppresses unloading-induced bone loss. J. Cellular Phys. 216: 47-53, 2008
6. Mizoguchi F, Nanki T, Takada K, Miyasaka N. Recurrent pulmonary embolism due to intracardiac thrombi in systemic sclerosis. Clin. Exp. Rheum. 26: 157, 2008
7. Tazaki T, Miyazaki K, Hiyama E, Nakamoto T, Sakai R, Yamasaki T, Honda Z, Noda M, Miyasaka N, Sueda T,

Honda H. Functional analysis of Src homology 3-encoding exon (exon 2) of p130Cas in primary fibroblasts derived from exon 2-specific knockout mice. Genes to Cells 13: 145-157, 2008

8. Harigai M, Kawamoto M, Hara M, Kubota T, Kamatani N, Miyasaka N. Excessive production of IFN-γ in patients with Systemic Lupus Erythematosus and its contribution to induction of B lymphocyte stimulator / B cell-activating factor / TNF ligand superfamily-13B1. J. Immunol. 181(3): 2211-2219, 2008
9. Mizoguchi F, Nanki T, Miyasaka N. Pneumatosis cystoides intestinalis following lupus enteritis and peritonitis. Intern. Med. 47(13): 1267-1271, 2008
10. Mizoguchi F, Nakamura S, Iwai H, Kubota T, Miyasaka N. Varicella-Zoster virus hepatitis in polymyositis. Mod. Rheumatol. 18(3): 301-305, 2008
11. Watanabe K, Nanki T, Sugihara T, Miyasaka N. A case of polyarteritis nodosa with periurethral aseptic abscesses and testicular lesions. Clin. Exp. Rheumatol. 26: 1113-1115, 2008
12. Okiyama N, Kohsaka H, Ueda N, Satoh T, Katayama I, Nishioka K, and Yokozeki H. Seborrhic area erythema as a common skin manifestation in Japanese patients with dermatomyositis. Dermatology 217(4): 374-377, 2008
13. Matsudaira T, Tsuzuki S, Wada A, Suwa A, Kohsaka H, Tomida M, and Ito Y. Automated microfluidic assay system for autoantibodies causing autoimmune diseases using a photoimmobilized autoantigen microarray. Biotechnology Progress 24(6): 1384-1392, 2008

Dermatology

1. Staffs and Students (April 2008)

Professor	Hiroo YOKOZEKI	
Associate Professor	Takahiro SATOH	
Junior Associate Professor	Ken IGAWA,	Tetsuya HIGUCHI,
	Kaoru TAKAYAMA	
Assistant Professor	Nobuhiko UEDA,	Yoshiko OKUBO,
	Aya NISHIZAWA,	Tomoko TANAKA
Hospital Staff	Eishi TAKAHASHI,	Syouun TOKORO,
	Tomoko HARADA	
Secretary	Yu KAWAMURA,	Yukako KIKUCHI
Residents	Madoka ARAI,	Kayo USUDA,
	Makiko NAKATUKA,	Kohei NOJIMA,
	Kosuke HARUYAMA,	Risa WATANABE,
Graduate Students	Chieko SHIMURA,	Naoko OKIYAMA,
	Tsukasa UGAJIN,	Akiko IMAI,
	Yuichi ITO,	Makiko UENO,
	Tomoko TANAKA,	Yoshihiro YAMAMOTO,
	Kazuki HOSOYA,	Kazumi SAEKI,
	Yuki MATSUSHIMA,	Yasumasa KANAI

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 techniqes. 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) Therapeutic approach for scleroderma by decoy oligodeoxynucleotides
8) The CD40-CD40ligand interaction in patients with drug eruptions
9) Pathophysiology of hyperhidrosis

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 thearies (STAT6 decoy ODN) for severe atopic dermatitis in the clinic.

5. Publications

Original Article

1. Hamuro J, Higuchi O, Okada K, Ueno M, Iemura S I, Natsume T, Spearman M, Beeson D, Yamanashi Y : Mutations causing DOK7 congenital myasthenia abate functional motifs in Dok-7 : J Biol Chem : 283(9):5518-5524.2008
2. Oiwa M, Satoh T, Watanabe M, Niwa H, Hirai H, Nakamura M, Yokozeki H : CRTH2-dependent, STAT6-independent induction of cedar pollen dermatitis : Clin Exp Allergy : 38(8):1357-66.2008
3. Okiyama N, Kohsaka H, Ueda N, Satoh T, Katayama I, Nishioka K, Yokozeki H : Seborrheic area erythema as a common skin manifestation in Japanese patients with dermatomyositis : Dermatology : 217(4):374-7.2008

4. Kikuchi A, Satoh T, Yokozeki H : Primary cutaneous epithelioid Angiosarcoma : Acta Derm Venereol : 88(4):422-3.2008
5. Shimura C, Satho T, Yokozeki H : Increased expression of hematopoietic prostaglandin D synthase in CCR4-positive T cells from patients with atopic dermatitis : Acta Derm Venereol : 88(5):506-8.2008
6. Takayama K, Satoh T, Maruyama R, Yokozeki H : Dialysis-related amyloidosis on the buttocts : Acta Derm Venereol : 88(1):72-73.2008
7. Takayama K, Satoh T, Hayashi M, Yokozeki H : Psoriatic skin lesions induced by BCG vaccination : Acta Derm Venereol : 88(6):621-2.2008
8. Takayama K, Satoh T, Yokozeki H : Papular granuloma annulare with subcutaneous granulomatous reaction induced by a bee sting : Acta Derm Venereol : 88(5):519-20.2008
9. Namiki T, Valencia JC, Hall MD, Hearing VJ : A novel approach to enhance antibody sensitivity and specificity by peptide cross-linking : Anai Biochem : 383(2):265-9.2008
10. Passeron T, Namiki T, Passeron HJ,Le Pape E, Hearing VJ : ForsKolin p rotects keratinocytes from UVB-induced Apoptosis and increases DNA repair independent of its effects on melanogenesis : J Invest Dermatol :
11. Nishizawa A, Nakajima R, Nakano H, Sawamura D, Takayama K, Satoh T, Yokozeki H : A de novo missense mutation in the keratin 13 gene in oral white sponge naevus : Br J Dermatol : 159(4):422-3.2008
12. Nishizawa A, Nakano H, Satoh T, Takayama K, Sawamura D, Yokozeki H : Haber's syndrome may be a clinical entity different from Dowling-Degos disease : Brit J Dermatol : 160(1):215-7.2008
13. Higuchi T, Satoh T, Yokozeki H : Prurigo in dermatomyositis : Dermatology : 217(4):378-9.2008
14. Balkow S, Loser K, Krummen M, Higuchi T, Rothoeft T, Apelt J, Tuettenberg A, Weishaupt C, Beissert S, Grabbe S : Dendritic cell activation by combined exposure to anti-CD40 plus interleukin (IL)-12 and IL-18 efficiently stimulates anti-tumor immunity : Experimental Dermatology : 18(1):78-87.2008
15. Yahara H, Satoh T,Hashimoto T, Yokozeki H : Transient macular erythema with eosinophilia in a patient carrying the FIP1L1-PDGFRA fusion gene : Br J Dermatol : 157(6):1284-7.2008
16. Yamazaki S, Dudziak D, Heidkamp GF, Fiorese C, Bonito AJ, Inaba K, Nussenzweig MC, Steinman RM : CD8+ CD205+ splenic dendritic cells are specialized to induce Foxp3+ regulatory T cells : J Immunol : 181(10):6923-33.2008
17. Watanabe M, Satoh T, Yamamoto Y, Kanai Y, Karasuyama H, Yokozeki H : Overproduction of IgE induces macrophage-derived chemokine (CCL22) secretion from basophils : J Immunol : 181(8):5653-9.2008

Review Article

Book

Pathological Biochemistry

1. Staffs and Students (April, 2008)

Professor	Hirobumi TERAOKA	
Assistant Professor	Ken-ichi YOSHIOKA	
Research Assistant	Keiko SHIMIZU-SAITO	
Post Doctoral Fellow (JST)	Yousuke ICHIJIMA,	
Graduate Students	Hiroaki FUJIMORI,	Mima SHIKANAI,
	Tsuyoshi SAITO,	Tomohiro NISHIDA,
	Hisaharu MASAKI,	Keitaro SHINOHE,
	Kentaro TATSUMI,	Yumi TADAI,
	Kensuke HAMADA	

2. Purpose of Education

Main object of Pathological Biochemistry in the graduate course is to provide students opportunity to study advanced DNA metabolism (replication, repair and recombination) and cell fate (proliferation, differentiation, cell death and cellular transformation). In particular, students are taught on DNA double-strand break signaling/repair and basic regenerative medicine of liver.

3. Research Subjects

1) Signaling of DNA double-strand breaks and molecular mechanism of non-homologous end-joining
2) Genomic instability via carryover of replication stress-induced DNA lesions into the M phase
3) Maintenance of genome integrity in pluripotent stem cells (ES cells, iPS cells)
4) Differentiation of pluripotent stem cells into a hepatocyte lineage
5) Epigenetic regulation of liver-specific or liver-related genes
6) Ex utero transplantation of hepatic progenitor cells into mouse fetal liver

4. Publications

Original Articles

1. Fujimori H, Asahina K, Shimizu-Saito K, Ikeda R, Tanaka Y, Teramoto K, Morita I, Teraoka H. VEGF promotes proliferation and function of hepatocyte-like cells in embryoid bodies formed from mouse embryonic stem cells. J. Hepatol. 48: 962-973, 2008
2. Ikeda R, Nishida T, Watanabe F, Shimizu-Saito K, Asahina K, Horikawa S, Teraoka H. Involvement of CCAAT/enhancer binding protein-β (C/EBPβ) in epigenetic regulation of mouse methionine adenosyltransferase 1A gene expression. Intern. J. Biochem. Cell Biol. 40: 1956-1969, 2008
3. Shibata A, Ogino H, Maeda D, Tsutsumi M, Nohmi T, Nakagama H, Sugimura T, Teraoka H, Masutani M. Role of Parp-1 in suppressing spontaneous deletion mutation in the liver and brain of mice at adolescence and advanced age. Mutat. Res.-Fundam. Mol. Mech. Mutagen. (in press)
4. Shikanai M, Asahina K, Iseki S, Teramoto K, Nishida T, Saito T, Shimizu-Saito K, Ota M, Eto K, Teraoka H. A novel method of mouse ex utero transplantation of hepatic progenitor cells into the fetal liver. Biochem. Biophys. Res. Commun. (in press)

Department of Immunology

1. Staffs and Students (April, 2008)

Professor	Takeshi Tsubata, M.D., Ph.D.	
Associate Professor	Takahiro Adachi, Ph.D.	
Junior Associate Professor	Makoto Tsuiji, Ph.D.	
Assistant Professor	Kozo Watanabe, Ph.D.	
Assistant Professor	Yusuke Kishi	
Technician	Koji Hayashizaki	
Secretary	Hiroko Takahashi,	Junko Shinya
Graduate Student	Hou You,	Man Rong Yong,
	T.D.C.P.Gunasekara,	Xu Miduo,
	Yuki Ishii,	Aya Sato,
	Makiko Konishi,	Taichi Tamanaka,
	Yasurou Sakamaki,	Chiaki Takaku,
	Mai Tanaka,	Weng Dong

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. Yan, B.-C., Adachi, T. and Tsubata, T. (2008) : ER stress is involved in B cell antigen receptor ligation-induced apoptosis. *Biochem. Biophys. Res. Comm.* 365:143-148.
2. Onodera, T., Poe, J. C., Tedder, T. F. and Tsubata, T. (2008): CD22 regulates time course of both B cell division and antibody response. *J. Immunol.* 180: 907-913.
3. Zhu, C., Fujimoto, M., Sato, M., Yanagisawa, T. and Tsubata, T. (2008): Novel binding site for SH2-containing protein tyrosine phosphatase-1 in CD22 activated by B Lymphocyte stimulation with antigen. *J. Biol. Chem.* 283: 1653-1659.
4. Adachi, T. and Tsubata, T. (2008): FRET-based Ca^{2+} measurement in B lymphocyte by flow cytometry and confocal microscopy. *Biochem. Biophys. Res. Comm.* 367: 377-382.
5. Watanabe, K., Ichinose, S., Hayashizaki, K. and Tsubata, T. (2008): Induction of autophagy by B cell antigen receptor stimulation and its inhibition by costimulation. *Biochem. Biophys. Res. Comm.* 374: 274-281
6. Abdu-Allah, H. H. M., Tamanaka, T., Yu, J., Lu, Z., Sadagopan, M., Adachi. T., Tsubata, T., Kelm, S., Ishida, H. and Kiso, M. (2008): Design, synthesis, and structure-activity relationships of novel series of sialosides as CD22-specific inhibitors. *J. Me.l Chem.* 51: 6665-6681.
7. Watanabe, K and Tsubata, T. (2009): Autophagy connects antigen receptor signaling to costimulatory signaling in B lymphocytes. *Autophagy*.5: 108-110.
8. Toda, M., Hisano, R., Yurugi, H., Akita, K., Maruyama, K., Inoue, M., Adachi, T., Tsubata, T. and Nakada, H. (2009):

Ligation of tumor-produced mucins to CD22 dramatically impairs splenic marginal zone B cells. *Biochem J.* 417:673-683.

9. Hou, R., Ohtsuji, M., Ohtsuji, N., Zhang, L., Adachi, T., Hirose, S. and Tsubata, T. (2009): The centromeric interval of chromosome 4 derived from C57BL/6 mice accelerates type 1 diabetes in NOD.CD72^{b} congenic mice. *Biochem. Biophys. Res. Comm.* 380: 193-197.

[Book]

1. Tsubata, T (2008). Siglec-2 is a key molecule for immune response. In "Experimental Glycoscience, Glycobiology" (ed by N. Taniguchi, A. Suzuki, Y. Ito, H. Narimatsu, T. Kawasaki and S. Hase) p. 167-170, Springer.

Cellular and Environmental Biology (General Isotope Center)

1. Staffs and Students (April, 2008)

Associate Professor	Masayuki HARA
Graduate Student	Satoru MIYAKURA

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 change in environment, cell differentiation, disease, or drug exposure.

Human Pathology

1. Staff and Students

Professor	Yoshinobu EISHI	
Assistant Professor	Tetsuo YAMADA,	Hiroshi KAWACHI,
	Daisuke KOBAYASHI	
Laboratory Technician	Yoshimi SUZUKI	
Technical Assistant	Asuka FURUKAWA	
Secretary	Miho IWAMITSU	
Graduate Student	Urara TAMAHASHI,	Maki KOBAYASHI,
	Kayoko ICHIMURA,	Shinichi HIROOKA,
	Tomonari AMANO,	Mariko NEGI,
	Naoko OKAMOTO,	Masaki TAKASHIMA,
	Hiroko OGINO,	Manami TAKIZAWA,
	Aya MIWA,	Eri NISHIKAWA,
Research Student	Mitsuru NOGI,	Shinichiro HORIGUCHI,
	Kazumi HORIGUCHI,	Kana MINEGISHI

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. Ito T, Kobayashi D, Uchida K, Takemura T, Nagaoka S, Kobayashi I, Yokoyama T, Ishige I, Ishige Y, Ishida N, Furukawa A, Muraoka H, Ikeda S, Sekine M, Ando N, Suzuki Y, Yamada T, Suzuki T, Eishi Y. *Helicobacter pylori* invades the gastric mucosa and translocates to the gastric lymph nodes. Lab Invest 88: 664-681, 2008.
2. Isobe Z, Suga T, Aoki Y, Aoki F, Ikeda K, Ueno M, Maeno T, Kurabayashi M, Eishi Y. A case of sarcoidosis with hypoxia showing slight ground glass opacities on chest CT. Nihon Kokyuki Gakkai Zasshi 46(11):899-903,2008
3. Wanajo A, Sasaki A, Nagasaki H, Shimada S, Otsubo T, Owaki S, Shimizu Y, Eishi Y, Kojima K, Nakajima Y, Kawano T, Yuasa Y, Akiyama Y. Methylation of the calcium channel-related gene, CACNA2D3, is frequent and a poor prognostic factor in gastric cancer. Gastroenterology 135(2):580-590,2008
4. Tamahashi U, Kumagai J, Takizawa T, Sekine M, Eishi Y. Expression and intracellular localization of matrix metalloproteinases in intraductal papillary mucinous neoplasms of the pancreas. Virchows Arch 453(1):79-87,2008
5. Miyazaki E, Ando M, Fukami T, Nureki S, Eishi Y, Kumamoto T. Minocycline for the treatment of sarcoidosis: is the mechanism of action immunomodulating or antimicrobial effect? Clin Rheumatol 27(9):1195-1197,2008
6. Koda H, Kimura Y, Iino Y, Eishi Y, Murakami Y, Kitamura K. Bilateral sudden deafness caused by diffuse metastatic leptomeningeal carcinomatosis. Otol Neurotol 29(5):727-729,2008
7. Matsumoto T, Kumagai J, Hasegawa M, Tamaki M, Aoyagi M, Ohno K, Mizusawa H, Kitagawa M, Eishi Y, Koike M. Significant increase in the expression of matrix metalloproteinase 7 in primary CNS lymphoma. Neuropathology 28(3):277-285,2008
8. Arai T, Inoue Y, Eishi Y, Yamamoto S, Sakatani M. Propionibacterium acnes in granulomas of a patient with necrotising sarcoid granulomatosis. Thorax 63(1):90-1,2008

9. Kawano T, Haruki S, Ogiya K, Kawada K, Nakajima Y, Nishikage T, Kojima K, Nagai K, Kawachi H. Reliability of endoscopic esophageal mucosectomy using TxHood, a multipurposetreatment hood. Surg Endosc 22:2466-2469, 2008.
10. Nakagawa T, Iida S, Osanai T, Uetake H, Aruga T, Toriya Y, Takagi Y, Kawachi H, Sugihara K. Decreased expression of SOCS-3 mRNA in breast cancer with lymph node metastasis. Oncol Rep 19:33-39, 2008.
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Gastroenterology and Hepatology

1. Staffs and Students (April, 2008)

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)
Assistant Professor	Akihiro ARAKI (Department of Endoscopic Diagnosis and Therapeutics)
	Masakazu NAGAHORI, Shinji SUZUKI,
	Shinya OOKA (April～) Cheng-Hsin CHEN,
	Teruji TOTSUKA
	Takashi NAGAISHI (Department of Advanced Therapeutics in Gastrointestinal Diseases)
	Mina NAKAGAWA (Department for Hepatitis Control)
Tokunin Assistant Professor	Yasuhiro NEMOTO (GCOE)
Hospital Staff	Eriko OKADA (Department of Endoscopic Diagnosis and Therapeutics・April～)
	Hiroshi KAMEI (April～), Kei TANAKA (April～)
	Atsushi YOSHIOKA (April～), Megumi TASAKA（April～）
	Kei KIYOHASHI (April～), Sayuri NITTA (April～)
Graduate Student	Yuki SAKURAI, Michio ONIZAWA,
	Toshimitsu FUJII, Michiko IWASAKI
	Tamako SHINOHARA, Yuko KARAGAMA,
	Kako MISHIMA Machi YAMAMOTO,
	Gouki SUDA, Junko AKIYAMA,
	Kaori ISHIGURO Izumi ONOZUKA,
	Sea Bong HYUN, Mayumi UEYAMA,
	Masahiro SUZUKI Yusuke FUNAOKAKA,
	Osamu YAMAJI, Shiro YUI,
	Takako WATANABE, Akiko KITADUME (April～),
	Tomohiro MIZUTANI (April～)
	Yoshihito KANO (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. Amemiya F, Maekawa S, Itakura Y, Kanayama A, Takano S, Yamaguchi T, Itakura J, Kitamura T, Inoue T, Sakamoto M, Yamauchi K, Okada S, Sakamoto N, Enomoto N: Targeting lipid metabolism in the treatment of hepatitis C. **Antimicrob Agent Chemother.**197:361-370, 2008.
2. Araki A, Tsuchiya K, Okada E, Suzuki S, Oshima S, Okamoto R, Kanai T, Watanabe M : Single-operator method for double-balloon endoscopy: a pilot study. **Endoscopy**. 40:936-938, 2008.
3. Aragaki M, Tsuchiya K, Okamoto R, Yoshioka S, Nakamura T, Sakamoto N, Kanai T, Watanabe M: Proteasomal degradation of Atoh1 by aberrant Wnt signaling maintains the undifferentiated state of colon cancer. **Biochem Biophys Res Commun.** 368:923-929, 2008.
4. Asahina Y, Izumi N, Hirayama I, Tanaka T, Sato M, Yasui Y, Komatsu N, Umeda N, Hosokawa T, Ueda K, Tsuchiya K, Nakanishi H, Itakura J, Kurosaki M, Enomoto N, Tasaka M, Sakamoto N, Miyake S: Potential relevance of cytoplas mic viral sensors and related regulators involving innate immunity in antiviral response. **Gastroenterology.** 134:1396-1405, 2008.
5. Chen Z, Chen L, Qiao SW, Nagaishi T, Blumberg RS: Carcinoembryonic antigen-related cell adhesion molecule 1 inhibits proximal TCR signaling by targeting ZAP-70. **J Immunol.** 180:6085-6093, 2008.
6. Fujii T, Kanai T, Tomita T, Nemoto Y, Totsuka T, Sakamoto N, Nakamura T, Tsuchiya K, Okamoto R, Watanabe M: FTY720 suppresses the development of colitis in lymphoid-null mice by modulating the trafficking of colitogenic CD4+ T cells in bone marrow. **Eur J Immunol.** 38:3290-3303, 2008.
7. Fujiki K, Nakamura M, Matsuda T, Isogai M, Ikeda M, Yamamoto Y, Kitamura M, Sazaki N, Yakushiji F, Suzuki S, Tomiyama J, Uchida T, Taniguchi K: IL-12 and IL-18 induction and subsequent NKT activation effects of the japanese botanical medicine juzentaihoto. **Int. J. Mol. Sci.** 9:1142-1155, 2008.
8. Hino K, Tsuchiya K, Fukao T, Kiga K, Okamoto R, Kanai T, Watanabe M : Inducible expression of microRNA-194 is regulated by HNF-1 during intestinal epithelial cell differentiation. **RNA.** 14:1433-1442, 2008.
9. Nagaishi T, Chen Z, Chen L, Ijima H, Nakajima A, Richard S, Blumberg RS: CEACAM1 and the regulation of mucosal inflammation. **Mucosal Immunology.** 1:S39-S42, 2008.
10. Nanmoku K, Imaizumi R, Tojimbara T, Nakajima I, Fuchinoue S, Sakamoto N, Watanabe M, Teraoka S. Effects of immunosuppressants on the progression of hepatitis C in hepatitis C virus-positive renal transplantation and the usefulness of interferon therapy. **Transplant Proc.** 40:2382-2385, 2008.
11. Nemoto Y, Kanai T, Tohda S, Totsuka T, Okamoto R, Tsuchiya K, Nakamura T, Sakamoto N, Fukuda T, Miura O, Yagita H, Watanabe M: Negative feedback regulation of colitogenic CD4+ T cells by increased granulopoiesis. **Inflamm Bowel Dis.** 14:1491-1503, 2008.
12. Ohashi K, Sakamoto N , Watanabe M :Development of a telediagnosis endocsopy system over secure internet. **Methods of Information in Medicine.** 47:157-166, 2008.
13. Sakamoto N, Tanabe Y, Yokota T, Saito K, Sekine-Osajima Y, Nakagawa M, Itsui Y, Tasaka M, Sakurai Y, Chen CH, Yano M, Ohkoshi S, Aoyagi Y, Maekawa S, Enomoto N, Kohara M, Watanabe M: Inhibition of hepatitis C virus infection and expression in vitro and in vivo by recombinant adenovirus expressing short hairpin RNA. **J Gastro Hepatol.** 23:1437-1447, 2008.
14. Sawada T, Nishiyama C, Kishi T, Sasazuki T, Komazawa-Sakon S, Xue X, Piao JH, Ogata H, Nakayama J , Taki T,

Hayashi Y, Watanabe M, Yagita H, Okumura K, Nakano H: Fusion of One twenty-two to BSAC(Basic,SAP, and coiled-coil domain) results in aberrant upregulation of transcriptional activity. **J Biol Chem.** 283:26820-26828, 2008.

15. Tomita T, Kanai T, Fujii T, Nemoto Y, Okamoto R, Tsuchiya K, Totsuka T, Sakamoto N, Watanabe M: Continuous generation of colitogenic CD4+ Tcells in persistent colitis. **Eur J Immunol.** 38:1264-1274, 2008.
16. Tomita T, Kanai T, Fujii T, Nemoto Y, Okamoto R, Tsuchiya K, Totsuka T, Sakamoto N, Akira S, Watanabe M: MyD88-dependent pathway in T Cells directly modulates the expansion of colitogenic CD4+ T Cells in chronic colitis1. **J Immunol.** 180:5291-5299, 2008.
17. Tomita T, Kanai T, Nemoto Y, Totsuka T,Okamoto R, Tsuchiya K , Sakamoto N ,Watanabe M : Systemic, but not intestinal, IL-7 is essential for the persistence of chronic colitis. **J Immunol.** 180:383-390,2008.
18. Tomita T, Kanai T, Nemoto Y, Fujii T, Okamoto R, Tsuchiya K, Nakamura T, Sakamoto N, Totsuka T, Watanabe M: Colitogenic CD4+ effector-memory Tcells actively recirculate in chronic colitic mice. **Inflam Bowel Dis.** 14:1630-1640, 2008.
19. Totsuka T, Kanai T, Nemoto Y, Tomita T, Tsuchiya K, Sakamoto N, Okamoto R, Watanabe M : Immunosenescent colitogenic CD4+ T cells convert to regulatory cells and suppress colitis. **Eur J Immunol.** 38:1275-1286, 2008.
20. Yoshioka A, Okamoto R, Oshima S, Akiyama J, Tsuchiya K, Nakamura T, Kanai T, Watanabe M: Flagellin stimulation suppresses IL-7 secretion of intestinal epithelial cells. **Cytokine.** 44:57-64, 2008.

Surgical Oncology

1. Staffs and Students

Professor:	Kenichi SUGIHARA	
Junior Associate Professor:	Masayuki ENOMOTO,	Kazuyuki KOJIMA
Assistant Professor:	Tetsuro HIGUCHI,	Satoru IIDA,
	Hiroyuki YAMADA,	Mikito INOKUCHI,
	Takanobu SATO,	Hirotoshi KOBAYASHI,
	Tsuyoshi NAKAGAWA	
Associate Professor:	Hiroyuki UETAKE (Translational oncology)	
Assistant Professor:	Toshiaki ISHIKAWA (Translational oncology)	
Tokunin Associate Professor:	Masamichi YASUNO	
Tokunin Assistant Professor:	Megumi ISHIGURO	
Hospital Staff:	Keiji KATO	
Graduate Student:	Satoru TAKENAKA,	Hiroshi MAKINO,
	Yoichi TORIYA,	Takashi KUWAYAMA,
	Tsuyoshi YOSHIDA,	Yasushi TAKATSUNO,
	Ken HINOUE,	Mikiko HAYASHI,
	Tetsuma CHIBA,	Shigeo HIRASAKI,
	Makoto NAGAHARA,	Kazuo MOTOYAMA,
	Haruhiko MOTOYAMA,	Megumu ENJOJI,
	Takatoshi MATSUYAMA,	Hirohumi SUGITA,
	Sayaka SHIMIZU,	Hiromi KAWAI,
	Hiroaki ONO,	Satoru OKAZAKI,
	Sho OTSUKI,	Yashar MURATE,
	Tsuyoshi ODA,	Akifumi KIKUCHI,
	Shunsuke TSUKAMOTO,	Yoshitake FUJIMORI,
	Ahamad KAMAS	

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

1. Nakagawa T, Iida S, Osanai T, Uetake H, Aruga T, Toriya Y, Takagi Y, Kawachi H, Sugihara K. Decreased expression of SOCS-3 mRNA in breast cancer with lymph node metastasis. Oncol Rep. 2008; 19 (1): 33-9
2. Kato K, Iida S, Uetake H, Takagi Y, Yamashita T, Inokuchi M, Yamada H, Kojima K, Sugihara K. Methylated TMS1 and DAPK genes predict prognosis and response to chemotherapy in gastric cancer. Int J Cancer 2008; 122: 603-8.
3. Yamada H, Kojima K, Inokuchi , M, Kawano T, Sugihara K, Nihei Z. Preliminary experience using a computer-mediated flexible circular stapler in laparoscopic esophagogastrostomy. Surg Laparosc Endosc Percutan Tech 2008; 8: 59-63
4. Motoyama K, Tanaka F, Kosaka Y, Mimori K, Uetake H, Inoue H, Sugihara K, Mori M. Clinical significance of BMP7 in human colorectal cancer. Ann Surg Oncol 2008; 15(5): 1530-7

5. Motoyama K, Inoue H, Nakamura Y, Uetake H, Sugihara K, Mori M. Clinical significance of high mobility group A2 in human gastric cancer and its relationship to let-7 microRNA family. Clin Cancer Res. 2008; 14 (8): 2334-40
6. Kobayashi H, Sugihara K, Uetake H, Higuchi T, Yasuno M, Enomoto M, Kuramochi H, Lenz HJ, Danenberg KD, Danenberg PV. Messenger RNA expression of vascular endothelial growth factor and its receptors in primary colorectal cancer and corresponding liver metastasis. Ann Surg Oncol 2008; 15(4): 1232-8
7. Hirokawa K, Utsuyama M, Ishikawa T, Kikuchi Y, Kitagawa M, Fujii Y, Nariuchi H, Uetake H, Sugihara K. Decline of T cell-related immune functions in cancer patients and attempt to restore them through infusion of activated autologous T cell. Mechanisms of Aging and Development 2008; 10524: 1-6
8. Enjoji M, Ohtsukasa S, Nagano H, Matsui M, Kawachi Y, Kurisu A, Maruyama H, Kusakabe M, Nagata K, Hamaguchi H, Taki K. Localized small-bowel infarction caused by Aspergillus during chemotherapy for acute leukemia: Report of a case. Surg Today 2008; 38: 449-52
9. Kojima K, Yamada H, Inokuchi M, Kawano T, Sugihara K. A comparison of Roux-en-Y and Billroth-I reconstruction after laparoscopic-assisted distal gastrectomy. Ann Surg 2008; 247: 962-7
10. Yamada H, Kojima K, Inokuchi M, Kawano T, Sugihara K. Effect of obesity on technical feasibility and postoperative outcomes of laparoscopy-assisted distal gastrectomy-comparison with open distal gastrectomy. J Gastrointest Surg 2008; 12 (6): 997-1004
11. Makino H, Uetake H, Danenberg K, Danenberg PV, Sugihara K. Efficacy of laser capture microdissection plus RT-PCR technique in analyzing gene expression levels in human gastric cancer and colon cancer. BMC Cancer 2008; 8 (210):
12. Wanajo A, Sasaki A, Nagasaki H, Shimada S, Otsubo T, Owaki S, Shimizu Y, Eishi Y, Kojima K, Nakajima Y, Kawano T, Yuasa Y, Akiyama Y. Methylation of the calcium channel-related gene, CACNA2D3, is frequent and poor prognostic factor in Gastric Cancer. Gastroenterology 2008; 135: 580-90
13. Kinugasa Y, Niikura H, Murakami G, Suzuki D, Saito S, Tatsumi H, Ishii M. Development of the human hypogastric nerve sheath with special reference to the topohistology between the nerve sheath and other prevertebral fascial structures. Clin Anat 2008; 21: 558-67
14. Kojima K, Yamada.H, Inokuchi M, Kawano T, Sugihara K. Functional evaluation after vagus nerve-sparing laparoscopically assisted distal gastrectomy. Surg Endosc 2008; 22: 2003-8
15. Kondo I, Iida S, Takagi Y, Sugihara K. MDM2 mRNA expression in the p53 pathway may predict the potential of invasion and liver metastasis in colorectal cancer. Dis Colon Rectum 2008; 51 (9): 1395-402
16. Tsukamoto S, Fujita S, Yamaguchi T, Yamamoto S, Akasu T, Moriya Y, Taniguchi H, Shioda T. Clinicopathological characteristics and prognosis of rectal well-differenciated nuroendocrine tumors. Int J Colorectal Dis 2008; 23: 1109-13
17. Hayashi M, Inokuchi M, Takagi Y, Yamada H, Kojima K, Kumagai J, Kawano T, Sugihara K. High expression of HER3 is associated with a decreased survival in gastric cancer. Clin Cancer Res 2008; 14 (23): 7843-9
18. Kobayashi H, Sugihara K, Uetake H, Higuchi T, Yasuno M, Enomoto M, Iida S, Azuma M, Mori R, Omori A, Lenz HJ, Danenberg K, Danenberg P. Messenger RNA expression of TS and ERCC1 in colorectal cancer and matched liver metastasis. Int J Oncol 2008; 33: 1257-62
19. Kojima K, Yamada H, Inokuchi M, Hayashi M, Kawano T, Sugihara K. Current status and evaluation of laparoscopic surgery for gastric cancer. Digestive Endoscopy 2008; 20: 1-5
20. Yuasa Y, Nagasaki H, Akiyama Y, Hashimoto Y, Takizawa T, Kojima K, Kawano T, Sugihara K, Imai K, Nakachi K. DNA methylation is inversely correlated with green tea intake and physical activity in gastric cancer patients. Int J Cancer 2008; in press

Physiology and Cell Biology

1. Staffs and Students (April 2008)

Professor	Noboru MIZUSHIMA	
Junior Associate Professor	Katsushige SATO	
Assistant Professor	Naotada ISHIHARA, Taichi HARA	
Tokunin Assistant Professor	Takahiro SASAKI	
Medical Fellow	Chieko KISHI	
Postdoctoral Fellow	Masae KINOSHITA	
Graduate Student	Nao HOSOKAWA,	Anoop Kumar VELIKKAKATHGOPI,
	Yutaka MIURA,	Takeshi KAIZUKA
Research Student	Sahani Mayurbhai HIMATBHAI	

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
5) Optical Imaging and analysis of the central nervous system

4. Publications

Original Article

1. Zhao, Z., Fux, B., Goodwin, M., Dunay, I.R., Strong, D., Miller, B.C., Cadwell, K., Delgado, M.A., Ponpuak, M., Green, K.G., Schmidt, R.E., Mizushima, N., Deretic, V., Sibley, L.D., Virgin, H.W. Autophagosome-independent essential function for the autophagy protein Atg5 in cellular immunity to intracellular pathogens. ***Cell Host Microbe.*** 4: 458-469 (2008)
2. Cadwell, K., Liu, J.Y., Brown, S.L., Miyoshi, H., Loh, J., Lennerz, J.K., Kishi, C., Kc, W., Carrero, J.A., Hunt, S., Stone, C.D., Brunt, E.M., Xavier, R.J., Sleckman, B.P., Li, E., Mizushima, N., Stappenbeck, T.S., Virgin, IV H.W. A key role for autophagy and the autophagy gene Atg16l1 in mouse and human intestinal Paneth cells. ***Nature.*** 456: 259-263 (2008)
3. Itakura, E., Kishi, C., Inoue, K., Mizushima, N. Beclin 1 Forms Two Distinct Phosphatidylinositol 3-Kinase Complexes with Mammalian Atg14 and UVRAG. ***Mol. Biol. Cell*** 19: 5360-5372 (2008)
4. Ohne, Y., Takahara, T., Hatakeyama, R., Matsuzaki, T., Noda, M., Mizushima, N., Maeda, T. Isolation of hyperactive mutants of mammalian target of rapamycin. ***J. Biol. Chem.*** 283: 31861-31870 (2008)
5. Gozuacik, D., Bialik, S., Raveh, T., Mitou, G., Shohat, G., Sabanay, H., Mizushima, N., Yoshimori, T., Kimchi, A. DAP-kinase is a mediator of endoplasmic reticulum stress-induced caspase activation and autophagic cell death. ***Cell Death Differ.*** 15: 1875-1886 (2008)
6. Raben, N., Hill, V., Shea, L., Takikita, S., Baum, R., Mizushima, N., Ralston, E., Plotz, P. Suppression of autophagy in skeletal muscle uncovers the accumulation of ubiquitinated proteins and their potential role in muscle damage in Pompe disease. ***Hum Mol Genet.*** 17: 3897-3908 (2008)
7. Sou, Y.S., Waguri, S., Iwata, J.I., Ueno, T., Fujimura, T., Hara, T., Sawada, N., Yamada, A., Mizushima, N., Uchiyama, Y., Kominami, E., Tanaka, K., Komatsu, M. The Atg8 Conjugation System Is Indispensable for Proper Development of Autophagic Isolation Membranes in Mice. ***Mol Biol Cell.*** 19: 4762-4775 (2008)
8. Nedjic, J., Aichinger, M., Emmerich, J., Mizushima, N., Klein, L. Macroautophagy in thymic epithelial cells shapes the T cell repertoire and is essential for self-tolerance. ***Nature*** 455: 396-400 (2008)
9. Hashimoto, D., Ohmuraya, M., Hirota, M., Yamamoto, A., Suyama, K., Ida, S., Okumura, Y., Takahashi, E., Kido, H., Araki, K., Baba, H., Mizushima, N., Yamamura, K., Involvement of autophagy in trypsinogen activation within the

pancreatic acinar cells. ***J. Cell Biol.*** 181: 1065-1072 (2008)
10. Tsukamoto, S., Kuma, A., Murakami, M., Kishi, C., Yamamoto, A., Mizushima, N. Autophagy is essential for preimplantation development of mouse embryos. ***Science*** 321: 117-120 (2008)
11. Hara, T., Takamura, A., Kishi, C., Iemura, S., Natsume, T., Guan, J.L., Mizushima, N. FIP200, a ULK-interacting protein, is required for autophagosome formation in mammalian cells. ***J. Cell Biol.*** 181: 497-510 (2008)
12. Kaushik, S., Massey, A. C., Mizushima, N., Cuervo, A. M. Constitutive activation of chaperone-mediated autophagy in cells with impaired macroautophagy. ***Mol. Biol. Cell*** 19: 2179-2192, (2008)
13. Tallóczy, Z., Martinez, J., Joset, D., Ray, Y., Gácser, A., Toussi, S., Mizushima, N., Nosanchuk, J., Goldstein, H., Loike, J., Sulzer, D., Santambrogio, L. Methamphetamine Inhibits Antigen Processing, Presentation, and Phagocytosis. ***PLoS Pathog.*** 4:e28 (2008)
14. Katayama, H., Yamamoto, A., Mizushima, N., Yoshimori, T., Miyawaki, A. GFP-like Proteins Stably Accumulate in Lysosomes. ***Cell Struct. Funct.*** 33: 1-12 (2008)
15. King, M.A., Hands, S., Hafiz, F., Mizushima, N., Tolkovsky, A.M., Wyttenbach, A. Rapamycin inhibits polyglutamine aggregation independently of autophagy by reducing protein synthesis. ***Mol. Pharmacol.*** 73: 1052-63 (2008)
16. Miller, B.C., Zhao, Z., Stephenson, L.M., Cadwell, K., Pua, H.H., Lee, H.K., Mizushima, N., Iwasaki, A., He, Y.W., Swat, W., Virgin, H.W. The autophagy gene ATG5 plays an essential role in B lymphocyte development. ***Autophagy*** 4: 309-14 (2008)
17. Kuma, A., Mizushima, N. Chromosomal mapping of the GFP-LC3 transgene in GFP-LC3 mice. ***Autophagy*** 4:61-62 (2008)
18. Tamai, S., Iida, H., Yokota, S., Sayano, T., Kiguchiya, S., Ishihara, N., Hayashi, J., Mihara, K., Oka. T. Characterization of a mitochondrial protein LETM1 that maintains the mitochondrial tubular shapes and interacts with an AAA-ATPase BCS1L. ***J. Cell Sci.*** 121:2588-2600 (2008)
19. Sato. K., Momose-Sato, Y. Optical analysis of neural circuit formation in the embryonic brain. ***Clin. Exp. Pharmacol. Physiol.*** 35: 706-713 (2008).
20. Glover, J. C., Sato, K., Momose-Sato, Y. Using voltage-sensitive dye recording to image the functional development of neuronal circuits in vertebrate embryos. ***Dev. Neurobiol.*** 68: 804-816 (2008).
21. Wang, S., Sato, K., Giurfa, M. and Zhang, S. Processing of sting pheromone and its components in the antennal lobe of the worker honeybee. ***J. Insect physiol.*** 54: 833-841 (2008).

Review Article

1. Tsukamoto, S., Kuma, A., Mizushima, N. The role of autophagy during the oocyte-to-embryo transition. ***Autophagy.*** 4: 1076-1078 (2008)
2. Mizushima, N., Kuma, A. Autophagosomes in GFP-LC3 transgenic mice. ***Methods Mol. Biol.*** 445: 119-124 (2008)
3. Mizushima, N., Levine, B., Cuervo, A.M., Klionsky, D.J. Autophagy fights disease through cellular self-digestion ***Nature*** 451:1069-1075 (2008)
4. Klionsky, D.J. et al. Guidelines for the use and interpretation of assays for monitoring autophagy in higher eukaryotes. ***Autophagy*** 4: 151-75 (2008)

Book

Cardiovascular Medicine

1. Staffs and Students (April, 2008)

Professor	Mitsuaki Isobe	
Associate Professor	Kenzo Hirao	
Junior Associate Professor	Tokuhiro Kawara,	Hitoshi Hachiya
Assistant Professor	Mihoko Kawabata,	Hiroshi Inagaki ,
	Go Haraguchi,	Masatoshi Komura,
	Shigeki Kimura,	Ryoko Azuma
Graduate Student	Kino Futamatsu,	Takanobu Yamamoto,
	Toshiyuki Furukawa,	Takaaki Haga,
	Takashi Ishihara,	Kazuya Isobe,
	Daisuke Tezuka,	Masanori Konishi,
	Hirokazu Ohigashi,	Yasutoshi Nagata,
	Tetsuya Katsuno,	Kengo Tanabe,
	Manabu Kurabayashi,	Ayumi Goda,
	Yoshihide Takahashi,	Takeshi Sasaki,
	Masakazu Ohno,	Koji Higuchi,
	Kamimura Munehiro,	Sasaoka Taro,
	Tatsuya Hayashi,	Masaaki Shoji,
	Shingo Maeda,	Seiji Matsubara

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

Original Article

1. Miyzaki S, Kuwahara T, Takahashi A, Kobori A, Takahashi Y, Nozato T, Hikita H, Sato A, Aonuma K, Hirao K, Isobe M: Effect of Left Atrial Ablation on the Quality of Life in Patients with Atrial Fibrillation. Circ J 72:582-587, 2008.
2. Sato A, Hiroe M, Tamura M, Ohigashi H, Nozato T, Hikita H, Takahashi A, Aonuma K, Isobe M: Quantitative mesures of coronary stenosis severity by 64-slice computed tomography angiography and relation to physiologic significance of perfusion in non-obese patients: comparison with stress myocardial perfusion imaging. J Nuc Med, in press
3. Sato A, Hiroe M, Nozato T, Hikita H, Ito Y, Ohigashi H, Takahashi A, Isobe M, Aonuma K: Early validation study of 64-slice multidetector computed tomography for the assessment of myocardial viability and the prediction of left ventricular remodeling after acute myocardial infarction. Eur Heart J, 29:490-498, 2008
4. Haraguchi G, Kosuge H, Maejima Y, Suzuki J, Imai T, Yoshida M, Isobe M: Pioglitazone reduces systemic inflammation and improves mortality in apolipoprotein E knockout mice with sepsis. Intensive Care Med, on line, 2008
5. Ogawa M, Suzuki J, Isobe M: Clarithromycin Attenuates Acute and Chronic Rejection via MMP Suppression in Murine Cardiac Transplantation. J Am Coll Cardiol, 51:1977-1985, 2008
6. Nishizaki M, Sakurada H, Mizusawa Y, Niki S, Hayashi T, Tanaka Y, Maeda S, Fujii H, Ashikaga T, Yamawake N, Isobe M, Hiraoka M: Infuence of meals on variations of ST segment elevation in patients with Brugada syndrome. J Cardiovasc Electrophysiol 19: 62-68, 2008
7. Saiki H, Suzuki J, Kosuge H, Haraguchi G, Ishihara T, Haga T, Maejima Y, Isobe M, Uede T: Blockade of the 4-1BB pathway attenuates graft arterial disease in cardiac allografts. Int Heart J 49: 105-118, 2008
8. Egashira K, Suzuki J, Ito H, Aoki M, Isobe M, Morishita R: Long-term follow up of initial clinical cases with NF-kB decoy oligodeoxynucleotide transfecton at the site of coronary stenting. J Gene Med 10: 805-809, 2008.
9. Suzuki J, Ogawa M, Muto S, Yamaguchi Y, Itai A, Isobe M: The effects of pharmacological PAI-1 inhibition on thrombus formation and neointima formation after arterial injury. Expert Opin Ther Targets 12: 1-12,783-794, 2008
10. Tamamori-Adachi M, Takagi H, Hashimoto K, Goto K, Hidaka T, Koshimizu U, Yamada K, Goto I, Maejima Y, Isobe M, Nakayama KI, Inomata N, Kitajima S: Cardiomyocyte proliferation and protection against post-myocardial infarction heart failure by cyclin D1 and Skp2 ubiquitin ligase. Cardiovasc Res 80: 181-190, 2008
11. Karube A, Suzuki J, Haraguchi G, Maejima Y, Saiki H, Kosuge H, Isobe M, Uede T: Suppression of neointimal

hyperplasia after vascular injury by blocking 4-1BB/4-1BB ligand pathway. J Med Dent Sci 55: 207-213, 2008
12. Suzuki J, Ogawa M, Muto S, Itai A, Isobe M. A specific inhibitor of plasminogen activator inhibitor-1 suppresses rat autoimmune myocarditis. Expert Opin Ther Targets. 12: 1313-20, 2008
13. Goda A, Isobe M: Effects of a work rate increase during cardiopulmonary exercise testing in respiratory gas indexes in patients with chronic heart failure. Jpn J Clin Physiol 38: 167-173, 2008
14. Hishikari K, Suzuki J, Ogawa M, Isobe K, Takahashi T, Onishi M, Takayama K, Isobe M. Pharmacological activation of the prostaglandin E_2 receptor EP4 improves cardiac function after myocardial ischemia/reperfusion injury. Cardiovasc Res. published on line, Sept 2008
15. Ashikaga T, Nishizaki M, Fujii H, Ihara K, Niki S, Murai T, Maeda S, Yamawake N, Kishi Y, Isobe M: Coronary endothelial dysfunction and impared icrocirculation response to atrial natriuretic peptide in hyperinsulinemia. J Cardiovasc Pharmacol Ther 13: 58-63, 2008
16. Konishi M, Maejima Y, Inagaki H, Haraguchi G, Hachiya H, Suzuki J, Hirao K, Isobe M: Clinical characteristics of acute decompensated heart failure with rapid onset of simptoms. Journal of Cardiac Failure 15 : 300-304, 2009
17. Suzuki J, Tezuka D, Morishita R, Isobe M. An initial case of suppressed restenosis with NF-kB decoy transfection after PCI. J Gene Med. published on line, Nov 10. 2008
18. Wakatsuki S, Suzuki J, Ogawa M, Masumura M, Muto S, Shimizu T, Takayama K, Itai A, Isobe M. A novel IKK inhibitor suppresses heart failure and chronic remodeling after myocardial ischemia via MMP alteration. Expert Opin Ther Targets. 12: 1469-1476, 2008.
19. Sato M, Suzuki M, Suzuki J, Endo Y, Chiba Y, Matsuura M, Nakagawa K, Mataki S, Kurosaki N, Hasegawa M. Overweight patients with severe sleep apnea experience deeper oxygen desaturation at apneic events. J Med Dent Sci. 55: 43-47, 2008.
20. Takahashi Y, O'neill MD, Hocini M, Remi D, Matsuo S, Knecht S, Mahapatra S, Lim KT, Jais P, Jonsson A, Sacher F, Sanders P, Rostock T, Bordachar P, Clementy J, Klein GJ, Haissaguerre M. Characterization of electrograms associated with termination of chronic atrial fibrillation by catheter ablation. J Am Coll Cardiol. 2008;51:1003-10.
21. Takahashi Y, Takahashi A, Isobe M. Ventricular fibrillation initiated by premature beats from the ventricular myocardium not associated with the Purkinje system after myocardial infarction. Heart Rhythm. 2008;5:1458-1460.
22. Chang KC, Barth AS, Sasano T, Kashiwakura Y, Zhang T, Kizana E, Brian Foster D, Marbán E: CAPON modulates cardiac repolarization via neuronal nitric oxide synthase signaling in the heart et al. Proc Natl Acad Sci USA 105: 4477-82, 2008.
23. Sasano T, Abraham MR, Chang KC, Ashikaga H, Mills KJ, Holt D, Hilton J, Nekolla S, Dong J, Lardo AC, Halperin HR, Dannals R, Marbán E: Abnormal Sympathetic Innervation of Viable Myocardium and the Substrate of Ventricular Tachycardia after Myocardial Infarction. J Am Coll Cardiol 51: 2266-75, 2008.
24. Kawabata M, Hirao K, Higuchi K, Sasaki T, Furukawa T, Okada H, Hachiya H, Isobe M. Clinical and electrophysiological characteristics of patients having atrial flutter with 1:1 atrioventricular conduction. *Europace* 2008;10:284-288
25. Kawabata M, Hirao K, Sasaki T, Sakurai K, Inagaki H, Hachiya H, Isobe M. Torsades de pointes related to transient marked QT prolongation following successful emergent percutaneous intervention for acute coronary syndrome. *J Electrocardiol* 2008;41:117-122
26. Okishige K, Uehara H, Miyagi N, Nakamura K, Azegami K, Wakimoto H, Ohba K, Hirao K, Shimabukuro M, Isobe M. Clinical study of the acute effects of intravenous nifekalant on the defibrillation threshold in patients with persistent and paroxysmal atrial fibrillation. *Circ J* 2008;72:76-80

Anesthesiology

1. Staffs and Students (April, 2008)

Professor	Koshi MAKITA	
Associate Professor	Koichi NAKAZAWA	
Junior Associate Professor	Tokujiro UCHIDA,	Seiji ISHIKAWA
Assistant Professor	Akio MASUDA,	Megumi OHATA,
	Hiroyuki KOBINATA,	Sakurako ISHIBASHI
Hospital Staff	Satomi KANEKO,	Eri IKEDA,
	Fumi MAKINO,	Yoriko DATE,
	Yuzuru INATOMI,	Akiko FUJISAWA,
	Yosie Otani,	Takashi HAKUSUI
Graduate Student	Yoshiyasu MATSUZAWA,	Naoko YAMAKAWA,
	Fukami NAKAJIMA	

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) Pathophysiology of shock status
2) Acute lung injury
3) Partial liquid ventilation and lung protective ventilation
4) Pulmonary circulation
5) Physiology related with stellate ganglion block
6) Pathophysiology of brain ischemia
7) Perioperative management

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) Yamamoto M, Ishikawa S, Makita K. Medication errors in anesthesia : an 8-year retrospective analysis at an urban university hospital. J Anesth 22: 248-252, 2008.
2) Mitaka C, Kudo T, Jibiki M, Sugano N, Inoue Y, Makita K, Imai T. Effects of human atrial natriuretic peptide on renal function in patients undergoing abdominal aortic aneurysm repair. Crit Care Med 36: 745-751, 2008
3) Toyama S, Hatori F, Shimizu A, Takagi T. A neutrophil erastase inhibitor, sivelestat, improved respiratory and cardiac function in pediatric cardiovascular surgery with cardiopulmoanry bypass. J Anesth 22: 341-346, 2008
4) Cheng HT, Suzuki M, Hegarty DM, Xu Q, Weyerbacher AR, South SM, Ohata M, Inturrisi CE Inflammatory pain-induced signaling events following a conditional deletion of the N-methyl-d-aspartate receptor in spinal cord dorsal horn. Neuroscience 155 : 948-958, 2008
5) Briot R, Frank JA, Uchida T, Lee JW, Calfee CS, Matthay MA. Elevated levels of the receptor for advanced glycation end products, a marker of alveolar epithelial type i cell injury, predict impaired alveolar fluid clearance in isolated perfused human lungs. Chest: Epub 2008 Nov 18.
6) Ohmi S, Takei T, Habuka K, Watanabe Y: Acute pulmoanry capillary leak syndrome during elective surgery under general anesthesia. J Anesth 22: 77-80, 2008
7) Toyama S, Hatori F, Shimuzu A, Takagi T: Anesthetic management of a pediatric patient with severe Williams-Cambell syndrome undergoing surgery for giant ovarian tumor. J Anesth 22: 182-185, 2008

Thoracic and Cardiovascular Surgery

1. Staffs and Students (April. 2008)

Professor	Hirokuni ARAI	
Associate Professor		
Junior Associate Professor		
Assistant Professor	Katsuo KOJIMA,	Tomoya YOSHIZAKI
	Fusahiko ITO,	Naoyuki FUJIWARA,
	Naoto MIYAGI	
Hospital Staff	3	
Graduate Student	1	
Research Student	0	

2. Purpose of education

Thoracic and Cardiovascular Surgery is a branch of medical science which deals the surgical treatment of the disease of lung, mediastinum, heart and aorta. Main objective of Thoracic and 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 and heart and/or lung transplantation
5) Developing technique of lung resection with preserving lung function
6) Diagnose and treatment with video-assisted surgery

4. Clinical Services

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

5. Publications in English

1. Hirokuni Arai, Fusahiko Itoh, Takeshi Someya, Keiji Oi, Kiyoshi Tamura, Hiroyuki Tanaka. New Surgical Procedure for Ischemic/Functional Mitral Regurgitation: Mitral Complex Remodeling. Ann Thorac Surg. 2008;85:1820-2
2. Miyagi N, Rao VP, Ricci D, Du Z, Byrne GW, Bailey KR, Nakai H, Russell SJ, McGregor CGA: Efficient and durable gene transfer to the transplanted heart using adeno-associated virus 9 vector. *J Heart Lung Transplant,* 27(5):554-60, 2008.
3. Ricci D, Mennander AA, Pham LD, Rao VP, Miyagi N, Byrne GW, Russell SJ, McGregor CGA: Non-invasive radioiodine imaging for accurate quantitation of NIS reporter gene expression in transplanted hearts. *Eur J Cardiothorac Surg*, 33(1):32-9, 2008.

International Presentation

1. Someya T, Hijikata W, Ushiyama T, Kobayasi M, Waguri S, Shinshi T, Arai H, Takatani S : Development of a disposable Mag-Lev centrifugal blood pump (MedTech Dispo) intended for 1 month support in bridge-to-bridge applications 16th Congress of the International Society for Rotary Blood Pumps Houston, Texas, USA, 2008, Oct. 2-4
2. Arai H, On-pump beating mitral valve plasty without aortic cross clamp The International Society for Minimally Invasive Cardiothoracic Surgery Winter Workshop2008 SymposiumⅣOkinawa, Japan, 2008, November 15
3. Arai H, The International Society for Minimally Invasive Cardiothoracic Surgery Winter Workshop2008 Invited Lecture Okinawa, Japan,2008, November 15
4. Naoto Miyagi, Kiyotoshi Oishi, Eiki Nagaoka, Tomohiro Ushiyama, Takeshi Someya, Fusahiko Ito, Hirokuni Arai. The multi-suction heart positioner TENTACLES equipped with epicardiac sensors for prediction of ischemic change and hemodynamic instability during OPCAB. The international society for minimally invasive cardiothoracic

surgery winter workshop Okinawa, Japan, 2008 Nov14-16th

Cardiovascular Physiology and Pathophysiology

1. Staffs and Students (January, 2008)

Professor (concurrent, Professor of Genetic Regulation)	Akinori KIMURA
Associate Professor	Seiko KAWANO
Associate Professor	Yuji HIRANO

2. Purpose of Education (see also Genetic Regulation)

Electrophysiological, pathophysiological, and cell biological studies on the function of heart and cardiomyocytes.

3. Research Subjects (see also Genetic Regulation)

1) Mechanisms for differentiation of embryonic stem (ES) cells to cardiomyocytes and their physiological functions
2) Intracellular regulation of Ca signaling in stem cells during differentiating processes
3) Use of computer simulation model to decipher the role of ion channels in relation to arrhythmias

4. Publications (see also Genetic Regulation)

None

Bio-informational Pharmacology

1. Staffs and Students (April, 2008)

Professor	Tetsushi FURUKAWA	
Associate Professor	Junko KUROKAWA	
Assistant Professor	Asami KAIHARA	
Tokunin Assistant Professor	Tetsuro SASANO,	Yusuke Ebana
Secretary	Kuniko YAMAGUCHI	
Graduate Student	Tokuhisa UEJIMA,	Mahoko ASAYAMA,
	Sakiko OISHI,	Yuya KARUBE,
	Takashi MAEDA,	Takayuki NAKAJIMA
Research Student	Kenji YAMASHIRO,	Emika KUROBANE
Technician	Eri OZAKI,	Mika KANARI

2. Purpose of Education

This laboratory focuses on understanding fundamental physiological roles of ion channels and transporters in cardiovascular system. We employ multidisciplinary approach (patch-clamp, cell biology, optical recording, proteomics, and computational analysis) in order to seek novel regulatory mechanisms and modulatory molecules/compounds of ion channels and transporters in cardiac myocytes, vascular smooth muscle and endothelial cells, and circulating cells in vessels (monocytes and macrophages). Our ultimate goal is to discover novel diagnostic and therapeutic strategy for intractable cardiovascular diseases, such as sudden death, life-threatening arrhythmias, and atherosclerosis, by modulating ion channels and transporters.

3. Research Subjects

1) Basic research on gender-specific medicine (GSM)

i) Characterization of sex hormone receptors involved in non-genomic effects
ii) Oxidative modification of the cardiac IKs channel
iii) Analysis of gender difference of arrhythmias with computer simulation model

2) Research on atrial fibrillation

i) Analysis of gene polyrmophism associated with atrial fibrillation
ii) Inflammatory and immunological mechanisms involved in early stage of atrial fibrillation
iii) Mechanism for development of myocardial sleeve in the pulmonary vein

3) Basic research on gender-specific medicine (GSM)

i) Designing molecular imaging probe for ion channels
ii) Roles of ion channels in macrophage-involved phagocytosis and inflammation
iii) Auto-immune mechanisms involved in arrhythmia development

4. Clinical Services

N/A

5. Publications

Original Article

1. Kurokawa J, Tamagawa M, Harada N, Honda S, Bai CX, Nakaya H, Furukawa T. Acute effects of estrogen on the guinea pig and human IKr and drug-induced prolongation of cardiac repolarization. **J. Physiol.** 586:2961-2973, 2008.
2. Kaihara A, Umezawa Y, Furukawa T. Bioluminescent indicators for Ca2+ based split *Renilla* Luciferase complementation in living cells. **Analyt. Sci.** 24:1405-1408, 2008.

Molecular Medicine and Metabolism

1. Staffs and Students (April, 2008)

Professor	Yoshihiro OGAWA	
Associate Professor	Yasutomi KAMEI	
Assitant Professor	Takayoshi SUGANAMI	
Tokunin Assistant Professor	Ayaka ITO	
Secretary	Ai TOGO	
Graduate Students	Michiko ITOH,	Rumi HACHIYA,
	Miyako TANAKA,	Takanobu YAMAMOTO,
	Yoshihiro YAMZAKI,	Kenji YAMASHIRO,
	Satoshi SUGITA,	Masayuki ICHIOKA,
	Hirohide NANBU,	Fumiko AKAIKE,
Research Students	Tatsuya EHARA,	Naoto TSUDA

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) *In vivo* and *in vitro* inhibition of monocyte adhesion to endothelial cells and endothelial adhesion molecules by eicosapentaenoic acid
2) Role of CCR2 in bone marrow cells in the recruitment of macrophages into obese adipose tissue
3) Role of RXR γ in the skeletal muscle glucose and lipid metabolism

4. Publications

1. S. Yura, H. Itoh, N. Sagawa, H. Yamamoto, H. Masuzaki, K. Nakao, M. Kawamura, H. Mogami, Y. Ogawa, S. Fujii. Neonatal exposure to leptin augments diet-induced obesity in leptin-deficient *ob/ob* mice. **Obesity** 16: 1289-1295, 2008.
2. T. Toyoda, Y. Kamei, H. Kato, S. Sugita, M. Takeya, T. Suganami, Y. Ogawa. Anti-inflammatory effect of peroxisome proliferator activated receptor α ligands in the interaction between adipocytes and macrophages in obese adipose tissue. **Obesity** 16:1199-1207, 2008.
3. Y. Kamei, S. Miura, T. Suganami, F. Akaike, S. Kanai, S. Sugita, A. Katsumata, H. Aburatani, T. G. Unterman, O. Ezaki, Y. Ogawa. Regulation of SREBP1c gene expression in skeletal muscle: role of retinoid X receptor/liver X receptor and forkhead-O1 transcription factor. **Endocrinology** 149: 2293-2305, 2008.
4. N. Satoh, A. Shimatsu, Y. Kato, R. Araki, K. Koyama, T. Okajima, M. Tanabe, M. Ooishi, K. Kotani, Y. Ogawa for the Japan Obesity and Metabolic Syndrome Study (JOMS) Group. Evaluation of the cardio-ankle vascular index, a new indicator of arterial stiffness independent of blood pressure, in obesity and metabolic syndrome. **Hypertens. Res.** 31: 1921-1930, 2008.
5. H. Yamada, M. Yoshida, Y. Nakano, T. Suganami, N. Satoh, T. Mita, K. Azuma, M. Itoh, Y. Yamamoto, Y. Kamei, M. Horie, H. Watada, Y. Ogawa. *In vivo* and *in vitro* inhibition of monocyte adhesion to endothelial cells and endothelial adhesion molecules by eicosapentaenoic acid. **Arterioscler. Thromb. Vasc. Biol.** 28: 2173-2179, 2008.
6. A. Ito, T. Suganami, A. Yamauchi, M. Degawa-Yamauchi, M. Tanaka, R. Kouyama, Y. Kobayashi, N. Nitta, K. Yasuda, Y. Hirata, W. A. Kuziel, M. Takeya, S. Kanegasaki, Y. Kamei, Y. Ogawa. Role of C-C chemokine receptor 2 in bone marrow cells in the recruitment of macrophages into obese adipose tissue. **J. Biol. Chem.** 283: 35715-35723, 2008.

Developmental and Regenerative Biolog

1. Staffs and Students (April, 2008)

Professor	Hiroshi NISHINA	
Assistant Professor	Yoichi ASAOKA,	Takashi NAKAMURA,
	Shinya TAKAHASHI,	Takahiro NEGISHI
Secretary	Keiko OTAKA	
Graduate Student	Tadashi YOKOI,	Hiroshi OHASHI

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 he development of new rational therapy for the diseases.

3. Research Subjects

1) Activation mechanism and physiological roles of stress-activated MAP kinase signaling pathway
2) Molecular mechanism of mouse liver regeneration
3) Mutations affecting liver development and function in Medaka, Oryzias Latipes

4. Publications

Original Article

1. Wada T, Stepniak E, Hui L, Leibbrandt A, Katada T, Nishina H, Wagner EF, Penninger JM. (2008) Antagonistic control of cell fates by JNK and p38-MAPK signaling. ***Cell Death Differ.*** 15, 89-93.
2. Yoshio Marumoto, Shuji Terai, Yohei Urata, Toshihiko Matsumoto, Yuko Mizunaga, Naoki Yamamoto, Haiyan Jin, Koichi Fujisawa, Tomoaki Murata, Koh Shinoda, Hiroshi Nishina, Isao Sakaida (2008) Continuous high expression of XBP1 and GRP78 is important for the survival of bone marrow cells in CCl4-treated cirrhotic liver. ***Biochem. Biophys. Res. Commun.*** 367, 546-552.
3. Shizue Ohsawa, Tomomi Watanabe, Toshiaki Katada, Hiroshi Nishina, Masayuki Miura (2008) Novel antibody to human BASP1 labels apoptotic cells post-caspase activation. ***Biochem. Biophys. Res. Commun.*** 371, 639-643.
4. Shinya Takahashi, Yasuhiro Araki, Yuriko Ohya, Takeshi Sakuno, Shin-ichi Hoshino, Kenji Kontani, Hiroshi Nishina, and Toshiaki Katada (2008) Upf1 potentially serves as a RING-related E3 ubiquitin ligase via its association with Upf3 in yeast. ***RNA*** 14, 1950-1958.
5. Tomohiko Maehama, Masahiko Tanaka, Hiroshi Nishina, Makoto Murakami, Yasunori Kanaho, and Kentaro Hanada (2008) RalA functions as an indispensable signal mediator for nutrient sensing system. ***J. Biol. Chem.*** 283, 35053-35059.

Department of Nephrology

1. Staffs and Students (April, 2008)

Professor	Sei SASAKI	
Associate Professor	Shinichi UCHIDA	Tatemitsu RAI (Dept. of Blood Purification)
Junior Associate Professor	Tomokazu OKADO	
Assistant Professor	Eisei SOHARA	Akihito OHTA (Dept. of Blood Purification)
Tokunin Assistant Professor	Yumi NODA	
Hospital Staff	Mai WAKABAYASHI	Wataru AKITA
	Mari IWAMOTO	Rie OKUTSU (Dept. of Blood Purification)
	Fumie SATO (Dept. of Blood Purification)	
Secretary	Asa MURANO,	Miki SAKIYAMA,
	Yukiko ITO	
Graduate Student	Eriko OHTA	Rie OKUTSU
	Naohumi YUI	Hitoshi KUWANA
	Shotaro NAITO	Kayoko ETO
	Naohiro NOMURA	Katsuyuki OI
	Gulibaha TALATI	
Research Student	Yuhua LI	

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).*** 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

Original Article

1. Akiba T, Akizawa T, Tsukamoto Y, Uchida E, Iwasaki M, Koshikawa S. Dose determination of cinacalcet hydrochloride in Japanese hemodialysis patients with secondary hyperparathyroidism. *Ther. Apher. Dial.* 12 : 117-25, 2008.
2. Chiga M, Rai T, Yang SS, Ohta A, Takizawa T, Sasaki S, Uchida S. Dietary salt regulates the phosphorylation of OSR1/SPAK kinases and the sodium chloride cotransporter through aldosterone. *Kidney Int.* 74 : 1403-9, 2008.
3. Fujii H, Mori Y, Kayamori K, Igari T, Ito E, Akashi T, Noguchi Y, Kitamura K, Okado T, Terada Y, Kanda E, Rai T, Uchida S, Sasaki S. A familial case of mitochondrial disease resembling Alport syndrome. *Clin. Exp. Nephrol.* 12 : 159-63, 2008.

4. Fujimoto M, Imai K, Hirata K, Kashiwagi R, Morinishi Y, Kitazawa K, Sasaki S, Arinami T, Nonoyama S, Noguchi E. Immunological profile in a family with nephrogenic diabetes insipidus with a novel 11 kb deletion in AVPR2 and ARHGAP4 genes. *BMC Med. Genet.* 9 : 42, 2008.
5. Fukagawa M, Yumita S, Akizawa T, Uchida E, Tsukamoto Y, Iwasaki M, Koshikawa S. Cinacalcet (KRN1493) effectively decreases the serum intact PTH level with favorable control of the serum phosphorus and calcium levels in Japanese dialysis patients. *Nephrol. Dial. Transplant.* 23 : 328-35, 2008.
6. Ito K, Ozasa H, Noda Y, Koike K, Arii S, Horikawa S. Effect of non-essential amino acid glycine administration on the liver regeneration of partially hepatectomized rats with hepatic ischemia/reperfusion injury. *Clin. Nutr.* 27 : 773-780, 2008.
7. Ito K, Ozasa H, Noda Y, Arii S, Horikawa S. Effects of free radical scavenger on acute liver injury induced by D-galactosamine and lipopolysaccharide in rats. *Hepatol. Res.* 38 : 194-201, 2008.
8. Kobayashi T, Terada Y, Kuwana H, Tanaka H, Okado T, Kuwahara M, Tohda S, Sakano S, Sasaki S. Expression and function of the Delta-1/Notch-2/Hes-1 pathway during experimental acute kidney injury. *Kidney Int.* 73 : 1240-50, 2008.
9. Kuwana H, Terada Y, Kobayashi T, Okado T, Penninger JM, Irie-Sasaki J, Sasaki T, Sasaki S. The phosphoinositide-3 kinase gamma-Akt pathway mediates renal tubular injury in cisplatin nephrotoxicity. *Kidney Int.* 73 : 430-445, 2008.
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11. Maeda Y, Inaba N, Aoyagi M, Tanase T, and Shiigai T. Pseudoaldosteronism caused by combined administration of cilostazol and glycyrrhizin. *Intern. Med.* 47 : 1345- 1348, 2008.
12. Noda Y, Horikawa S, Kanda E, Yamashita M, Meng H, Eto E, Li Y, Kuwahara M, Hirai K, Pack C, Kinjo M, Okabe S, Sasaki S. Reciprocal interaction with G-actin and tropomyosin is essential for aquaporin-2 trafficking. *J. Cell Biol.* 182 : 587-601, 2008.
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19. Takeda A, Toda T, Iwamoto H, Watanabe K, Matsui N. Long-term evaluation and changing associations of left ventricular hypertrophy after starting hemodialysis. *Nephron Clin. Pract.* 110 : 126-132, 2008.
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22. Tsukamoto Y. End-stage renal disease (ESRD) and its treatment in Japan. *Nephrol. Dial. Transplant.* 23 : 2447-50, 2008.
23. Yajima A, Akizawa T, Tsukamoto Y, Kurihara S, Ito A. Impact of cinacalcet hydrochloride on bone histology in patients with secondary hyperparathyroidism. *Ther. Apher. Dial.* Oct ; 12 Suppl 1 : S38-43, 2008.
24. Wada K and Shinoda T. A case report of an anorexia nervosa patient with end-stage renal disease due to pseudo Bartter's syndrome and Chinese herb nephropathy requiring maintenance hemodialysis. *Ther. Apher. Dial.* 12 : 417-420, 2008.

Review Article

1. Noda Y, Sasaki S. The role of actin remodeling in the trafficking of intracellular vesicles, transporters and channels: focusing on aquaporin-2. *Pflugers. Arch.* 456 : 737-745, 2008.
2. Noda Y, Sasaki S. Actin-binding channels. *Prog. Brain. Res.* 170 : 551-557, 2008.
3. Nozaki K, Ishii D, Ishibashi K. Intracellular aquaporins: clues for intracellular water transport? *Pflugers. Arch.* 456 : 701-707, 2008.
4. Sasaki S. Invited Review: Introduction for special issue for aquaporin. Expanding the world of aquaporins: new members and new functions. *Pflugers. Arch.* 456 : 647-9, 2008.
5. Sasaki S. Is oxytocin a player in antidiuresis? *J. Am. Soc. Nephrol.* 19 : 225-32, 2008.

Comprehensive Reproductive Medicine

1. Staffs and Students (2008)

Professor:	Toshiro Kubota	
Junior Associate Professor :	Yasufumi Shimizu,	Satoshi Obayashi,
	Naoyuki Miyasaka	
Assistant professor :	Naoyuki Yoshiki,	Tatsuya Harada,
	Yoshimi Taniguchi,	Masakazu Terauchi,
	Tomoko Ishibashi,	Akira Wakabayashi,
	Tomonori Ishikawa	
Hospital Staff :	Masaki Sekiguchi,	Daigo Sato,
	Sato Takamine	
Resident :	Izumi Honda,	Miwa Shimizu
IVF staff:	Mina Iwata	
Registered dietitian:	Mihoko Akiyoshi,	Kiyoko Kato
Secretary:	Urara Ozawa,	Hiroko Nogi,
	Sumiko Ichinose,	Noriko Mizutani
Graduate Student :	Makiko Tajima,	Noriko Sudo (Oshima),
	Mikayo Toba,	Yuki Iwahara,

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. Yoshiki N, Suginami H, Kubota T : Unusual uterus didelphys presenting in the retroperitoneum. Fertility and Sterility. 90(2);427-428,2008.
2. Marinova GV, Loyaga-Rendon RY, Obayashi S, Ishibashi T, Kubota T, Imamura M, Azuma H : Possible involvement of altered arginase activity, arginase type I and typeII expressions, and nitric oxide production in occurrence of intimal hyperplasia in premenopausal human uterine arteries. J Pharmacol Sci.Mar, 106(3);385-93 2008.
3. Yuhao Gao, Xiaojun Wu, Masakazu Terauchi, Jau-Yi Li, Francesco Grassi, Sarah Galley, Xiaoying Yang, M. Neale Weitzmann, Roberto Pacifici : T cells potentiate PTH-induced cortical bone loss through CD40L signaling. Cell Metabolism, 8(2);132-145,2008.
4. Aira Wanajo, Akane Sasaki, Hiromi Nagasaki, Shu Shimada, Takeshi Otsubo, Syuichi Owaki, Yasufumi Shimizu, Yoshinobu Eishi, Kazuyuki Kojima, Yasuaki Nakajima, Tatsuyuki Kawano, Yasuhito Yuasa, and Yoshimitsu Akiyama : Methylation of the Calcium Channel-Related Gene, CACNA2D3, Is Frequent and a Poor Prognostic Factor in Gastric Cancer, Gastroenterology, 135;580-590,2008.
5. Yasufumi Shimizu, Reiko Minaguchi, Tomonori Ishikawa, Tatsuya Harada, Naoyuki Yoshiki and Toshiro Kubota : Increase in the concentration of cytosolic-free calcium induced by human follicular fluid was decreased in single human spermatozoon with abnormal morphology, Reproductive Medicine and Biology, 7;143-149,2008.

Urology

1. Staffs and Students (December, 2008)

Professor and Chairman	Kazunori Kihara	
Associate Professor	Satoru Kawakami	
Lecturer	Yasuhisa Fujii,	Hitoshi Masuda (July～),
	Tsuyoshi Kobayashi (～June)	
Assistant Professor	Fumitaka Koga,	Yasuyuki Sakai,
	Noboru Numao,	Kazutaka Saito (～June),
	Nobutaka Ichiyanagi (July～)	
Hospital Staff	Akihiro Yano (June～),	Aki Iwai (～May),
	Yasumasa Iimura,	Minato Yokoyama,
	Mizuaki Sakura,	Manabu Tatokoro,
	Soichiro Yoshida,	Yoshinobu Komai,
	Toshiki Kijima (Oct～)	
Graduate Student	Hideto Kano,	Masaki Tanaka,
	Yukihiro Otsuka,	Yasumasa Iimura,
	Minato Yokoyama,	Mizuaki Sakura,
	Manabu Tatokoro,	Soichiro Yoshida,
	Yoshinobu Komai,	Toshiki Kijima,
	Naoko Kawamura,	Naotaka Fukui,
	Sachi Kitayama,	Yasukazu Nakanishi,
	Yuichi Kubo,	Hideki Takeshita

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) Immunotherapy combined with multiple molecular targeted agents against advanced kidney cancer
8) Application of novel MRI imaging protocol to urology
9) Application of serum C-reactive protein as a prognostic marker 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

Original Article

1. Akbari H, Kosugi Y, Kihara K. A novel method for artery detection in laparoscopic surgery. Surg Endosc. 22(7): 1672-1677, 2008.
2. Fujii Y, Yonese J, Kawakami S, Yamamoto S, Okubo Y, Fukui I. Equivalent and sufficient effects of leuprolide acetate and goserelin acetate to suppress serum testosterone levels in patients with prostate cancer. BJU Int. 101: 1096-1100, 2008.
3. Fujii Y, Komai Y, Saito K, Iimura Y, Yonese J, Kawakami S, Ishikawa Y, Kumagai J, Kihara K, Fukui I. Incidence of benign pathologic lesions at partial nephrectomy for presumed RCC renal masses: Japanese dual-center experience with 176 consecutive patients. Urology 72: 598-602, 2008.
4. Fujii Y, Saito K, Iimura Y, Sakai Y, Koga F, Kawakami S, Kumagai J, Kihara K. External Validation of the Mayo Clinic Cancer Specific Survival Score in a Japanese Series of Clear Cell Renal Cell Carcinoma. J Urol. 180: 1290-1296, 2008.
5. Iimura Y, Kihara K, Saito K, Masuda H, Kobayashi T, Kawakami S.Oncological outcome of minimum incision endoscopic radical nephrectomy for pathologically organ confined renal cell carcinoma. Int J Urol. 15: 44-47, 2008.
6. Inoue M, Koga F, Kawakami S, Numao N, Sakura M, Kobayashi T, Kihara K. False tumor marker surge evoked by peripheral blood stem cell transplantation. Oncologist 13: 526-529, 2008.
7. Inoue M, Ishioka J, Fukuda H, Kageyama Y, Saito Y, Higashi Y. Clinical outcome of chemoradiotherapy for T1G3 bladder cancer. Int J Urol. 15(8): 747-750, 2008.
8. Ishioka J, Fujii Y, Kageyama Y, Fukuda H, Higashi Y, Kihara K. Cardiovascular Events in Survivors of High-dose Chemotherapy for Germ Cell Tumors. Int J Urol. 15: 642-645, 2008.
9. Ishioka J, Kageyama Y, Inoue M, Higashi Y, Kihara K. Prognostic model for predicting survival after palliative urinary diversion in ureteral obstruction: Analysis of 140 cases. J Urol. 180(2): 618-621, 2008.
10. Kamiyama Y, Muto S, Masuda H, Ide H, Ishizuka N, Soito K, Horie S. Inhibitory effects of nicorandil, a K ATP channel opener and a nitric oxide donor, on overactive bladder in animal models. BJU Int. 101: 360-365, 2008.
11. Kawakami S, Koga F, Fujii Y, Saito K, Yamamoto S, Tatokoro M, Yonese J, Kageyama Y, Fukui I, Kihara K. History of malignancy is a predictor of prostate cancer detection: incorporation into a pre-biopsy nomogram. Int J Urol. 15: 1055-1060, 2008.
12. Kawakami S, Numao N, Okubo Y, Koga F, Yamamoto S, Saito K, Fujii Y, Yonese J, Masuda H, Kihara K, Fukui I. Development, validation, and head-to-head comparison of logistic regression-based nomograms and artificial neural network models predicting prostate cancer on initial extended biopsy. Eur Urol. 54: 601-611, 2008.
13. Koga F, Yoshida S, Kawakami S, Kageyama Y, Yokoyama M, Saito K, Fujii Y, Kobayashi T, Kihara K. Low-dose chemoradiotherapy followed by partial or radical cystectomy against muscle-invasive bladder cancer: an intention-to-treat survival analysis. Urology 72: 384-388, 2008.
14. Kijima T, Fujii Y, Suyama T, Okubo Y, Yonese J, Fukui I. Lung and bone metastases from renal cell carcinoma responsive to bisphosphonates: a case report. Int J Urol 15: 546-547, 2008.
15. Komai Y, Fujii Y, Okubo Y, Yamamoto S, Kawakami S, Yonese J, Fukui I. Combination chemotherapy of ifosfamide, 5-fluorouracil, etoposide and cisplatin as perioperative treatment in lymph node positive bladder carcinoma patients treated by radical cystectomy. Int J Urol. 15: 971-975, 2008.
16. Masuda H, Kihara K, Saito K, Matsuoka Y, Yoshida S, Michael B. Chancellor, William C. de Groat, Yoshimura N. Reactive oxygen species mediate detrusor overactivity via sensitization of afferent pathway in the bladder of anaesthetized rats. BJU Int. 101: 775-780 , 2008.
17. Masuda N, Masuda H, Matsuyoshi H, Michael B. Chancellor, William C. de Groat, Yoshimura N. Effects of intrathecal injection of a hyperpolarization-activated Channel (I_h) inhibitor ZD7288 on bladder function in urethane-anesthetized rats. Neurourology and Urodynamics. 27：838-844, 2008.

18. Matsuoka Y, Kobayashi T, Kihara K, Nagahama Y. Molecular cloning of Plk1 and Nek2 and their expression in mature gonads of the teleost fish Nile tilapia (Oreochromis niloticus). Mol Reprod Dev. 75(6): 989-1001, 2008.
19. Matsuoka Y, Masuda H, Yokoyama M, Kihara K. Protective effects of bilirubin against cyclophosphamide induced haemorrhagic cystitis in rats. J Urol. 179: 1160-1166, 2008.
20. Matsuoka Y, Hirokawa M, Chiba K, Hashiba T, Tomoda T, Sugiura S. Biphasic and monophasic sarcomatoid carcinoma of the urinary bladder. Can J Urol. 15: 4106-4108, 2008.
21. Numao N, Kawakami S, Yonese J, Koga F, Saito K, Fujii Y, Ishikawa Y, Fukui I, Kihara K. Three-dimensional 26-core biopsy-based patient selection criteria for nerve-sparing radical prostatectomy. Int J Urol. 15: 1061-1066, 2008.
22. Numao N, Kawakami S. Reply to Rafael Boscolo-Berto, Antonio Galfano and Massimo Iafrate's Letter to the Editor re: Noburu Numao, Satoru Kawakami, Minato Yokoyama et al. Improved Accuracy in Predicting the Presence of Gleason Pattern 4/5 Prostate Cancer by Three-Dimensional 26-Core Systematic Biopsy. Eur Urol. 54: 471, 2008.
23. Sakura M, Masuda H, Matsuoka Y, Yokoyama M, Kawakami S, Kihara K. Rolipram, a specific type-4 phosphodiesteraseinhibitor, inhibits cyclophosphamide-inducedhaemorrhagic cystitis in rats. BJU Int. 103: 264-269, 2008.
24. Sakura M, Masuda H, Saito K, Koga F, Kawakami S, Kihara K. Collecting duct carcinoma with acquired cystic disease of the kidney in a long-term hemodialysis patient. Int J Urol. 15: 93-95, 2008.
25. Sakura M, Kawakami S, Yoshida S, Masuda H, Kobayashi T, Kihara K.Prospective comparative study of single dose versus 3-day administration of antimicrobial prophylaxis in minimum incision endoscopic radical prostatectomy. Int J Urol. 15: 328-331, 2008.
26. Singh P, Hallur G, Anchoori RK, Bakare O, Kageyama Y, Khan SR, Isaacs JT. Rational design of novel antiandrogens for neutralizing androgen receptor function in hormone refractory prostate cancer. Prostate 68(14): 1570-1581, 2008.
27. Takazawa R, Kawakami S, Yamamoto K, Kubo Y, Kageyama Y, Kihara K.A case of prostatic duct adenocarcinoma: its clinical significance in comparison with typical acinar adenocarcinoma. Hinyokika Kiyo 54: 243-247, 2008.
28. Tatokoro M, Saito K, Iimura Y, Fujii Y, Kawakami S, Kihara K. Prognostic impact of postoperative C-reactive protein level in patients with metastatic renal cell carcinoma undergoing cytoreductive nephrectomy. J Urol. 180: 515-519, 2008.
29. Tatokoro M, Kawakami S, Yonese J, Fujii Y, Okubo Y, Yamamoto S, Takeshita H, Komai Y, Ishikawa Y, Fukui I. Preliminary report of multimodal treatment with ifosfamide, 5-fluorouracil, etoposide and cisplatin (IFEP chemotherapy) against metastatic adenocarcinoma of the urachus. Int J Urol. 15(9): 851-853, 2008.
30. Tatokoro M, Fujii Y, Kawakami S, Fukui N, Komai Y, Saito K, Koga F, Morimoto S, Fukui I, Kihara K. Favorable response to combination treatment of cimetidine, cyclooxygenase-2 inhibitor and renin-angiotensin system inhibitor in metastatic renal cell carcinoma: Report of three cases. Int J Urol. 5(9): 848-850, 2008.1
31. Tatokoro M, Kawakami S, Sakura M, Kobayashi T, Kihara K, Akamatsu H. Successful management of life-threatening choriocarcinoma syndrome with rupture of pulmonary metastatic foci causing hemorrhagic shock. Int J Urol. 15: 263-264, 2008.
32. Tsutsumi S, Scrrogins B, Koga F, Lee MJ, Trepel J, Felts S, Carreras C, Neckers L. A small molecule cell-impermeant Hsp90 antagonist inhibits tumor cell motility and invasion. Oncogene 27: 2478-2487, 2008.
33. Yamamoto S, Kawakami S, Yonese J, Fujii Y, Tsukamoto T, Ohkubo Y, Komai Y, Ishikawa Y, Fukui I.Prognostic significance of cancer volume involving seminal vesicles in patients with pT3bpN0 prostate cancer. Urology 72:1224-1228, 2008.
34. Yamamoto S, Kawakami S, Yonese J, Fujii Y, Ohkubo Y, Suyama T, Komai Y, Kijima T, Ishikawa Y, Fukui I.Lymphovascular invasion is an independent predictor of prostate-specific antigen failure after radical prostatectomy in patients with pT3aN0 prostate cancer. Int J Urol. 15: 895-899, 2008.
35. Yano A, Tsutsumi S, Soga S, Lee MJ, Trepel J, Osada H, Neckers L. Inhibition of Hsp90 activates osteoclast c-Src signaling and promotes growth of prostate carcinoma cells in bone. Proc Natl Acad Sci USA 105: 15541-15546, 2008.
36. Yoshida S, Fujii Y, Yokoyama M, Ishii C, Saito K, Koga F, Masuda H, Kobayashi T, Kawakami S, Kihara K.Female urethral diverticular abscess clearly depicted by diffusion-weighted magnetic resonance imaging. Int J Urol. 15: 460-461, 2008.
37. Yoshida S, Saito K, Koga F, Yokoyama M, Kageyama Y, Masuda H, Kobayashi T, Kawakami S, Kihara K. C-reactive protein level predicts prognosis in patients with muscle-invasive bladder cancer treated with chemoradiotherapy. BJU Int. 101: 978-981, 2008.

38. Yoshida S, Masuda H, Ishii C, Saito K, Kawakami S, Kihara K. Initial experience of functional imaging of upper urinary tract neoplasm by diffusion-weighted magnetic resonance imaging. Int J Urol. 15: 140-143,

Review Article

1. Masuda H. Significance of nitric oxide and its modulation mechanisms by endogenous nitric oxide synthase inhibitors and arginase in the micturition disorders and erectile dysfunction. Int J Urol. 15: 128-134 2008.

Award

1. Koga F, Kawakami S, Yoshida S, Saito K, Fujii Y, Kihara K. Best poster presentation award in Poster Session 61: Treatment of advanced stage bladder cancer. Awarded by European Association of Urology, 2008.
2. Koga F. International Journal of Urology Reviewer of the Year 2007. Awarded by Japanese Urological Association, 2008.

Presentations at International Meetings

1. Kawakami S, Numao N, Yamamoto S, Yonese J, Fujii Y, Yokoyama M, Sakura M, Komai Y, Fukui I, Kihara K. Extended biopsy-based nomograms predicting prostate cancer on initial biopsy in men with PSA < 20 mg/mL. 2008 Genitourinary Cancers Symposium. San Francisco, USA, Feb 14, 2008.
2. Kobayashi T, Sakura M, Kawakami S, Yoshida S, Tatokoro M, Yokoyama M, Sakai Y, Koga F, Saito K, Fujii Y, Kihara K. Prospective comparative study of single intravenous versus single oral administration of antimicrobial prophylaxis in minimum incision endoscopic radical prostatectomy. 23rd annual EAU congress, Milan, Italy, March 26, 2008.
3. Koga F, Kawakami S, Yoshida S, Saito K, Fujii Y, Kihara K. Favorable outcomes of T3N0M0 bladder cancer patients treated with induction low-dose chemoradiotherapy plus partial or radical cystectomy compared to immediate radical cystectomy. 23rd annual EAU congress, Milan, Italy, March 26, 2008.
4. Fujii Y, Komai K, Yonese J, Kawakami S, Saito K, Iimura Y, Kihara K, Fukui I. Incidence of benign pathologic lesions at partial nephrectomy for renal masses presumed to be renal cell carcinoma: Japanese dual-center experience with 176 consecutive patients. 103th annual meeting of AUA (AUA 2008), Orlando, USA, May 19, 2008.
5. Iimura Y, Saito K, Tatokoro M, Fujii Y, Sakai Y, Koga F, Kobayashi T, Kawakami S, Kihara K. Preoperative C-reactive protein is a significant factor of prediction model for cancer specific survival in patients with clear cell renal cell carcinoma. 103th annual meeting of AUA (AUA 2008), Orlando, USA, May20, 2008.
6. Masuda H, Ichiyanagi N, Horie S, Sakai Y, Yokoyama M, Kihara K, Azuma H. Effects of PDE5 inhibitor on bladder blaood flow and nitric oxide pathway in the rat urinary bladder after partial outlet obstruction. The Third Japan-Asean Men's Health & Aging Conference, Singapore, Dec, 1, 2008.
7. Numao N, S. Kawakami, M. Sakura, J. Yonese, I. Fukui , Y. Ishikawa, K. Kihara. Which Gleason score should be applied, global or highest Glesaon score ? Grade concordance between extended biopsy and prostatectomy according to modified Gleason grading system.23rd annual EAU congress, Milan, March 28, 2008.
8. Saito K, Yoshida S, Yokoyama M, Sakura M, Sakai Y, Koga F, Masuda H, Fujii Y, Kobayashi T, Kawakami S, Kihara K. Absence of prophylactic antibiotics in minimum incision endoscopic surgery (MIES) of adrenal and renal tumour. 23rd annual EAU congress, Milan, Italy, March 26, 2008.
9. Yano A, Tsutsumi S, Lee MJ, Trepel J, Osada H, Neckers L. 17-allylamino-17-demethoxygeldanamycin induces osteoclast differentiation through Src kinase activation. The Molecular Chaperones & Stress Responses Meeting, Cold Spring Harbor Laboratory, NY, USA, Apr 30-May 4, 2008.
10. Yoshida S, Masuda H, Ishii C, Numao N, Sakai Y, Saito K, Koga F, Fujii Y, Kobayashi T, Kawakami S, Kihara K. Functional imaging of upper urinary tract neoplasm by diffusion-weighted MRI. 23rd annual EAU congress, Milan, Italy, March 26, 2008.

Autonomic Physiology

1. Staffs and Students

Professor Tetsuya TAGA (December 2008 -)

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 mostly focused on molecular regulation of neural stem cells and hematopoietic 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 analyzing cross-interactions of transcriptional regulatory signaling pathways, which lead to spatio-temporally coordinated gene expression.

3. Research Subjects

1) Molecular basis for the maintenance of neural stem cells
2) Regulation of neural stem cell fate
3) Characterization of hematopoietic stem cells in fetal hematopoietic organs
4) Characterization of stem-like cells in cancer
5) Epigenetic regulation of neural stem cells

4. Publications

Original Article

1. Shimizu T, Kagawa T, Inoue T, Nonaka A, Takada S, Aburatani H, and Taga T. Stabilized beta-catenin functions through TCF/LEF proteins and the Notch/RBP-Jkappa complex to promote proliferation and suppress differentiation of neural precursor cells. Mol. Cell. Biol. 24:7427-7441, 2008.

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.	
MTT Research Instructor:	Hiroaki Hemmi, Ph.D.	
GCOE Research Instructor:	Takuya Notomi, Ph.D.	
GCOE International Coordinator:	Tetsuya Nakamoto, M.D., Ph.D.	
MTT Technical Assistant:	Miwa Hayashida	
Secretary:	Tamano Urata	
GCOE Secretary:	Yuki Asano,	Anna Nakamura
Graduate Students:	Kentaro Miyai,	Ryo Hanyu,
	Masashi Nagao,	Paksinee Kamolratanakul,
	Tomomi Nakagawa	
Research Students:	Smriti Aryal	

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. Ono N, Nakashima K, Rittling SR, Schipani E, Hayata T, Soma K, Denhardt DT, Kronenberg HM, Ezura Y, Noda M. Osteopontin negatively regulates parathyroid hormone receptor signaling in osteoblasts. J Biol Chem. 283:19400-9, 2008.
2. Mizoguchi F, Mizuno A, Hayata T, Nakashima K, Heller S, Ushida T, Sokabe M, Miyasaka N, Suzuki M, Ezura Y, Noda M. Transient receptor potential vanilloid 4 deficiency suppresses unloading-induced bone loss. J Cell Physiol. 216:47-53, 2008.
3. Kawamata A, Izu Y, Yokoyama H, Amagasa T, Wagner EF, Nakashima K, Ezura Y, Hayata T, Noda M. JunD suppresses bone formation and contributes to low bone mass induced by estrogen depletion. J Cell Biochem. 103:1037-45, 2008.
4. Hayata T, Nakamoto T, Ezura Y, Noda M. Ciz, a transcription factor with a nucleocytoplasmic shuttling activity, interacts with C-propeptides of type I collagen. Biochem Biophys Res Commun. 368:205-10, 2008.
5. Chung CJ, Soma K, Rittling SR, Denhardt DT, Hayata T, Nakashima K, Ezura Y, Noda M. OPN deficiency suppresses appearance of odontoclastic cells and resorption of the tooth root induced by experimental force application. J Cell Physiol. 214:614-20, 2008.
6. Nakamoto T, Seo S, Sakai R, Kato T, Kutsuna H, Kurokawa M, Noda M, Miyasaka N, Kitagawa S. Expression and tyrosine phosphorylation of Crk-associated substrate lymphocyte type (Cas-L) protein in human neutrophils. J Cell Biochem. 105:121-8, 2008.
7. Ajima R, Akiyama T, Usui M, Yoneda M, Yoshida Y, Nakamura T, Minowa O, Noda M, Tanaka S, Noda T, Yamamoto T. Osteoporotic bone formation in mice lacking tob2; involvement of Tob2 in RANK ligand expression and osteoclasts differentiation. FEBS Lett. 582:1313-8, 2008.

8. Suzuki H, Amizuka N, Oda K, Noda M, Ohshima H, Maeda T. Histological and elemental analyses of impaired bone mineralization in klotho-deficient mice. J Anat. 212:275-85, 2008.
9. Tazaki T, Miyazaki K, Hiyama E, Nakamoto T, Sakai R, Yamasaki N, Honda Z, Noda M, Miyasaka N, Sueda T, Honda H. Functional analysis of Src homology 3-encoding exon (exon 2) of p130Cas in primary fibroblasts derived from exon 2-specific knockout mice. Genes Cells. 13:145-57, 2008.
10. Suzuki H, Amizuka N, Oda K, Noda M, Ohshima H, Maeda T. Involvement of the klotho protein in dentin formation and mineralization. Anat Rec (Hoboken). 291:183-90, 2008.

Molecular Cell Biology

1. Staffs

Professor	Hiroshi Shibuya
Associate Professor	Juniji Ohnishi
Associate Professor (GCOE)	Toshiyasu Goto
Assistant Professor	Mi-sun Kim
Assistant Professor (MTT)	Atsushi Sato
Research Assistant	Eriko Ohnishi

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) Regulation of TAK1-NLK signaling for anterior formation in *Xenopus* development
2) WNK protein kinases, the causative genes of pseudohypoaldosteronism type II (PHAII) disease

4. Publications

1. Goto, T., Kelle,r R. and Asashima, M. (2008). Concentrations of TBP-type genes affect chordamesodermal gene expression. Int. J. Dev. Biol. 52, 371-375.
2. Kawasaki, A., Kumasaka, M., Satoh, A., Suzuki, M., Tamura, K., Goto, T., Asashima, M., Yamamoto, H. (2008). Mitf contributes to melanosome distribution and melanophore dendricity. Pigment Cell and Melanoma Research 21, 56-62.

Functional Genomics

1. Staffs and Students (April, 2008)

Professor:	Masatoshi HAGIWARA	
Associated Professor:	Hidehito KUROYANAGI	
Guest Associated Professor:	Tetsuro HIROSE	
Assistant Professor:	Akihide TAKEUCHI	
Tokunin Assistant Professor:	Takayuki NOJIMA,	Yasushi OGAWA,
	Kensuke NINOMIYA	
Technicians:	Takako IDEUE,	Izumi DOBASHI,
	Machiko HORIUCHI	
Graduate Students:	Hidenobu KAWAMURA,	Makoto YAMAMOTO,
	Genta OHNO,	Yousuke NONAKA,
	Motoyasu HOSOKAWA,	Marina TOGO

2. Research Interests

Recent whole genome sequence analyses revealed that a high degree of proteomic complexity is achieved with a limited number of genes. This surprising finding underscores the importance of alternative splicing, through which a single gene can generate structurally and functionally distinct protein isoforms. Based on genome wide analysis, 75% of human genes are thought to encode at least two alternatively spliced isoforms. The regulation of splice site usage, so called "splicing code" provides a versatile mechanism for controlling gene expression and for the generation of proteome diversity. Thus splicing code may play essential roles in many biological processes, such as embryonic development, cell growth, and apoptosis.

3. Research Subjects

1) A Transgenic Reporter Worm System Offers a Path to Alternative Splicing Codes *in vivo*.
2) Regulating Mechanism of Alternative Splicing and its Physiological Function during the Development of Mouse Brain
3) mRNA Splicing Regulation and Virus Infection.
4) Development of Novel Specific Inhibitors of "PSYCHIK" Family Kinases and their Potentials as Pharmaceutical Drugs

4. Publications

Original articles

1. Yomoda, J., Muraki, M., Kataoka, N., Hosoya, T., Suzuki, M., Hagiwara, M. and Kimura, H. (2008) Combination of Clk family kinase and SRp75 modulates alternative splicing of Adenovirus E1A. Genes Cells, 13, 233-244.
2. Ohno, G., Hagiwara, M. and Kuroyanagi, H. (2008) STAR family RNA-binding protein ASD-2 regulates developmental switching of mutually exclusive alternative splicing in vivo. Genes & Dev., 22,360-374.

Epigenetics

1. Staffs and Students (April 2008)

Professor	Fumitoshi ISHINO	
Associate Professor	Takashi KOHDA	
Lecturer	Shin KOBAYASHI	
Assistant Professor	Ryuichi ONO,	Shunsuke SUZUKI,
	Yoichi SEKITA,	Hirosuke SHIURA,
	Daisuke ENDO	
Secretary	Ikuko MAEDA	
Graduate Student	KazuyaMatumoto,	Masahito IRIE,
	Mie NARUSE,	Hirotaka IWAFUNE,
	Changshan Wang, Xija XIA,	Masayuki ISHII,
	Sawa IWASAKI,	Yuki YAMAGUCHI

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. Kagami, M.*, Sekita, Y.*, Nishimura, G., Irie, M., Kato, F., Okada, M., Yamamori, S., Kishimoto, H., Nakayama, M., Tanaka, Y., Matsuoka, K., Takahashi, T., Noguchi, M., Tanaka, Y., Masumoto, K., Utsunomiya, T., Kouzan, H., Komatsu, Y., Ohashi, H., Kurosawa, K., Kosak, K., Ferguson-Smith, A. C., Ishino F. and Ogata, T. Deletions and epimutations affecting the human chromosome 14q32.2 imprinted region in individuals with paternal and maternal upd(14)-like phenotypes. Nat. Genet. 40(2), 237-242 (2008). (Double first and corresponding authors).
2. Sekita, Y., Wagatsuma, H., Nakamura, K., Ono, R., Kagami, M., Wakisaka-Saito, N., Hino, T., Suzuki-Migishima, R., Kohda, T., Ogura, A., Ogata, T. Yokoyama, M., Kaneko-Ishino T. and Ishino, F. Role of retrotransposon-derived imprinted gene, *Rtl1*, in the feto-maternal interface of mouse placenta. Nat. Genet. 40(2), 243-248 (2008). (Double corresponding authors)
3. Hikichi, T., Kohda, T., Wakayama, S., Ishino, F. and Wakayama, T. Nuclear transfer alters the DNA methylation status of specific genes in fertilized and parthenogenetically activated mouse embryonic stem cells. Stem Cells. 26(3),783-788 (2008).
4. Yamamoto, Y., Ishino, F., Kaneko-Ishino, T., Shiura H., Uchio-Yamada, K., Matsuda, J., Suzuki, O. and Sato, K. Type 2 diabetes mellitus in a non-obese mouse model induced by *Meg1/Grb10* overexpression. Exp. Animals 57(4), 385-395 (2008).
5. Wakisaka, N., Ogonuki, N., Miki, Y., Sekita, Y., Hanaki, K., Aikatsuka, A., Kaneko-Ishino, T., Ishino F., and Ogura, A. Ultrastructure of placental hyperplasia in mice: Comparison of placental phenotypes with three different etiologies. Placenta 29(8), 753-759 (2008).

Molecular Oncology

1. Staffs and Students (April, 2008)

Professor	Yasuhito YUASA	
Lecturer	Yoshimitsu AKIYAMA,	Hiroshi FUKAMACHI
Visiting Professor	Masabumi SHIBUYA	
Tokunin Assistant Professor	Feng WANG,	Tsuyoshi OSAWA,
	Rika TSUCHIDA,	
Secretary	Yoshiko OZAWA,	Tomoko NAKAZAWA
Graduate Student	Yumiko SATOU,	Takeshi OTSUBO,
	Shu SHIMADA,	Ayako MIMATA,
	Rie WADA,	Yutaka HASHIMOTO,
	Pichayanoot ROTKRUA,	Masashi MURAMATSU

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) Effect of environmental factors on gene expression and DNA methylation
8) Involvement of microRNA in gastric carcinogenesis
9) Involvement of VEGF receptors in tumor growth and metastasis.
10) Role of macrophages infiltrated into tumor tissues.
11) Importance of bone marrow-derived cells in tumor growth.
12) Mechanism of tumor resistance to anti-angiogenesis therapy.
13) Mechanism of hypertension observed in anti-angiogenesis therapy.

4. Publications

Original Article

1. Jin S-H, Akiyama Y, Fukamachi H, Yanagihara K, Akashi T, Yuasa Y: *IQGAP2* inactivation through aberrant promoter methylation and promotion of invasion in gastric cancer cells. Int. J. Cancer, 2008:122:1040-1046.
2. Otsubo T, Akiyama Y, Yanagihara K, Yuasa Y: SOX2 is frequently down-regulated in gastric cancers and inhibits cell growth through cell cycle arrest and apoptosis. Brit. J. Cancer 2008:98:824-831.
3. Wanajo A , Sasaki A , Nagasaki H, Shimada S, Otsubo T, Owaki S, Shimizu Y, Eishi Y, Kojima K, Nakajima Y, Kawano T, Yuasa Y, Akiyama Y: Methylation of the calcium channel-related gene, *CACNA2D3*, is frequent and a poor prognostic factor in gastric cancer. Gastroenterology, 2008:135:80-590.

4. Fukamachi H, Mimata A, Tanaka I, Ito K, Ito Y, Yuasa, Y: Differentiation in vitro of *Runx3-/-p53-/-* gastric epithelial cells into intestinal type cells. Cancer Sci. 2008:99:671-676.
5. Kurakata H, Oka M, Matsubara Y, Niwa T, Utsunomiya H, Fujishiro M, Miki K, Fukamachi H, Kubota S, Ichinose M: Developmentally regulated expression of matrix metalloproteinases during fetal rat colon morphogenesis. Develop Growth Differ., 2008:50: 41-48.
6. Sakuma A, Fukamachi H, Ito K, Ito Y, Takeuchi S, Takahashi S: Loss of Runx3 affects ovulation and estrogen-induced endometrial cell proliferation in female mice. Mol Reprod Develop., 2008:75:1653-1661.
7. Ito K, Lim A. C.-B, Salto-Tellez M, Motoda L, Osato M, Chuang L. S. H, Lee C. W. L, Voon D. C.-C, Koo J. K. W, Wang H, Fukamachi H, Ito Y: RUNX3 attenuates β-catenin/T cell factors in intestinal tumorigenesis. Cancer Cell, 2008:14: 226-237.
8. Hiratsuka S, Watanabe A, Sakurai Y, Akashi-Takamura S, Ishibashi S, Miyake K, Shibuya M, Akira S, Aburatani H, Maru Y. The S100A8-serum amyloid A3-TLR4 paracrine cascade establishes a pre-metastatic phase. Nat Cell Biol. 10:1349-1355, 2008.
9. Poesen K, Lambrechts D, Van Damme P, Dhondt J, Bender F, Frank N, Bogaert E, Claes B, Heylen L, Verheyen A, Raes K, Tjwa M, Eriksson U, Shibuya M, Nuydens R, Van Den Bosch L, Meert T, D'Hooge R, Sendtner M, Robberecht W, Carmeliet P. Novel Role for VEGF-Receptor-1 and its Ligand VEGF-B in Motor Neuron Degeneration. J Neurosci 28: 10451-10459, 2008.
10. Nishi JI, Minamino T, Miyauchi H, Nojima A, Tateno K, Okada S, Orimo M, Moriya J, Fong GH, Sunagawa K, Shibuya M, Komuro I. Vascular Endothelial Growth Factor Receptor-1 Regulates Postnatal Angiogenesis Through Inhibition of the Excessive Activation of Akt. Circulation Res 103: 261-268, 2008.
11. Kami J, Muranaka K, Yanagi Y, Obata R, Tamaki Y, Shibuya M. Inhibition of choroidal neovascularization by blocking vascular endothelial growth factor receptor tyrosine kinase. Jpn J Ophthalmol 52: 91-98, 2008.
12. Kerber M, Reiss Y, Wickersheim A, Jugold M, Kiessling F, Heil M, Tchaikovski V, Waltenberger J, Shibuya M, Plate KH, Machein MR. Flt-1 signaling in macrophages promotes glioma growth in vivo. Cancer Res 68: 7342-7351, 2008.
13. Tammela T, Zarkada G, Wallgard E, Murtomaki A, Suchting S, Wirzenius M, Waltari M, Hellstrom M, Schomber T, Peltonen R, Freitas C, Duarte A, Isoniemi H, Laakkonen P, Christofori G, Yla-Herttuala S, Shibuya M, Pytowski B, Eichmann A, Betsholtz C, Alitalo K. Blocking VEGFR-3 suppresses angiogenic sprouting and vascular network formation. Nature 54: 656-660, 2008.
14. Fukuhara S, Sako K, Minami T, Noda K, Kim HZ, Kodama T, Shibuya M, Takakura N, Koh GY, Mochizuki N. Differential function of Tie2 at cell-cell contacts and cell-substratum contacts regulated by angiopoietin-1. Nat Cell Biol 10: 513-526, 2008.
15. Endo Y, Sugiyama A, Li SA, Ohmori K, Ohata H, Yoshida Y, Shibuya M, Takei K, Enari M, Taya Y. Regulation of clathrin-mediated endocytosis by p53. Genes Cells 13: 375-386, 2008.
16. Tsuchida R, Das B, Yeger H, Koren G, Shibuya M, Thorner PS, Baruchel S, Malkin D. Cisplatin treatment increases survival and expansion of a highly tumorigenic side-population fraction by upregulating VEGF/Flt1 autocrine signaling. Oncogene 27: 3923-3934, 2008.
17. Murakami, M. Zheng Y, Hirashima M, Suda T, Morita Y, Ooehara J, Ema H, Fong GH, Shibuya M. VEGFR1 Tyrosine Kinase Signaling Promotes Lymphangiogenesis as Well as Angiogenesis Indirectly via Macrophage Recruitment. Arterioscler Thromb Vasc Biol 28: 658-664, 2008.
18. Taguchi, E., Nakamura K, Miura T, Shibuya M, Isoe T. Anti-tumor activity and tumor vessel normalization by the vascular endothelial growth factor receptor tyrosine kinase inhibitor KRN951 in a rat peritoneal disseminated tumor model. Cancer Sci 99: 623-630, 2008.

Review Article

1. Yuasa Y: Frontiers in epigenetics medicine: foreword: Miniseries collected from a symposium organized by the Study Group on Epigenetics Medicine held at the 77th Annual Meeting of the Japanese Society for Hygiene. Environ. Health Prev. Med., 2008:13:2.
2. Murakami M, Shibuya M. Involvement of vascular endothelial growth factor receptor-1 in rheumatoid arthritis. Inflammation and Regeneration, 28: 78-85, 2008.
3. Shibuya M. Vascular endothelial growth factor-dependent and –independent regulation of angiogenesis. BMB Rep 41: 278-286, 2008.

Book

1. Li X, Claesson-Welsh L, Shibuya M. Chapter 13 VEGF receptor signal transduction. Methods Enzymol 443: 261-284, 2008.
2. Shibuya M. Vascular Permeability/Vascular Endothelial Growth Factor, in Angiogenesis: An integrative approach from science to medicine. (eds. W. Figg and J. Folkman), Springer, New York, pp.89-98, 2008.

Hematology

1. Staffs and Students

Professor	Osamu MIURA	
Junior Associate Professor	Ayako ARAI	
Assistant Professor	Tetsuya FUKUDA, Shihoko WAKABAYASHI	Tetsuya KUROSU,
Hospital Staff	Keisuke NAKAUCHI, Emiko YAMAZAKI	Yutaka MURATA
Hospital Staff/Graduate Student	Manabu OHKI,	Gaku OSHIKAWA
Graduate Student	Minako JINTA, Nan WU	Toshikage NAGAO,

2. Purpose of Education

The major ojdective of the course is to understand the pathophysiology of blood cells and 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 disease 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 get knowledge and skill 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 againt tyrosine kinase inhibitors

4. Clinical Services

We provide the highest quality of patient care for a wide spectrum of illnesses related to blood diseases and cancer.

5. Publications

1. A novel variant form of MLL-ELL fusion transcript with t(11;19)(q23;p13.1) in chronic myelomonocytic leukemia transforming to acute myeloid leukemia.
   Kakihana K, Kubo F, Wakabayashi S, Kurosu T, Miki T, Murakami N, Miura O. Cancer Genet Cytogenet. 2008 Jul 15;184(2):109-12.
2. A variant-type MLL/SEPT9 fusion transcript in adult de novo acute monocytic leukemia (M5b) with t(11;17)(q23;q25).
   Kurosu T, Tsuji K, Ohki M, Miki T, Yamamoto M, Kakihana K, Koyama T, Taniguchi S, Miura O. Int J Hematol. 2008 Sep;88(2):192-6.
3. Antisera induced by infusions of autologous Ad-CD154-leukemia B cells identify ROR1 as an oncofetal antigen and receptor for Wnt5a.
   Fukuda T, Chen L, Endo T, Tang L, Lu D, Castro JE, Widhopf GF 2nd, Rassenti LZ, Cantwell MJ, Prussak CE, Carson DA, Kipps TJ. Proc Natl Acad Sci USA. 2008 Feb 26;105(8):3047-52.
4. Functional analysis of cytomegalovirus-specific T lymphocytes compared to tetramer assay in patients undergoing hematopoietic stem cell transplantation.
   Morita-Hoshi Y, Heike Y, Kawakami M, Sugita T, Miura O, Kim SW, Mori SI, Fukuda T, Tanosaki R, Tobinai K, Takaue Y. Bone Marrow Transplant. 2008 Mar;41(6):515-21.
5. An autopsy case of multicentric Castleman's disease associated with interstitial nephritis and secondary AA amyloidosis.
   Morita-Hoshi Y, Tohda S, Miura O, Nara N. Int J Hematol. 2008 Jan;87(1):69-74.
6. Negative feedback regulation of colitogenic CD4+ T cells by increased granulopoiesis.

Nemoto Y, Kanai T, Tohda S, Totsuka T, Okamoto R, Tsuchiya K, Nakamura T, Sakamoto N, Fukuda T, Miura O, Yagita H, Watanabe M. Inflamm Bowel Dis. 2008 Nov;14(11):1491-503.

7. Treatment of adult AML with t(6;11)(q27;q23) by allogeneic hematopoietic SCT in the first CR.
   Tamai H, Yamaguchi H, Takahashi S, Tojo A, Hamaguchi H, Kobayashi T, Akiyama H, Sakamaki H, Okumura H, Nakao S, Arai A, Miura O, Tajika K, Inokuchi K, Dan K. Bone Marrow Transplant. 2008 Oct;42(8):553-4.
8. Clinical features of adult acute leukemia with 11q23 abnormalities in Japan: a co-operative multicenter study.
   Tamai H, Yamaguchi H, Hamaguchi H, Yagasaki F, Bessho M, Kobayashi T, Akiyama H, Sakamaki H, Takahashi S, Tojo A, Ohmine K, Ozawa K, Okumura H, Nakao S, Arai A, Miura O, Toyota S, Gomi S, Murai Y, Usui N, Miyazawa K, Ohyashiki K, Takahashi N, Sawada K, Kato A, Oshimi K, Inokuchi K, Dan K. Int J Hematol. 2008 Mar;87(2):195-202.
9. Long-term responses and outcomes following immunosuppressive therapy in large granular lymphocyte leukemia-associated pure red cell aplasia: a Nationwide Cohort Study in Japan for the PRCA Collaborative Study Group.
   Fujishima N, Sawada KI, Hirokawa M, Oshimi K, Sugimoto K, Matsuda A, Teramura M, Karasawa M, Arai A, Yonemura Y, Nakao S, Urabe A, Omine M, Ozawa K. Haematologica. ; 93:1555-9.

Clinical and Molecular Endocrinology

1. Staffs and Students (April, 2008)

Professor	Yukio Hirata	
Associate Professor	Masayoshi Shichiri	
Lectrurer	Isao Uchimura	
Assistant Professor	Takanobu Yoshimoto,	Masaru Doi,
	Hajime Izumiyama	
Resident	Ryuji Koyama,	Kyoichiro Tsuchiya,
	Atsuko Miyake,	Miho Sugiyama,
	Mina Yamaguchi,	Jun Watanabe
Graduate Students	Tae Nakano,	Kiichiro Hiraishi,
	Naoko Sekizawa,	Yuji Tani,
	Eri Hayakawa	Itaru Akaza,
	Noriko Suzuki,	Chisato Nakayama,
	Yoshihiro Yamazaki,	Yuko Tateishi,
	Takako Asano,	Masako Kato
Research Students	Munehiro Ikebukuro,	Koji Hagiwara
Secretaries	Kimie Takano,	Yasuko Tsuchiya

2. Purpose of Education

Our training program enables postdoctoral trainees to prepare for future academic careers and 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 results in the field of cell 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) In-silico analysis of novel bioactive peptides
3) Mechanism of insulin resistance and atherosclerosis in diabetes and metabolic syndrome
4) Mechanism of pathogenesis in endocrine tumors
5) Novel diagnostic development 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
- abnormalities in calcium regulation

5. Publications

1) Peer-reviewed Journal

1. Sakurada M, Shichiri M, Imamura M, Azuma H, and Hirata Y: Nitric oxide upregulates dimethylarginine dimethylaminohydrolase-2 via cyclic GMP induction in endothelial cells. Hypertension 2008;52:903-909.
2. Miyake A, Murata Y, Okazawa H, Ikeda H, Niwayama Y, Ohnishi H, Hirata Y, Matozaki T: Negative regulation by SHPS-1 of Toll-like receptor-dependent proinflammatory cytokine production in macrophages. Genes to Cells 2008;13:209-219.
3. Minami I, Yoshimoto T, Hirono Y, Izumiyama H, Doi M, Hirata Y: Diagnostic accuracy of adrenal venous sampling in comparison with other parameters in primary aldosteronism. Endocr J 2008;55:839-846.
4. Tani Y, Tateno T, Izumiyama H, Doi M, Yoshimoto T, Hirata Y: Defective expression of prohormone convertase 4 and enhanced expression of insulin-like growth factor II by pleural solitary fibrous tumor causing hypoglycemia Endocr J 2008;55:905-911.

5. Iwashima F, Yoshimoto T, Minami I, Sakurada M, Hirono Y, Hirata Y:Aldosterone induces superoxide generation via Rac1 activation in endothelial cells. Endocrinology 2008;149:1009-1014.
6. Doi M, Sekizawa N, Tani Y, Tsuchiya K, Kouyama R, Tateno T, Izumiyama H, Yoshimoto T, Hirata Y: Late-night salivary cortisol as a screening test for the diagnosis of Cushing's syndrome in Japan. Endocr J 2008;55:121-126.
7. Sakai H, Tsuchiya K, Nakayama C, Iwashima F, Izumiyama H, Doi M, Yoshimoto T, Tsujino M, Yamada S, Hirata Y: Improvement of endothelial dysfunction in acromegaly after transsphenoidal surgery. Endocr J 2008;55:853-859.
8. Terada Y, Kuwana H, Kobayashi T, Okado T, Suzuki N, Yoshimoto T, Hirata Y, Sasaki S: Aldosterone-stimulated SGK1 activity mediates profibrotic signaling in the mesangium. J Am Soc Nephrol 2008;19:298-309.
9. Saito T, Dayanithi G, Saito J, Onaka T, Urabe T, Watanabe TX, Hashimoto H, Yokoyama T, Fujihara H, Yokota A, Nishizawa S, Hirata Y, Ueta Y: Chronic osmotic stimuli increase salusin-β-like immunoreactivity in the rat hypothalamo- neurohypophyseal system: possible involvement of salusin-β on [Ca2+]i increase and neurohypophyseal hormone release from the axon terminals. J Neuroendocrinol. 2008;20:207-219.
10. Sato K, Koyama T, Shichiri M: Biosynthesis and secretion of salusin-α from human cells. Peptides 2008;29:2203-2207.
11. Watanabe T, Suguro T, Sato K, Koyama T, Nagashima M, Kodate S, Hirano T, Adachi M, Shichiri M, Miyazaki A: Serum salusin-α levels are decreased and correlated negatively with carotid atherosclerosis in essential hypertensive patients. Hypertens Res 2008;31:463-468.
12. Watanabe T, Nishio K, Kanome T, Matsuyama TA, Koba S, Sakai T, Sato K, Hongo S, Nose K, Ota H, Kobayashi Y, Katagiri T, Shichiri M, Miyazaki A. Impact of salusin-α and $-\beta$ on human macrophage foam cell formation and coronary atherosclerosis, Circulation 2008;117:638-648.
13. Ito A, Suganami T, Yamauchi A, Degawa-Yamauchi M, Tanaka M, Kouyama R, Kobayashi Y, Nitta N, Yasuda K, Hirata Y, Kuziel WA, Takeya M, Kanegasaki S, Kamei Y, Ogawa Y. Role of CC chemokine receptor 2 in bone marrow cells in the recruitment of macrophages into obese adipose tissue. J Biol Chem 2008;283:35715-35723.

2) Review

1. Tsuchiya K, Hirata Y: Advanced endothelial dysfunction in diabetic patients with multiple risk factors: Importance of insulin resistance. Arterial Stiffness 2008;14:70-71.

3) International Meeting

1. Sakurada M, Shichiri M, Imamura M,Azuma H, Hirata Y: NO upregulates dimethylarginine dimethylaminohydrolase-2 via cGMP induction in endothelial cells The 22th Scientific Meeting of the International Society of Hypertension. Berlin, Germany (2008.6)
2. Tani Y, Tateno T, Izumiyama H, Doi M, Yoshimoto T, Hirata Y: Defective expression of prohormone convertase 4 in pleural solitary fibrous tumor causing non-islet cell tumor hypoglycemia (NICTH) The Endocrine Society Annual Meeting. San Francisco, USA (2008.6)
3. Tsuchiya K, Nakayama C, Iwashima F, Sakai H, Yoshimoto T, Hirata Y: Metabolic syndrome is associated with endothelial dysfunction: Important roles of hyperinsulinemia and Hypertension. The Endocrine Society Annual Meeting San Francisco, USA (2008.6)
4. Tateno T, Izumiyama H, Doi M, Yoshimoto T, Oyama K, Yamada Y, Hirata Y: Differential gene expression of somatostatin receptor (SSTR) subtype and dopamine type 2 receptor (D2R) in adrenocorticotropin (ACTH) -secreting and non-functioning pituitary tumors. The Endocrine Society's Annual Meeting. San Francisco, USA (2008.6)

Human Gene Sciences Center (Signal Gene Regulation)

1. Staff and Student

Professor	Masataka NAKAMURA (Director)
Junior Associate Professor	Kiyoshi OHTANI
Assistant Professor	Toshifumi HARA
Postdoctral Fellow	Mizue OHKUMA
Graduate Student	Masanori MURAKAMI (～March),
	Terumi MIZUKOSHI, Mariko MIZUGUCHI,
	Ryutaro OHBA (April～), Yating WANG (October～),
	Shigeru HASUNUMA (April～)

2. Parpose 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 the transcription factor TWIST in cell differetiation.
3) Implication of prostaglandin D2 receptor (CRTH2) in allergy reactions.

5. Publications

Original Article

1. Shiraishi Y, Asano K, Niimi K, Fukunaga K, Wakai M, Kagyo J, Takihara T, Ueda S, Nakajima T, Oguma T, Suzuki Y, Shiomi T, Sayama K, Kagawa S, Ikeda E, Hirai H, Nagata K, Nakamura M, Miyasho T, Ishizaka A. Cyclooxygenase-2/prostaglandin D_2/CRTH2 pathway mediates dsRNA-induced enhancement of allergic airway inflammation. J. Immunol. 180: 541-549, 2008.
2. Murakami M, Ohkuma M, Nakamura M. Molecular mechanism of TGF-β-mediated inhibition of growth arrest and differentiation in a myoblast cell line. Development Growth Differentiation 50: 121-130, 2008.
3. Nomiya R, Okano M, Fujiwara T, Maeda M, Kimura Y, Kino K, Yokoyama M, Hirai H, Nagata K, Hara T, Nishizaki K, Nakamura M. CRTH2 plays an essential role in the pathophysiology of Cry j1-induced pollinosis in mice. J. Immunol. 180: 5680-5688, 2008.
4. Hara T, Matsumura-Arioka Y, Ohtani K. Nakamura M. Role of human T-cell leukemia virus type I Tax in expression of the human telomerase reverse transcriptase (hTERT) gene in human T cells. Cancer Sci. 99: 1155-1163, 2008.
5. Oiwa M, Satoh T, Watanabe M, Miwa H, Hirai H, Nakamura M, Yokozeki H. CRTH2-dependent, STAT6-independent induction of cedar pollen dermatitis. Clin. Exp. Allergy. 38: 1357-1366, 2008.
6. Tajima J, Murata T, Aritake K, Urade Y, Hirai H, Nakamura M, Ozaki H, Hori M. Lipopolysaccharide induces macrophage migration via PGD2 and PGE2. J. Pharmacol. Exp. Ther. 326: 493-501, 2008.
7. Iwanaga R, Ozono E, Fujisawa J, Ikeda MA, Okamura N, Huang Y, Ohtani K. Activation of the cyclin D2 and cdk6 genes through NF-κB is critical for cell cycle progression induced by HTLV-I Tax. Oncogene, 27: 5635-5642, 2008.

Book

1. Ohtani K, Komori H, Ozono E, Ikeda M-A, Iwanaga R. Distinct transcriptional regulation by E2F in cell growth and tumor suppression.In “Control of cellular physiology by the transcription factor E2F”, Yoshida, K. ed., Research Signpost, pp91-105. 2008.

Drug Design Chemistry (Molecular Design)

1. Staffs and Student

Assistant Professor	Shigeru Ito	
Tokunin Associate Professor	Akiko Sugimoto	
Graduate Student	Gao Pei,	Yuto Kawahara,
	Yuka Saishu,	Aya Suzuki,
	Yuki Yamada	

2. Purpose of Education

Drug Design Chemistry is a branch of Pharmaceutical sciences, especially focus on novel drug development through organic chemistry, analytical chemistry, biochemistry and related fields. We provide these subjects, lectures and laboratory practice, to graduate students.

3. Research Subjects

1) Elucidation and application of antioxidant system in vivo
2) Chemical studies and development of drug discovery of bioactive substances
3) Research on drug discovery of the inflammatory bowel diseases
4) Study on amino sugar derived substances related to diabetes and its complication
5) Relation of physical properties and 3 dimensional molecular structures of drugs

4. Publications

1. Murakami Y, Ishii H, Takada N, Tanaka S, Machino M, Ito S, Fujisawa S. Comparative anti-inflammatory activities of curcumin and tetrahydrocurcumin based on the phenolic O-H Bond dissociation enthalpy, ionization potential and quantum chemical descriptor. ***Anticancer Research*** 28: 699-708, 2008.
2. Kadoma Y, Ito S, Yokoe I, Fujisawa S. Comparative study of the alkyl and peroxy radical-scavenging activity of 2-t-butyl-4-methoxyphenol (BHA) and its dimer, and their theoretical parameters, ***in vivo*** 22: 289-296, 2008.
3. Fukuzawa M, Yamaguchi R, Hide I. Chen Z, Hirai Y, Sugimoto A, Yasuhara T, Nakata Y. Possible involvement of long chain fatty acids in the spores of *Ganoderma lucidum* (Reishi Houshi) to its anti-tumor activity. ***Biol Pharm Bull*** 31(10): 1933-1937, 2008.

Medicinal-Chemical Biology (Molecular Recognition)

1. Staffs and Students (April, 2008)

Professor	Hirokazu TAMAMURA	
Assistant Professor	Hiroshi TSUTSUMI	Wataru NOMURA
Research Staff	Kyoko ITOTANI	
Secretary	Naoko HIRAGA	
Research Student	Kentaro FUKUMOTO,	Yuko YAMADA
Graduate Student	Yuka INABA,	ToruA OKI,
	Nami OHASHI,	Shintaro SUZUKI,
	Tomohiro TANAKA,	Seiichiro ABE,
	Mai KATO,	Hiromi KUBOTA,
	Yuta SAKAMAKI,	Yuki SERIZAWA,
	Toru NAKAHARA,	Masaki HASEYAMA,
	Aki OYA,	Chihiro OCHIAI,
	Sayaka KAGAWA,	Jun SATO,
	Yoshiaki OKUDA,	Yuta NAKANISHI,
	Chie HASHIMOTO,	Akemi MASUDA,
	Tomoaki MINO,	Takayuki YANAGISAWA

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 nuclear receptors/ enzymes and their ligands.
4) Development of applications of zinc finger protein for gene therapy and nano technology.

4. Publications

Original Article

1. Kasiyanov A, Fujii N, Tamamura H & Xiong H. Modulation of Network-driven, GABA-mediated Giant Depolarizing Potentials by SDF-1 in Developing Hippocampus. Developmental Neuroscience 30(4): 285-292, 2008.
2. Driessen W.H.P, Fujii N, Tamamura H & Sullivan S.M. Development of Peptide-targeted Lipoplexes to CXCR4-expressing Rat Glioma Cells and Rat Proliferating Endothelial Cells. Mol. Ther. 16(3): 516-524, 2008.
3. Tamamura H, Tsutsumi H, Nomura W & Fujii N. Exploratory Studies on Development of the Chemokine Receptor CXCR4 Antagonists toward Downsizing. Perspectives in Medicinal Chemistry 2: 1-9, 2008.
4. Nakata H, Steinberg S.M, Koh Y, Maeda K, Takaoka Y, Tamamura H, Fujii N & Mitsuya H. Potent Synergistic Anti-Human Immunodeficiency Virus (HIV) Effects Using Combinations of the CCR5 Inhibitor Aplaviroc with Other Anti-HIV Drugs. Antimicrob. Agents Chemother. 52(6): 2111-2119, 2008.
5. Nomura W, Tanabe Y, Tsutsumi H, Tanaka T, Ohba K, Yamamoto N & Tamamura H. Fluorophore Labeling Enables Imaging and Evaluation of Specific CXCR4-Ligand Interaction at the Cell Membrane for Fluorescence-Based Screening. Bioconjugate Chem. 19: 1917-1920, 2008.
6. Tanaka T, Tsutsumi H, Nomura W, Tanabe Y, Ohashi N, Esaka A, Ochiai C, Sato J, Itotani K, Murakami T, Ohba K, Yamamoto N, Fujii N & Tamamura H.Structure-activity Relationship Study of CXCR4 Antagonists Bearing the Cyclic Pentapeptide Scaffold: Identification of the New Pharmacophore. Org. Biomol. Chem. 6(23): 4374-4377, 2008.
7. Itoh T, Fairall L, Amin K, Inaba Y, Szanto A, Balint BL, Nagy L, Yamamoto K & Schwabe JW. Structural Basis for the Activation of PPARgamma by Oxidized Fatty Acids. Nat. Struct. Mol. Biol. 15: 924-931, 2008.

Review Article

1. Tamamura H, Tsutsumi H, Nomura W, Tanaka T & Fujii N. A Future Perspective on the Development of

Chemokine Receptor CXCR4 Antagonists. Expert Opin. Drug Discovery 3(10): 1155-1166, 2008.

Book

1. Tamamura H, Komano A, Nakahara T, Ohashi N, Tanaka T, Tsutsumi H, Nomura W, Urano E, Hua Y, Fuji H, Hamatake M, Miyauchi K, Morikawa Y, Hoshino T, Sugiura W & Yamamoto N. Identification of Sequential Motifs Relevant to Inhibitory Activity against HIV Integrase. Peptide Science 2007, Saburo Amimoto and Shin Ono (Eds.), The Japanese peptide Society, Osaka, 335-336, 2008.
2. Tsutsumi H, Tanabe Y, Abe S, Mino T, Ohashi N, Tanaka T, Nomura W & Tamamura H. Development of Peptide Tools for Fluorescence Imaging of Proteins in Living Cells. Peptide Science 2007, Saburo Amimoto and Shin Ono,(Eds.), The Japanese peptide Society, Osaka, 95-96, 2008.
3. Tamamura H, Komano A, Nakahara T, Ohashi1 N, Tanaka T, Tsutsumi H, Nomura W, Urano E, Hua Y, Fuji H, Hamatake M, Miyauchi K, Morikawa Y, Hoshino T, Sugiura W & Yamamoto N. Identification of Sequential Motifs Relevant to Inhibitory Activity against HIV Integrase. 4th International Peptide Symposium, Cairn, Australia, Oct21-25, 2007, in press.
4. Ohashi N, Kato M, Matsumoto H, Tanaka T, Tsutsumi H, Masuno H, Nomura W, Yoshida K, Ikura T, Ito N & Tamamura H. Chemical Synthesis of a PKC C1b Domain by a Peptide Ligation Method and Expression of the Protein in E. coli and Their Application. 4th International Peptide Symposium, Cairn, Australia, Oct21-25, 2007, in press.

Genetic Regulation

1. Staffs and Students (April, 2008)

Professor	Akinori KIMURA	
Associate Professor (School of Biomedical Science)		
	Toshiaki NAKAJIMA	
Assistant Professor	Takuro ARIMURA	
Research Associate	Taeko NARUSE	
Graduate Student	Daiske SHICHI	
Graduate Student (Biomedical Science PhD program)		
	Minako ABE,	Kunihiko HINOHARA,
	Hitoshi OHTANI,	Risa YANAGIDA
Visiting Graduate Student	Zhiyong CHEN	
Visiting Student	Jianbo ANN,	Yukiko OKUDA

2. Purpose of Education

Genetic factors, i.e. structural and/or functional diversity of human genome, are more or less 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, Behcet disease, rheumatoid arthritis, and chronic thromboembolic pulmonary hypertension) and infectious diseases (e.g. HIV/AIDS and HCV). 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 in vaccination

4. Publications

Original Article

1. Shichi D, Matsumori A, Naruse TK, Inoko H, Kimura A: HLA-DP beta chain may confer the susceptibility to hepatitis C virus-associated hypertrophic cardiomyopathy. Int J Immunogenet 2008; 35(1): 37-43.
2. Kato N, Miyata T, Tabara Y, Katsuya T, Yanai K, Hanada H, Kamide K, Nakura J, Hohara K, Takeuchi F, Mano H, Yasunami M, Kimura A, Kita Y, Ueshima H, Nakamura T, Soma M, Hata A, Fujioka A, Kawano Y, Nakao K, Sekine A, Yoshida T, Nakamura Y, Saruta T, Ogihara T, Sugano S, Miki T, Tomoike H: High-density association study and nomination of susceptibility genes for hypertension in the Japanese national project. Hum Mol Genet 2008; 17(4): 617-627.
3. Hinohara K, Nakajima T, Takahashi M, Hohda S, Sasaoka T, Nakahara K, Chida K, Sawabe M, Arimura T, Sato A, Lee BS, Ban J, Yasunami M, Park JE, Izumi T, Kimura A: Replication of association between a chromosome 9p21 polymorphism with coronary artery disease in Japanese and Korean populations. J Hum Genet 2008; 53(4): 357-359.
4. Tsukamoto T, Dohki S, Ueno T, Kawada M, Takeda A, Yasunami M, Naruse T, Kimura A, Takiguchi M, Matano T: Determination of a major histocompatibility complex class I restricting simian immunodeficiency virus Gag241-249 epitope. AIDS 2008; 22(8): 993-994.
5. Takemoto Y, Naruse TK, Namba K, Kitaichi N, Ota M, Shindo Y, Mizuki N, Gul A, Madanat W, Shams H, Davatchi F, Inoko H, Ohno S, Kimura A: Re-evaluation of heterogeneity in HLA-B*510101 associated with Behçet's disease. Tissue Antigens 2008; 72(4): 347-353.
6. Nakajima T, Ohtani H, Satta Y, Uno Y, Akari H, Ishida T, Kimura A: Natural selection in the TLR-related genes in the course of primate evolution. Immunogenetics 2008; 60(12): 727-735.

Review Article

1. Kimura A: Molecular etiology and pathogenesis of hereditary cardiomyopathy. Circ J 2008; 72(Suppl A): A38-48.
2. Nakajima T, Kimura A: Genetic factors which confer sensitivity to highly active antiretroviral therapy (HAART) in HIV-infected subjects: implication of a benefit of an earlier initiation of HAART in HIV therapy. Pharmacogenomics 2008; 9(9): 1347-1351.

Bioinformatics

1. Staffs and Students

Professor:	Hiroshi Tanaka	
Associate Professor:	Yoshihito Niimura	
Assistant Professor:	Soichi Ogishima	
Project Associate Professor:	Hiroshi Mizushima,	Jun Nakaya,
	Fengrong Ren,	Takako Takai,
	Shinji Tanaka	
Project Lecturer:	Kazuro Shimokawa,	Kanae Oda
Project Assistant Professor:	Takeshi Hase,	Naoki Hasegawa,
	Kaei Hiroi,	Keisuke Ido,
	Mayuko Ishikawa,	Yasen Mahmut,
	Kaoru Mogushi,	Wataru Ohashi,
	Satoshi Shoji,	Masao Umayabashi
Visiting Professor:	Hiroki Nogawa	
Visiting Assistant Professor:	Isao Yamaguchi	
Technical Staff:	Masaya Itoda,	Ken Miyaguchi,
	Shota Nemoto	
Graduate Students:	Takayuki Ohnishi,	Isao Okada,
	Emilio Campos,	Yuki Katayama,
	Yoshitomo Tanaka,	Shun-ya Takahashi,
	Hironobu Yamaguchi,	Daisuke Yamakata,
	Kengo Morikawa,	Wataru Ohashi,
	Mojgan Haghighi,	Yoshiyuki Kaneko,
	Ryosuke Ishiwata,	Hideaki Takata,
	Masakuni Shibata,	Arihito Endo,
	Todd Johnson,	Satoshi Nagaie,
	Junko Shibata,	Yoshimi Naruo,
	Yasuko Takahashi,	Akiko Hatano,
	Taika Muto,	Mitsuteru Hoshina,
	Yuki Tanaka,	Izumi Nakahara,
	Hiromi Matsumae,	Izumi Yoshida,
	Hyeryung Kim,	Ken Miyaguchi,
	Kumiko Iijima,	Satoru Suzuki,
	Eiichi Ueno,	Naoko Kasahara,
	Tadashi Urashima,	Shunji Tamura,
	Takahiro Ishikawa,	Masao Ichikawa,
	Takumi Kobayashi,	Kazuhiko Inoue,
	Sakiko Ohta,	Manabu Chiba,
	Masataka Kikuchi,	Yoshiko Kozawa,
	Afsaneh Eslami,	Kae Suzuki,
	Risa Iijima,	Akihide Ohka,
	Wanping Aw,	Kyaw Tun

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”, “OMICS-based Drug Discovery and Development”, “Statistical Genetics and Medical Statistics”, “English Debate”, and “Practice in Global Linkage between University and Industry”. He supervises 27 students of PhD course and 3 students in Master course in Graduate School of Medical and Dental Sciences and 10 students of PhD course and 10 students in Master course in Biomedical Science PhD Program. He is a principle

investigator of "Global Linkage Program between University and Industry" granted by Support Program for Improving Graduate School Education. This program provides students with internship opportunities at international business firms to see real-world examples and global trends so as to envisage future needs. This program also provides students with specialist consultations which support them to define their career objectives. He is also a principle investigator of "International Educational Program for Interdisciplinary Disease Science" granted by Program for Accelerating Internationalization of Higher (University) Education. This program will form a global alliance of higher education institutes in Europe, the United States, and Asia and develop international cooperation education of the Double-degree Program (5-year PhD course). This program has established university alliances with Heidelberg University, Glasgow University, Dundee University, Peking University, Peking Union University, China Medical University, Fudan University, Hanoi Medical University, Ochanomizu University, and Kitasato University, sharing the philosophy of interdisciplinary disease science. He is also a principle investigator of "Educational Program for Biomedical Omics Information Scientists" granted by Special Coordination Funds for Promoting Science and Technology. This program offers study opportunities to clinical doctors and medical technologists in learning about integration of life science and informational science into practical applications in medicine. This program also educates bioinformatists who have been active in their field and are planning to diversify their activities into medical science, offering them basic and practical knowledge in clinical medicine and drug discoveries.

3. Research Subjects

In our laboratory, we conduct biological and medical researches from the viewpoint of Systems Biology.

Biological sciences: Recently, the whole genome sequences of diverse organisms have become available. Moreover, various "omix" 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 omix information.

Medical sciences – Genomic and omix 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 omix-based medicine.

(1) Integrated Clinical Omics Database Open to the Public

We are developing new OMICS based database for clinical research by integrating OMICS information and comprehensive clinical information. We are currently collecting hepatic, colon, and oral cancer. We have developed "Clinical Omics Database System (iCOD)" to store and analyze clinical omics data, which facilitates the understandings of relations between omics data and clinical data. This database has three components, 1) Primary database for anonimized data storage, 2) Secondary Database for research and analysis, 3) Tertiary database for publication. Publication database server can be accessed through the internet (http://omics.tmd.ac.jp/). Although it is currently only in Japanese, English version will be released in 2009. In this database, the relationship is visualized as a network with three layers, clinical, pathological and omics layer, for each case. This would be the first public integrated clinical database including clinical information and molecular biological information. The target for this research is to realize "OMICS based Medicine" and to understand the relation between pathobiology and clinical outcome.

(2) Omics-based Analysis of Hepatocellular Carcinoma

Gene expression profiling using microarray analysis has been widely used in biomedical research. Because microarray technique simultaneously detects expression levels for thousands of genes, interpretation of such large-scale data is still a challenging task. Therefore, microarray data is often examined using the information of a pathway as well as protein-protein interaction (PPI) network. In this research, we aimed to develop a novel method to identify disease-specific network in order to establish biomarkers for early detection of hepatocellular carcinoma.

One hundred and sixty-eight cases of primary HCC specimens were obtained from surgically resected materials. Eighty-one patients showed portal vein invasion (vp), and 87 patients did not show vp. We examined differently expressed genes using KEGG PATHAY, and we observed significant upregulation of cell proliferation, as well as downregulation of hepatic metabolism such as biosynthesis of complement, fatty acid, and cytochrome P450. Furthermore, we constructed vp-specific molecular networks using PPI information and identified genes related to mitosis such as Aurora kinase A/B and Survivin, which were not included in KEGG PATHWAY.

(3) Systems biology and evolution

Accumulating vast amounts of omics data, a new filed called "systems biology" proceed to aim system-level understanding of life, and we work on analysis of both evolution and dynamics of biological systems. (1) Evolutionary analysis, which we call "systems evolutionary biology", is to understand the evolution of life not only as gene evolution but also as systems evolution. We study evolution of i) Hox signaling system (developmental system) and ii) yeast protein interaction network (signaling system). In the former work, we inferred transcriptional network regulated by Hox proteins, and then we conduct preliminary analyses of evolution of it. In the latter work, we showed modularity as an evolutionary constraint on yeast protein interaction network. (2) On the other hand, dynamical analysis is to understand systems behavior. To aim transcriptional mechanism-based understanding of microarray data, we developed a novel method of trend analysis and a visualization system of hierarchical network model.

(4) Evolutionary Dynamics of Olfactory Receptor Gene Families in Mammals

Odorant molecules in the environment are detected by olfactory receptors (ORs). OR genes form the largest multigene family in vertebrates. So far we have identified the entire repertories of OR genes from the genome sequences of various species, revealing that OR gene families have dynamically changed during evolution depending on each species' living environment. In 2008, we have conducted a detailed comparative analysis of OR genes between humans and chimpanzees as a collaboration with Dr. Yasuhiro Go in the Primate Research Institute (Go & Niimura, 2008). We found that the number of OR genes (~810) and the fraction of pseudogenes (51%) are very similar to those in humans. These observations are in sharp contrast to the previous studies, in which humans were believed to have a poorer sense of smell than chimpanzees. Moreover, the most recent common ancestor between humans and chimpanzees were estimated to have a larger number of functional OR genes and a lower fraction of pseudogenes than its descendents, suggesting that the OR gene repertoires are in a phase of deterioration in both lineages. We also showed that ~25% of their functional genes are species-specific, implying that the spectrum of detectable odorants might be quite different between them.

(5) Intelligent Patient Care and Health Care Policy

We are handling several areas in Medical Informatics within our laboratory. We have been designing ubiquitous computer network in the hospital to establish an error free and effective environment at the bed side for the nurse, as it is the most essential point of care in the hospital. We are using active RFID tags to monitor the movement of individuals, and passive tags to confirm the equipment or drugs. Prof. Nakaya has been working for standardization of medical terminology, and is a member and section chair of ISO committee. We also have research field in the medical informatics policy (comparison of medical informatics system between countries, national doctor distribution), assessment of clinical trials, proposal of effective clinical trial with genomic information, web-based health consultation system, and effect of music for dementia.

4. Publications

[Original Articles]

1. Ohta T, Iijima K, Miyamoto M, Nakahara I, Tanaka H, Ohtsuji M, Suzuki T, Kobayashi A, Yokota J, Sakiyama T, Shibata T, Yamamoto M, Hirohashi S. Loss of Keap1 function activates Nrf2 and provides advantages for lung cancer cell growth. Cancer Research, 68:1303-1309, 2008
2. Nakagawa S, Niimura Y, Gojobori T, Tanaka H, Miura K. Diversity of preferred nucleotide sequences around the translation initiation codon in eukaryote genomes. Nucleic Acids Research, 36:861-871, 2008
3. Tanaka S, Arii S, Yasen M, Mogushi K, Nguyen T, Zhao C, Imoto I, Eishi Y, Inazawa J, Miki Y, Tanaka H. Aurora kinase B is a predictive factor for the aggressive recurrence of hepatocellular carcinoma after curative hepatectomy. British Journal of Surgery, 95:611-619, 2008
4. Watanabe H, Mogushi K, Miura M, Yoshimura R.I, Kurabayashi T, Shibuya H, Tanaka H, Noda S, Iwakawa M, Imai T. Prediction of lymphatic metastasis based on gene expression profile analysis after brachytherapy for early-stage oral tongue carcinoma. Radiotherapy and Oncology, 87:2237-2242, 2008
5. Go Y, Niimura Y. Similar numbers but different repertoires of olfactory receptor genes in humans and chimpanzees. Mol. Biol. Evol. 25: 1897-1907, 2008
6. Genome Information Integration Project and H-Invitational 2 Consortium. Yamasaki C, …Niimura Y, … Gojobori T. The H-Invitational Database (H-InvDB), a comprehensive annotation resource for human genes and transcripts. Nucleic Acids Res. 36: D793-799, 2008
7. Ren F, Tanaka H, Yang Z. A likelihood look at the supermatrix-supertree controversy. Gene, Epub 10 April, 2008

8. Hase T, Niimura Y, Kaminuma T, Tanaka H. Non-uniform survaival rate of heterodimerization links in the evolution of the yeast protein-protein interaction network. PLoS ONE, 3:e1667, 2008
9. Ichikawa M, Okamura-Oho Y, Shimokawa K, Kondo S, Nakamura S, Yokota H, Himeno R, Lesch KP, Hayashizaki Y. Expression analysis for inverted effects of serotonin transporter inactivation. Biochem Biophys Res Commun. 368:43-49, 2008
10. Ohashi K, Sakamoto N, Watanabe M, Mizushima H, Tanaka H. Development of a telediagnosis endoscopy system over secure internet. Methods of Information in Medicine, 47:157-166, 2008
11. Ohashi K, Kurihara Y, Watanabe K, Tanaka H. Safe patient transfer system with monitoring of location and vital signs. Journal of Medical and Dental Sciences, 55:33-41, 2008
12. Ooe Y, Anamizu H, Tatsumi H, Tanaka H. The Development of Network Infrastructure in Rural Areas and Problems in Applying IT to the Medical Field. Japan Hospitals, 27:65-69, 2008
13. Kurihara Y, Watanabe K, Kikuchi T, Namba T, Tanaka H. Potentialities of the Pneumatic Biosensing Bed as a Network Terminal for Ubiquitous Health Monitoring and Medical Care. IEEJ Trans, 3:632-641, 2008
14. Endo A, Shibata T, Tanaka H. Comparison of Seven Algorithms to Predict Breast Cancer Survival. International Journal of Biomedical Soft Computing and Human Sciences, 13:11-16, 2008
15. Koeda M, Shibata T, Asai K, Okubo Y, Tanaka H. Care Policy for Patients with Dementia: Family' s Decision and Its Impact. BioMedical Engineering and Informatics, 2:843-847, 2008.

[Reviews]

1. Nei M, Niimura Y, Nozawa M. The evolution of animal chemosensory receptor gene repertoires: roles of chance and necessity. Nat. Rev. Genet, 9: 951-963, 2008

[Books]

1. Tanaka H. Bioinformatics and Genomics for Opening New Perspective for Personalized Care. "eHealth: Combining Health Telematics, Telemedicine, Biomedical Engineering and Bioinformatics to the Edge" (B.Blobel et al. eds.). IOS press, 47-58, 2008
2. Niimura Y. Olfactory receptor genes: Evolution, in Encyclopedia of Life Sciences, John Wiley & Sons, Inc., 2008
3. Shimokawa K. et al. : DNA microarrays – Methods Express, Scion Publishing. 103-114 ,2008
4. Ohashi W, Mizushima H, Tanaka H. Economic Advantage of Pharmacogenomics – Clinical Trials with Genetic Information" eHealth Beyond the Horizon – Get IT There" (S.K. Andersen, et al. eds.) IOS press, 585-590, 2008

Applied Genetics

1. Staffs and Students (April, 2008)

Professor	Yoshio MIKI	
Associate Professor	Kiyotsugu YOSHIDA	
Assistant professor	Katsuya TAKENAKA	
Graduate Student	Xia YUN,	Hui Feng WANG,
	Zheng Guang LU,	Naoe TAIRA,
	Junko KIMURA,	Miho TAKAOKA,
	Hew Hoi CHIN,	Keishi NIHIRA,
	Nadila WALI,	Takuya KUDO,
	Sadiya MARIKU,	
Research Student	Azumi ITO,	Ikumi OKU

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.
2) Regulatory mechanisms of tumor cells 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. Han, X., Saito, H., Miki, Y.,* and Nakanishi, A. A CRM1-mediated nuclear export signal governs cytoplasmic localization of BRCA2 and is essential for centrosomal localization of BRCA2. Oncogene, 27: 2969-77, 2008. *Corresponding author
2. Hirai, Y., Banno, K., Suzuki, M., Ichikawa, Y., Udagawa, Y., Sugano, K., and Miki, Y. Molecular epidemiological and mutational analysis of DNA mismatch repair (MMR) genes in endometrial cancer patients with HNPCC-associated familial predisposition to cancer. Cancer Sci, 99: 1715-9, 2008.
3. Isomura, M., Oya, N., Tachiiri, S., Kaneyasu, Y., Nishimura, Y., Akimoto, T., Hareyama, M., Sugita, T., Mitsuhashi, N., Yamashita, T., Aoki, M., Sai, H., Hirokawa, Y., Sakata, K., Karasawa, K., Tomida, A., Tsuruo, T., Miki, Y.,* Noda, T., and Hiraoka, M. IL12RB2 and ABCA1 genes are associated with susceptibility to radiation dermatitis. Clin Cancer Res, 14: 6683-9, 2008. *Corresponding author
4. Izawa, N., Matsumoto, S., Manabe, J., Tanizawa, T., Hoshi, M., Shigemitsu, T., Machinami, R., Kanda, H., Takeuchi, K., Miki, Y., Arai, M., Shirahama, S., and Kawaguchi, N. A Japanese patient with Li-Fraumeni syndrome who had nine primary malignancies associated with a germline mutation of the p53 tumor-suppressor gene. Int J Clin Oncol, 13: 78-82, 2008.
5. Kimura, J., Nguyen, S. T., Liu, H., Taira, N., Miki, Y.,* and Yoshida, K. A functional genome-wide RNAi screen identifies TAF1 as a regulator for apoptosis in response to genotoxic stress. Nucleic Acids Res, 36: 5250-9, 2008. *Corresponding author
6. Komatsu, A., Nagasaki, K., Fujimori, M., Amano, J., and Miki, Y. Identification of novel deletion polymorphisms in breast cancer. Int J Oncol, 33: 261-70, 2008.
7. Nihira, K., Taira, N., Miki, Y.,* and Yoshida, K. TTK/Mps1 controls nuclear targeting of c-Abl by 14-3-3-coupled phosphorylation in response to oxidative stress. Oncogene, 27: 7285-95, 2008. *Corresponding author
8. Oku, Y., Shimoji, T., Takifuji, K., Hotta, T., Yokoyama, S., Matsuda, K., Higashiguchi, T., Tominaga, T., Nasu, T., Tamura, K., Matsuura, M., Miyata, S., Kato, Y., Yamaue, H., and Miki, Y. Identification of the molecular mechanisms for dedifferentiation at the invasion front of colorectal cancer by a gene expression analysis. Clin Cancer Res, 14: 7215-22, 2008.

9. Shinagawa, H., Miki, Y.,* and Yoshida, K. BRCA1-mediated ubiquitination inhibits topoisomerase II alpha activity in response to oxidative stress. Antioxid Redox Signal, 10: 939-49, 2008. *Corresponding author
10. Sugai, S., Satoh, Y., Komatsu, M., Okumura, S., Nakagawa, K., Ishikawa, Y., and Miki, Y. Recurrence pattern and rapid intraoperative detection of carcinoembryonic antigen (CEA) mRNA in pleural lavage in patients with non-small cell lung cancer (NSCLC). Rinsho Byori, 56: 851-7, 2008.
11. Sugano, K., Nakamura, S., Ando, J., Takayama, S., Kamata, H., Sekiguchi, I., Ubukata, M., Kodama, T., Arai, M., Kasumi, F., Hirai, Y., Ikeda, T., Jinno, H., Kitajima, M., Aoki, D., Hirasawa, A., Takeda, Y., Yazaki, K., Fukutomi, T., Kinoshita, T., Tsunematsu, R., Yoshida, T., Izumi, M., Umezawa, S., Yagata, H., Komatsu, H., Arimori, N., Matoba, N., Gondo, N., Yokoyama, S., and Miki, Y. Cross-sectional analysis of germline BRCA1 and BRCA2 mutations in Japanese patients suspected to have hereditary breast/ovarian cancer. Cancer Sci, 99: 1967-76, 2008.
12. Tanaka, S., Arii, S., Yasen, M., Mogushi, K., Su, N. T., Zhao, C., Imoto, I., Eishi, Y., Inazawa, J., Miki, Y., and Tanaka, H. Aurora kinase B is a predictive factor for the aggressive recurrence of hepatocellular carcinoma after curative hepatectomy. Br J Surg, 95: 611-9, 2008.
13. Tomiyoshi, G., Nakanishi, A., Takenaka, K., Yoshida, K., and Miki, Y. Novel BRCA2-interacting protein BJ-HCC-20A inhibits the induction of apoptosis in response to DNA damage. Cancer Sci, 99: 747-54, 2008.

Review Article

1. Nagasaki, K., and Miki, Y. Molecular prediction of the therapeutic response to neoadjuvant chemotherapy in breast cancer. Breast Cancer, 15: 117-20, 2008.

Molecular Cytogenetics

1. Staffs and Students (April, 2008)

Professor	Johji Inazawa M.D., Ph.D.	
Associate Professor	Issei Imoto M.D., Ph.D.	
Tokunin Associate Professor	Ken-ichi Kozaki D.D.S., Ph.D.	
MTT Lecturer	Takeshi Matsui Ph.D.	
Assistant Professor	Sana Yokoi M.D., Ph.D.	
Tokunin Assistant Professor	Jun Inoue Ph.D.	
Tokunin Assistant Professor	Shin Hayashi M.D., Ph.D.	
Research Assistant	Ayako Takahashi,	Rumi Mori
Secretary	Yuko Shinozaki,	Yoriko Fukukawa
Graduate Student	Shozo Honda,	Bai Hua,
	Tomoki Muramatsu,	Mayuko Furuta,
	Akiyo Ohmae	
Research Student	Ryoko Kikuchi,	Shuhei Komatsu,
	Tomohiko Tsuruta	

2. Purpose of Education

The principal aim of Department of Molecular Cytogenetics is to understand the molecular mechanism underlying intractable diseases, such as cancer 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. Development of innovative techniques for genomics and epigenomics in medical science.
3. Development of practically useful tools for molecular diagnosis of intractable diseases.
4. Molecular mechanisms involved in stratified epithelial differentiation and cancer progression.

5. Publications

Original Article

1. Ishihara T, Tsuda H, Hotta A, Kozaki K, Yoshida A, Jaeduk Yoshimura Noh, Ito K, Imoto I, Inazawa J: *ITCH* is a putative target for a novel 20q11.22 amplification detected in anaplastic thyroid carcinoma cells by array-based comparative genomic hybridization. Cancer Sci.99:1940-9, 2008
2. Hayashi S, Okamoto N, Makita Y, Hata A, Imoto I, Inazawa J: Heterozygous Deletion at 14q22.1-q22.3 including the BMP4 gene in a patient with psychomotor retardation, congenital corneal opacity and feet polysyndactyly. Am J Med Genet A.146A:2905-10, 2008
3. Arai E, Ushijima S, Tsuda H, Fujimoto H, Hosoda F, Shibata T, Kondo T, Imoto I, Inazawa J, Hirohashi S, Kanai Y: Genetic clustering of clear cell renal cell carcinoma based on array-comparative genomic hybridization: its association with DNA methylation alteration and patient outcome. Clin Cancer Res.14:5531-9, 2008
4. Kikuchi S, Honda K, Tsuda H, Hiraoka N, Imoto I, Kosuge T, Umaki T, Onozato K, Shitashige M, Yamaguchi U, Ono M, Tsuchida A, Aoki T, Inazawa J, Hirohashi S, Yamada T: Expression and gene amplification of actinin-4 in invasive ductal carcinoma of the pancreas. Clin Cancer Res.14:5348-56, 2008
5. Katsuki Y, Nakada S, Yokoyama T, Imoto I, Inazawa J, Nagasawa M, Mizutani S: Caffeine yields aneuploidy through asymmetrical cell division caused by misalignment of chromosomes. Cancer Sci.99:1539-45, 2008
6. Hayashi S, Mizuno S, Migita O, Okuyama T, Makita Y, Hata A, Imoto I, Inazawa J: The *CASK* gene harbored in a deletion detected by Array-CGH as a potential candidate for a gene causative of X-linked dominant mental retardation. Am J Med Genet A.146A:2145-51, 2008
7. Nakajima T, Yasui K, Zen K, Inagaki Y, Fujii H, Minami M, Tanaka S, Taniwaki M, Itoh Y, Arii S, Inazawa J,

Okanoue T: Activation of B-Myb by E2F1 in hepatocellular carcinoma. Hepatol Res.38:886-95, 2008

8. Qi S, Mogi S, Tsuda H, Tanaka Y, Kozaki K, Imoto I, Inazawa J, Hasegawa S, Omura K: Expression of cIAP-1 correlates with nodal metastasis in squamous cell carcinoma of the tongue. Int J Oral Maxillofac Surg.37:1047-53, 2008
9. Kikuchi R, Tsuda H, Kozaki K, Kanai Y, Kasamatsu T, Sengoku K, Hirohashi S, Inazawa J, Imoto I: Frequent inactivation of a putative conditional tumor-suppressor gene, angiopoietin-like protein 2, in ovarian cancer. Cancer Res.68:5067-75, 2008
10. Nakamura E, Kozaki K, Tsuda H, Suzuki E, Pimkhaokham A, Yamamoto G, Irie T, Tachikawa T, Amagasa T, Inazawa J, Imoto I: Frequent silencing of a putative tumor suppressor gene melatonin receptor 1A (MTNR1A) in oral squamous-cell carcinoma. Cancer Sci.99:1390-400, 2008
11. Kozaki K, Imoto I, Mogi S, Omura K, Inazawa J: Exploration of tumor-suppressive microRNAs silenced by DNA hypermethylation in oral cancer. Cancer Res. 68:2094-105, 2008
12. Suzuki A, Shibata T, Murakami Y, Horii A, Shiratori K, Hirohashi S, Inazawa J, Imoto I: Identification of SMURF1 as a possible target for 7q21.3-22.1 amplification detected in a pancreatic cancer cell line by in-house array-based comparative genomic hybridization. Cancer Sci.99:986-94, 2008
13. Tanaka S, Arii S, Yasen M, Moqushi K, Su NT, Zhao C, Imoto I, Eishi Y, Inazawa J, Miki Y, Tanaka H: Aurora kinase B is a predictive factor for the aggressive recurrence of hepatocellular carcinoma after curative hepatectomy. Br J Surg.95:611-9, 2008
14. Saitoh Y, Yamamoto N, Dewan MZ, Sugimoto H, Martinez BVJ, Iwasaki Y, Matsubara K, Qi X, Saitoh T, Imoto I, Inazawa J, Utsunomiya A, Watanabe T, Masuda T, Yamamoto N, Yamaoka S: Overexpressed NF-{kappa}B inducing kinase contributes to the tumorigenesis of adult T-cell leukemia and Hodgkin Reed-Sternberg cells. Blood.111:5118-29, 2008
15. Zhao C, Inoue J, Imoto I, Otsuki T, Iidab S, Ueda R, Inazawa J: POU2AF1, an amplification target at 11q23, promotes growth of multiple myeloma cells by directly regulating expression of a B-cell maturation factor, TNFRSF17. Oncogene.27:63-75, 2008
16. Nojima H, Adachi M, Matsui T, Okawa K, Tsukita S, Tsukita S: IQGAP3 regulates cell proliferation through the Ras/ERK signalling cascade. Nature Cell Biol.10:971-8, 2008
17. Katsuno T, Umeda K, Matsui T, Hata M, Tamura A, Itoh M, Takeuchi K, Fujimori T, Nabeshima YI, Noda T, Tsukita S, Tsukita S: Deficiency of zonula occludens-1 causes embryonic lethal phenotype associated with defected yolk sac angiogenesis and apoptosis of embryonic cells. Mol Biol Cell. 19:2465-75, 2008

Biochemical Genetics

1. Staffs and Students (April, 2008)

Professor	Shigetaka Kitajima MD, PhD	
Associate Professor	Yujiro Tanaka MD, PhD	
Assistant Professor	Mimi Adachi MD, PhD,	
Secretary	Kuniko Takayanagi	
Graduate Student	Kazuhiko Yamada,	Liu Qin,
	Aya Nakamura,	Shinichiro Asano,
Research Student	Yuriko Hosaka	

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
- To innovate novel in situ regeneration therapy of heart

3. Research Subjects

1) Transcription cycle of basal transcription
2) Biological role of transcription elongation factor Elongin A
3) Cell fate determination by stress response gene activating transcription factor (ATF) 3.
4) Mechanism of cell cycle arrest in terminal differentiation of cardiac cells and its re-activation in vivo and in vitro

4. Clinical Services

none

5. Publications

Original Article

1. Nakamura N, Yoshida M, Umeda M, Huang Y, Kitajima S, Inoue Y, Ishikawa I, Iwai T. Extended exposure of lipopolysaccharide fraction from Porphyromonas gingivalis facilitates mononuclear cell adhesion to vascular endothelium via Toll-like receptor-2 dependent mechanism. Atherosclerosis 196:59-67, 2008
2. Lee S-A, Lee S-Y, Cho I-H, Oh M-A, Kang E-S, Kim Y-B, Seo WD, Choi S, Nam JO, Adachi TM, Kitajima S, Ye S-K, Kim S, Hwang Y-J, Kim I-S, Park KH, Lee JW. Tetraspanin TM4SF5 mediates epithelial-mesenchymal transition leading to loss of contact inhibition. J. Clin Invest 118:1354-1366, 2008 (Comment in Editorial)
3. Nakamura K, Sakaue H, Nishizsawa A, Matsuki Y, Gomi H, Watanabe E, Hiramatsu R, Adachi T.M, Kitajima S, Noda T, Ogawa W, Kasuga M. PDK1 regulates cell proliferation and cell cycle progression through control of cyclin D1 and p27Kip1 expression. J Biol Chem 283:17702-17711, 2008
4. Turchi L, Aberdam E, Mazure N, Pouyssegur J, Deckert M, Kitajima S, Aberdam D, Virrole T. Hif-2alpha mediates UV-induced apoptosis through a novel ATF3 dependent death pathway. Cell Death and Differentiation 15:1472-1480, 2008
5. Adachi TM, Takagi H, Hashimoto K, Goto K, Hidaka T, Koshimizu U, Yamada K, Goto I, Maejima Y, Isobe M, Nakayama KI, Inomata N, Kitajima S. Cardiomyocyte proliferation and protection against post-myocardail infarctiosn heart failure by cyclin D1 and SCFSkp2 ubiquitin ligase. Cardiovascular Res. 80:181-190, 2008 (Comment in Editorial)
6. Mayer SI, Dexheimer V, Nishida E, Kitajima S, Thiel G. Expression of the transcriptional repressor ATF3 in gonadotrophs is regulated by Egr1, CREB and ATF2 following GnRH receptor stimulation. Endocrinology 149:

6311-6325, 2008
7. Adachi-T M, Goto I, Yamada K, Kitajima S. Differential regulation of cyclin D1 and D2 in protecting against cardiomyocyte proliferation. Cell Cycle 7: 3768-3774, 2008
8. Yasukawa T, Kamura T, Kitajima S, Conaway RC, Conaway JW, Aso T. Mammalian Elongin A complex mediates DNA-damage-induced ubiquitylation and degradation of Rpb1. EMBO J. 27: 3256-3266, 2008 (Faculty of 1000 Biology)
9. Matsuda T, Zhai P, Maejima Y, Hong C, Gao S, Tian B, Goto K, Takagi H, Adachi-Tamamori M, Kitajima S, and Sadoshima J. Distinct roles of GSK-3a and GSK-3b phosphorylation in the heart under pressure overload. Proc Natl Acad Sci USA 105: 20900-20905, 2008
10. Tanaka Y, Nakayama Y, Taniguchi M, Kioussis D. Regulation of early T cell development by the PHD finger of histone lysine methyltransferase ASH1. Biochem. Biophis. Res. Commun. 365: 589-584, 2008

Department of Hepato-Biliary-Pancreatic Surgery

1. Staffs and Students (April,2008)

Professor	Shigeki Arii	
Tokunin Associate Professor	Shinji Tanaka	
Assistant Professor	Koji Ito,	Noriaki Nakamura,
	Atsushi Kudo,	Toshiaki Kurokawa,
	Norio Noguchi	
Tokunin Assistant Professor	Yasen Mahmut	
Graduate Student	Yoko Zui,	Daisuke Ban,
	Keisuke Minamimura,	Arihiro Aihara
	Yusuke Mitsunori,	Satoshi Matsumura,
	Ayano Murakata,	Rama Adikrisna,
	Kenichiro Yoshitake,	Syunsuke Muramatsu,
	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 140 on 2007, which was ranked among high volume centers of our country.

5. Publications

Original Article

1. Tanaka S, Taira K, Kudo A, Nakamura N, Ito K, Arii S. Anterior approach for left-sided hepatic resection. Hepatog astroenterology.55:1767-1763, 2008
2. Inagaki Y, Yasui K, Endo M, Nakajima T, Zen K, Tsuji K, Minami M, Tanaka S, Taniwaki M, Itoh Y, Arii S,

Okanoue T. CREB3L4, INTS3, and SNAPAP are targets for the 1q21 amplicon frequently detected in hepatocellular carcinoma. Cancer Genet Cytogenet 180:30-36, 2008
3. Ito K, Ozasa H, Noda Y, Arii S, Horikawa S. Effects of free radical scavenger on acute liver injury induced by d-galactosamine and lipopolysaccharide in rats. Hepatol Res. 38:194-201,2008
4. Ito K, Ozasa H, Noda Y, Koike Y, Arii S, Horikawa S. Effect of non-essential amino acid glycine administration on the liver regeneration of partially hepatectomized rats with hepatric ischemia/reperfusion injury. Clin Nutr 27:773-780,2008
5. Teramoto K, Kawamura T, Takamatsu S, Nakamura N, Kudo A, Sanada T, Noguchi N, Ban D, Arii S. Strong association between frequency of intermittent inflow occlusion and transient increase in serum liver enzymes after hepatic resection. Hepatogastroenterology 55:636-640, 2008
6. Tanaka S, Arii S, Yasen M, Mogusi K, Su N-T, Zhao C, Imoto I, Eishi Y, Inazawa J, Miki Y, Tanaka H. Aurora kinase B is a predictive factor for aggressive recurrence of hepatocellular carcinoma after curative hepatectomy Brit J Surg 95:611-619, 2008
7. Makuuchi M, Kokudo N, Arii S, Futagawa S, Kaneko S, Kawasaki S, Matsuyama Y, Okazaki M, Okita K, Omata M, Saida Y, Takayama T, Yamaoka Y. Development of evidence-based clinical guidelines for the diagnosis and treatment of hepatocellular carcinoma in Japan. Hepatology Res. 38:37-51, 2008
8. Nakajima T, Yasui K, Keika Z, Inagaki Y, Fujii H, Minami M, Tanaka S, Taniwaki M, Itoh Y, Arii S, Inazawa J, Okanoue T. Activation of B-Myb by E2F1 in hepatocellular carcinoma Hepatology Res. 38:886-895, 2008
9. Kaneda M, Zhang D, Bhattacharjee R, Nakahama KI, Arii S, Morita I. Vitamin K(2) suppresses malignancy of HuH 7 hepatoma cells via inhibition of conenexin 43 Cancer Lett. 8:761-772, 2008
10. Eguchi S, Kanematsu T, Arii S, Okazaki M, Okita K, Omata M, Ikai I, Kudo M, Kojiro M, Makuuchi M, Monden M, Matsuyama Y, Nakanuma Y, Takayasu K. The Liver Cancer Study Group of Japan Comparison of the outcomes between an anatomical resection and a non-anatomical minor heoatectomy for single hepatocellular carcinomas based on a Japanese nationwide survey. Surgery 143:469-475, 2008
11. Hasegawa K, Makuuchi M, Takayama T, Kokudo N, Arii S, Okazaki M, Okita K, Omata M, Kudo M, Kojiro M, Nakanuma Y, Takayasu K, Monden M, Matsuyama Y, Ikai I, for the Liver Cancer Study Group of Japan Surgical resection vs percutaneous ablation for hepatocellular carcinoma: A preliminary report of the Japanese nationwide survey J Hepatology 49:589-594, 2008
12. Takamatsu S, Noguchi N, Kudo A, Nakamura N, Kawamura T, Teramoto K, Igari T, Arii S. Influence of risk factors for metabolic syndrome and non-alcoholic fatty liver disease on the progression and prognosis of hepatocellular carcinoma. Hepatogastroenterology 55:609-614, 2008
13. Minamimura K, Sato K, Yagita H, Tanaka T, Arii S, Maki T. Strategies to induce marked prolongation of secondary skin allograft survival in alloantigen-primed mice. Am J Transplant 8:761-772, 2008
14. Takanori Ochiai, Yasunori Saito, Tatsuya Saitoh, Md. Zahidunnabi Dewan, Ayumi Shioya, Maki Kobayashi, Hiroshi Kawachi, Susumu Muto, Akiko Itai, Shin Uota, Yoshinobu Eishi, Naoki Yamamoto, Shinji Tanaka, Shigeki Arii and Shoji Yamaoka. Inhibition of IkB kinase restrains oncogenic proliferation of pancreatic cancer cells. Journal of Medical and Dental Sciences 2008; 55: 49-59,2008.

Review Article

1. Atomi Y, Arii S. 2nd International symposium on alcoholic liver and pancreatic diseases and cirrhosis, 18-19 October 2007, Kobe, Japan, Preface J Gastroenterology, 2008, Mar; 23, Suppl 1.

A case report

1. Left-sided portal hypertension due to serous cystadenoma of the pancreas: Report of a Case. Ito K, Kudo A, Nakamura N, Tanaka S, Teramoto K, Arii S. Surgery Today, 38(2):184-7,2008.

International Presentation

1. Nakamura N, Kudo A, Ito K, Tanaka S, Arii S. Efficacy of gemcitabine/cisplatin combined chemotherapy for gall bladder cancer. 8th World Congress of the international Hepato-Pancreato-Biliary Association. Mumbai, India,2008.2.27.
2. Sanada T, Iwasaki Y, Honda G, Koji T. Double Cancer; Arising in Gastric Heterotopic Pancreas and Pancreas Tail. 8th World Congress of the international Hepato-Pancreato-Biliary Association. Mumbai, India, 2008.2.27.
3. Baba H, Honda G, Kurata M, Tsuruta K, Okamoto A. Pancreatic cancer patients surviving five or more years after

surgery (Oral). 8th World Congress of the International Hepato-pancreato-Biliary Association. Munbai, India, 2008.02.27.

4. Takamatsu S, Iseki H, Kawai S, Maruo H, Shinichiro Kume S. Two cases of metastatic pancreas tumors of renal cell carcinoma. 8th World Congress of the international Hepato-Pancreato-Biliary Association. Munbai, India, 2008.3.1.
5. Tanaka S, Aihara A, Mahmut Y, Mogushi K, Taira K, Kudo A, Nakamura N, Ito K,Imoto I, Eishi Y, Miki Y, Inazawa J, Tanaka H, Arii S. Aurora Kinase B is a novel target for treatment of hepatocellular carcinoma.AACR Annual Meeting 2008. San Diego, America, 2008.4.15. (Poster presentation)
6. Nakamura N, Murakata A, Mitsunori Y, Matsumura S, Taira K, Kudo A, Ito K, Tanaka S, Arii S.Successfully Treater,multiple huge metastatic liver tumors histologically diagnosed as neuroendocrine tumors during operation. The54th Annual Congress of the Japan Section & The14th Czech-Japan Surfical Symposium.Tokyo, Japan, 2008.6.7.
7. Aihara A, Tanaka S, Arii S. Aurora Kinase B Inhibitor is a novel molecularly targeting therapeutic for hepatocellular carcinoma. ILCA 2008 Annual Conference. Chicago, America, 2008.9.5-7. (Poster presentation)
8. Ochiai T, Saito Y, Saitoh T, Dewan M, Shioya A, Kobayashi M, Kawachi H, Muto S, Itai A, Uota S, Eishi Y, Yamamoto N, Tanaka S, Arii S, Yamaoka S. INHIBITION OF I KAPPA B KINASE BETA SUPPRESSES ONCOGENIC PROLIFERATION OF PANCREATIC CANCER CELLS. UICC World Cancer Congress 2008, Geneva, 2008.8.30 (Poster)
9. Ochiai T, Bhamrah J, Shioya A, Yamamoto H, Arii S, Yamaoka S. SILENCING OF NF-KAPPA B INDUCING KINASE EXPRESSION SUPPRESSES CONSTITUTIVE NF-KAPPA B ACTIVITY IN COLORECTAL CANCER CELLS. UICC World Cancer Congress 2008, Geneva, 2008.8.30 (Poster)
10. Saito M, Iijima H, Yoshikawa S, Aizawa N, Nishiguchi S, Kudo A, Arii S. The mechanism of decrease in ultrasound contrast enhancement during kupffer phase in NASH patients-study using NASH rat model. AASLD 2008:The59th Annual Meeting of The American Association for The Study of Liver Diseases, San Franci-sco, America, 2008.10.31-11.4.
11. Arii S, Tanaka S. Development of Novel Molecular Target Therapy for HCC. 6th International Meeting Hepatocellular Carcinoma:Eastern and Western Experien-ces Current Issues of Hepatocellular Carcinoma,Seoul,Korea, 2008.12.8.
12. Mitsunori Y, Tanaka S, Adikrisna R, Yoshitake K, Matsumura S, Murakata A, Aihara A, Noguchi N, Kudo A, Kurokawa T, Nakamura N, IIjima H, Moriyasu F, Arii S. Utility of intraoperative contrast-enhanced ultrasonography for surgic-al operation of liver tumors. 10th International Syposium on Ultrasound Cont-rast Imaging,Tokyo, 2008.12.14.

Orthopaedic and spinal surgery

1. Staffs and Students (April, 2008)

Professor	Kenichi SHINOMIYA	
Junior Associate Professor	Tetsuya JINNO,	Yoshiyasu ARAI
Assistant Professor	Yoshinori ASO,	Yoshiaki WAKABAYASHI,
	Shigenori KAWABATA,	Keisuke AE,
	Tsuyoshi KATO	
Graduate Student	Daisuke KOGA,	Toshiki YOSHII,
	Makiko IWASAKI,	Tabu GOKITA,
	Hidetsugu MAEHARA,	Hirotaka KOYANAGI,
	Senichi ISHII,	Masaki TOMORI,
	Hiroki YAMAUCHI,	Hiroyuki INOSE,
	Kazuo KUSANO,	Yumi SUGATA,
	Koji FUJITA,	Tomokazu MASAOKA,
	Kyohei SAKAKI,	Takashi HIRAI,
	Masato YUASA	

Regenerative Therapeutics for Spine and Spinal Cord

Associate Professor	Shinichi SOTOME,	Shu TAKEDA
Junior Associate Professor	Mitsuhiro ENOMOTO	

2. Activities

As a department of orthopaedic surgery, we execute medical treatment, research, and education in cooperation with section of Orthopaedic Joint Surgery. Orthopaedics treats with various disorders of musculoskeletal systems and nervous systems such as bone, cartilage, joint, tendon, muscle, spinal cord and peripheral nerves. And the disorders include not only trauma, but also 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 spontaneous resorption of herniated disc and clinical application
5) Determination of responsible genes for degenerated intervertebral disc
6) Clinical applications of spinal cord evoked potentials
7) Development of novel diagnostic method for spinal cord function
8) Development of cell therapy to repair injured spinal cord
9) Development of gene therapy and artificial nerve to repair injured peripheral nerve
10) Development of multidisciplinary therapy for musculoskeletal malignant neoplasm
11) Reconstruction of motor function after musculoskeletal tumor resection

(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, microscopic or endoscopic surgery and spinal cord monitoring yield safety and secure decompression and fusion, resulting 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

The faculty in the department is responsible for assisting graduate students to develop the professional research, teaching and skills for both clinical and basic science in the field of orthopaedic surgery. Morning conferences are held three times a week, and special guest lectures are sometimes provided to have up-to-date information. We are participating in center of excellence program, frontier research on molecular destruction and reconstruction of tooth and bone in Tokyo medical and dental university and providing leaning environment for the students.

For first year orthopaedic residents, the annual meeting is held to discuss clinical and basic research with the faculty outside of Tokyo. Furthermore, we provide several open meetings and many orthopeadic surgeons join educational lectures to study recent clinical application by special guest or oral presentation of case reports by the residents.

3. Publications

Original Article

1. Inose, H; Kimura, A; Iwasaki, M; Shinomiya, K; Takeda, S:The Regulation of Osteoblast Differentiation by MicroRNA.. JOURNAL OF BONE AND MINERAL RESEARCH. 23():S395-S395,2008.09.
2. Itoh, S; Ohta, T; Sekino, Y; Yukawa, Y; Shinomiya, K:TREATMENT OF DISTAL RADIUS FRACTURES WITH A WRIST-BRIDGING EXTERNAL FIXATION: THE VALUE OF ALTERNATING ELECTRIC CURRENT STIMULATION. JOURNAL OF HAND SURGERY-EUROPEAN VOLUME. 33E(5):605-608,2008.1.
3. Sato, S; Kimura, A; Ozdemir, J; Asou, Y; Miyazaki, M; Jinno, T; Ae, K; Liu, XY; Osaki, M; Takeuchi, Y; Fukumoto, S; Kawaguchi, H; Haro, H; Shinomiya, KI; Karsenty, G; Takeda, S:The distinct role of the Runx proteins in chondrocyte differentiation and intervertebral disc degeneration - Findings in murine models and in human disease. ARTHRITIS AND RHEUMATISM. 58(9):2764-2775,2008.09.
4. Wang, W; Itoh, S; Matsuda, A; Aizawa, T; Demura, M; Ichinose, S; Shinomiya, K; Tanaka, J:Enhanced nerve regeneration through a bilayered chitosan tube: The effect of introduction of glycine spacer into the CYIGSK sequence. JOURNAL OF BIOMEDICAL MATERIALS RESEARCH PART A. 85A(4):919-928,2008.06.
5. Tomizawa, S; Kawabata, S; Komori, H; Fukuoka, YH; Shinomiya, K:Evaluation of segmental spinal cord evoked magnetic fields after sciatic nerve stimulation. CLINICAL NEUROPHYSIOLOGY. 119(5):1111-1118,2008.05.
6. Itoho, H; Asou, Y; Hara, Y; Haro, H; Shinomiya, K; Tagawa, M:Enhanced type X collagen expression in the extruded nucleus pulposus of the chondrodystrophoid dog. JOURNAL OF VETERINARY MEDICAL SCIENCE. 70(1):37-42,2008.01.
7. Hisaoka M, Ishida T, Kuo TT, Matsuyama A, Imamura T, Nishida K, Kuroda H, Inayama Y, Oshiro H, Kobayashi H, Nakajima T, Fukuda T, Ae K, Hashimoto H.:Clear cell sarcoma of soft tissue: a clinicopathologic, immunohistochemical, and molecular analysis of 33 cases. American Journal of Surgical Pathology. 32(3):452-60,2008.03.
8. Sayaka Tokumoto, Shinichi Sotome, Ichirou Torigoe, Ken Omura and Kenichi Shinomiya:Effects of cryopreservation on bone marrow derived mesenchymal cells of a nonhuman primate.. Journal of medical and dental science. 55():137-143,2008.
9. Akio Tsuchiya, Shinichi Sotome, Yoshinori Asou, Masanori Kikuchi, Yoshihisa Koyama, Tetsuro Ogawa, Junzo Tanaka and Kenichi Shinomiya: Effects of pore size and implant volume of porous hydroxyapatite/collagen (HAp/Col) on bone formation in a rabbit bone defect model.. Journal of medical and dental science. 55():91-99,2008.
10. Tominaga H, Maeda S, Hayashi M, Takeda S, Akira S, Komiya S, Nakamura T, Akiyama H, Imamura T: CCAAT/Enhancer-binding Protein Promotes Osteoblast Differentiation by Enhancing Runx2 Activity with ATF4. Mol. Biol. Cell. 19(12):5373-5386,2008.
11. Wang, W; Itoh, S; Matsuda, A; Ichinose, S; Shinomiya, K; Hata, Y; Tanaka, J:Influences of mechanical properties and permeability on chitosan nano/microfiber mesh tubes as a scaffold for nerve regeneration (vol 84, pg 557, 2008). JOURNAL OF BIOMEDICAL MATERIALS RESEARCH PART A. 84A(3):846-846,2008.03.

Review Article

1. Takeda S, Karsenty G:Molecular bases of the sympathetic regulation of bone mass. Bone. 42(5):837-40,2008.
2. Takeda S:Central control of bone remodelling. J Neuroendocrinol. 20(6):802-7,2008.
3. Takeda S:Osteoporosis: A neuroskeletal disease?. Int J Biochem Cell Biol. ():,2008.

Surgical Pathology

1. Staff and Students

Professor	Yoshinobu EISHI	
Associate Professor	Takumi AKASHI	
Assistant Professor	Tohru IGARI, Takashi ITO	JiroKUMAGAI,
Hospital Staff Doctor	Keiko MIURA,	Takashi ENDO
Secretary	Mari KOIKE	

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. Miyazaki Y, Tateishi T, Akashi T, Ohtani Y, Inase N, Yoshizawa Y. Clinical predictors and histologic appearance of acute exacerbations in chronic hypersensitivity pneumonitis. Chest134:1265-1270,2008.
2. Fujii Y, Saito K, Iimura Y, Sakai Y, Koga F, Kawakami S, Kumagai J, Kihara K. External validation of the Mayo Clinic cancer specific survival score in a Japanese series of clear cell renal cell carcinoma. J Urol 180:1290-1295, 2008.
3. Fujii Y, Komai Y, Saito K, Iimura Y, Yonese J, Kawakami S, Ishikawa Y, Kumagai J, Kihara K, Fukui I. Incidence of benign pathologic lesions at partial nephrectomy for presumed RCC renal masses: Japanese dual-center experience with 176 consecutive patients. Urology 72:598-602, 2008.
4. Tamahashi U, Kumagai J, Takizawa T, Sekine M, Eishi Y. Expression and intracellular localization of matrix metalloproteinases in intraductal papillary mucinous neoplasms of the pancreas. Virchows Arch 453:79-87, 2008.
5. Yamada I, Okabe S, Enomoto M, Sugihara K, Yoshino N, Tetsumura A, Kumagai J, Shibuya H. Colorectal carcinoma: in vitro evaluation with high-spatial-resolution 3D constructive interference in steady-state MR imaging. Radiology 246:444-453, 2008.
6. Matsumoto T, Kumagai J, Hasegawa M, Tamaki M, Aoyagi M, Ohno K, Mizusawa H, Kitagawa M, Eishi Y, Koike M. Significant increase in the expression of matrix metalloproteinase 7 in primary CNS lymphoma. Neuropathology 28:277-285, 2008
7. Ito T, Kobayashi D, Uchida K, Takemura T, Nagaoka S, Kobayashi I, Yokoyama T, Ishige I, Ishige Y, Ishida N, Furukawa A, Muraoka H, Ikeda S, Sekine M, Ando N, Suzuki Y, Yamada T, Suzuki T, Eishi Y : *Helicobacter pylori* invades the gastric mucosa and translocates to the gastric lymph nodes. Lab Invest. 88: 664-681, 2008.
8. Isobe Z, Suga T, Aoki Y, Aoki F, Ikeda K, Ueno M, Maeno T, Kurabayashi M, Eishi Y. A case of sarcoidosis with hypoxia showing slight ground glass opacities on chest CT. Nihon Kokyuki Gakkai Zasshi 46(11):899-903,2008
9. Murayama J, Taniguchi Y, Takino C, Ohtaki M, Kumagai J; Case report of two patients with post-scabetic nodules; with special consideration about differential diagnosis with malignant lymphoma. Rinsho Hifuka 62:453-456, 2008.

10. Kawano T, Haruki S, Ogiya K, Kawada K, Nakajima Y, Nishikage T, Kojima K, Nagai K, Kawachi H. Reliability of endoscopic esophageal mucosectomy using TxHood, a multipurposetreatment hood. Surg Endosc 22:2466-2469, 2008.
11. Wanajo A, Sasaki A, Nagasaki H, Shimada S, Otsubo T, Owaki S, Shimizu Y, Eishi Y, Kojima K, Nakajima Y, Kawano T, Yuasa Y, Akiyama Y. Methylation of the calcium channel-related gene, CACNA2D3, is frequent and a poor prognostic factor in gastric cancer. Gastroenterology 135(2):580-590,2008.
12. Miyazaki E, Ando M, Fukami T, Nureki S, Eishi Y, Kumamoto T. Minocycline for the treatment of sarcoidosis: is the mechanism of action immunomodulating or antimicrobial effect? Clin Rheumatol 27(9):1195-1197,2008.
13. Koda H, Kimura Y, Iino Y, Eishi Y, Murakami Y, Kitamura K. Bilateral sudden deafness caused by diffuse metastatic leptomeningeal carcinomatosis. Otol Neurotol 29(5):727-729,2008.
14. Kawano T, Haruki S, Ogiya K, Kawada K, Nakajima Y, Nishikage T, Kojima K, Nagai K, Kawachi H. Reliability of endoscopic esophageal mucosectomy using TxHood, a multipurposetreatment hood. Surg Endosc 22:2466-2469, 2008.
15. Nakagawa T, Iida S, Osanai T, Uetake H, Aruga T, Toriya Y, Takagi Y, Kawachi H, Sugihara K. Decreased expression of SOCS-3 mRNA in breast cancer with lymph node metastasis. Oncol Rep 19:33-39, 2008.
16. Chiba T, Shinozaki S, Nakazawa T, Kawakami A, Ai M, Kaneko E, Kitagawa M, Kondo K, Chait A, Shimokado K. Leptin deficiency suppresses progression of atherosclerosis in apoE-deficient mice. Atherosclerosis 196:68-75, 2008.
17. Kurata M, Nakagawa Y, Yamamoto K, Suzuki K, Kitagawa M. Induction of integrin expression in bone marrow cells after chemotherapy correlates with the overexpression of lung resistance protein (LRP) and poor outcome in patients with multiple myeloma. Am J Hematol 83:755-757, 2008.
18. Shiraishi J, Nakagawa Y, Kurata M, Yamamoto K, Abe Y, Toyoda Y, Suzuki K, Kitagawa M, Takemura T. Follicular lymphoma with marked infiltration of eosinophils. Pathol Int58:701-705, 2008
19. Hirokawa K, Utsuyama M, Ishikawa T, Kikuchi Y, Kitagawa M, Fujii Y, Nariuchi H, Uetake H, Sugihara K. Decline of T cell-related immune functions in cancer patients and an attempt to restore them through infusion of activated autologous T cells. Mech Ageing Dev 2008 May 8. [Epub ahead of print]
20. Hasegawa M, Kurata M, Yamamoto K, Yoshida K, Aizawa S, Kitagawa M. A novel role for acinus and MCM2 as host-specific signaling enhancers of DNA-damage-induced apoptosis in association with viral protein gp70. : A novel role for acinus and MCM2 as host-specific signaling enhancers of DNA-damage-induced apoptosis in association with viral protein gp70. Leuk Res 2008.
21. Oakley AJ, Yamada T, Liu D, Coggan M, Clark AG, Board PG. The identification and structural characterization of C7orf24 as g-glutamyl cyclotransferase: An Essential Enzyme in The g-Glutamyl Cycle. J Biol Chem 283(32): 2031-22042, 2008; 283(46): 32152, 2008. (Addition)

Book・Review Article

1. Arai T, Inoue Y, Eishi Y, Yamamoto S, Sakatani M. Propionibacterium acnes in granulomas of a patient with necrotising sarcoid granulomatosis. Thorax 63(1):90-1,2008
2. Hirokawa K, Utsuyama M, Kikuchi Y, Kitagawa M. Proper assessment and restoration of immunological function for the improvement of QOL and elongation of healthy lifespan in the elderly. In The Impact of Ageing edited by Sinigoj G et al., pp363-372, 2008.
3. Kitagawa M, Hirokawa K. Aging, cancer and apoptosis in animal models and clinical settings. In Handbook on Immunosenescence: basic understanding and clinical applications. Springer, Fulop T et al. Eds. pp1165-1188, 2008.
4. Utsuyama M, Kikuchi Y, Kitagawa M, Hirokawa K. Age-related changes in subpopulations of peripheral blood lymphocytes in healthy Japanese population. In Handbook on Immunosenescence: basic understanding and clinical applications. Springer, Fulop T et al. Eds. pp203-218, 2008.
5. Hirokawa K, Utsuyama M, Kikuchi Y, Kitagawa M, Assessment of age-related decline of immunological function and possible methods for immunological restoration in elderly. In Handbook on Immunosenescence: basic understanding and clinical applications. Springer, Fulop T et al. Eds. pp1547-1570, 2008.

Others (Prize)

1. Ito T. *Helicobacter pylori* invades the gastric mucosa and translocates to the gastric lymph nodes. The 14th Annual Meeting of Japanese Society for Helicobacter Research Award, Uehara *H. pylori* Award -The Most Excellent-,KOBE, 2008.

Medical Technology (Biomedical Devices and Instrumentation)

1. Staffs and Students (April 2008)

Professor	Kohji MITSUBAYASHI	
Junior Associate Professor	Hiroyuki KUDO	
Assistant Professor	Hirokazu SAITO	
Lecturer (part-time)	Yuji OHTA	
Engineer Official	Kumiko MIYAJIMA	
Research Stuff	Hidetaka ISHIMARU	
Graduate Student	Xin WANG,	MingXing CHU,
	Tomoko GESSEI,	Elito KAZAWA,
	Ryodai KATO,	Yuki SUZUKI
Research Student	Takuhiro OMI	

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) Wearable chemical sensors for biomedical measurements
   Flexible and biocompatible biosensors have been fabricated by using Soft-MEMS technology on functional polymer membrane, thus applying to non-invasive approaches of physical monitoring (i.e. transcutaneous gas monitoring and tear glucose measurement).
2) Biological odor measurement and smell communication
   High selective gas-sensors - "Bio-sniffers" - have been constructed with biological recognition materials such as drug-metabolizing enzyme in human liver. Potential applications of the bio-sniffer and nose includes halitosis analysis, breath alcohol & aldehyde measurement, VOC sensing as environmental assessment, odorless chemical digital-code (watermark) system, smell informatics, etc.
3) Ubiquitous monitoring of biological information by using IT devices
   Mobile human-monitoring system for vital signs has been constructed using cellular communication service and body-wired techniques.
4) Novel biological devices based on new driving principle with chemical energy
   Bio-devices with high performance in electrical and mechanical properties have been investigated using functional biopolymer such as DNA, protein, lipid and sugar chain.

4. Publications

Original Article

1) Kudo H, Yagi T, Chu MX, Saito H, Morimoto N, Iwasaki Y, Akiyoshi K, Mitsubayashi K. Glucose sensor using a phospholipid polymer-based enzyme immobilization method. Anal Bioanal Chem 391:1269-1274, 2008.
2) Saito H, Shirai T, Kudo H, Mitsubayashi K. Electrochemical sensor with flavin-containing monooxygenase for triethylamine solution. Anal Bioanal Chem 391:1263-1268, 2008.
3) Hibi K, Ushio H, Fukuda H, Mitsubayashi K, Hayashi T, Ren H, Endo H. Immunomagnetic separation using carbonyl iron powder and flow cytometry for rapid detection of Flavobacterium psychrophilum. Anal Bioanal Chem 391:1147-1152, 2008.
4) Saito H, Nakazato T, Ishii N, Kudo H, Otsuka K, Endo H, Mitsubayashi K. An optical flow injection analysis system for measurement of glucose in tomato. Eur Food Res Technol 227:473-478, 2008.
5) Fillit C, Jaffrezic-Renault N, Bessueille F, Leonard D, Mitsubayashi K, Tardy J. Development of Microconductometric Biosniffer for Detection of Trimethylamine. Mater Sci Eng Biomim Mater Sens Syst 28:781-786, 2008.
6) Mitsubayashi K, Nishio G, Sawai M, Saito T, Kudo K, Otsuka K, Jaffrezic-Renault N, Saito H. A bio-sniffer stick with FALDH (formaldehyde dehydrogenase) for convenient analysis of gaseous formaldehyde. Sens Actuators B Chem 130(1):32-37, 2008.
7) Mitsubayashi K, Nishio G, Sawai M, Kazawa E, Yoshida H, Saito T, Kudo H, Otsuka K, Takao M, Saito H. A

biochemical sniffer-chip for convenient analysis of gaseous formaldehyde from timber materials. Microchim Acta 160:427-433, 2008.

8) Kudo H, Goto T, Saito T, Saito H, Otsuka K, Mitsubayashi K. Biochemical sniffer with choline oxidase for measurement of choline vapour. Microchim Acta 160:421-426, 2008.

Medical Instrument (Biomedical Information)

1. Staffs and Students (April, 2008)

Professor	Kenji YASUDA	
Associate Professor	Tomoyuki KANEKO	
Assistant Professor	Ikurou SUZUKI	
Tokunin Junior Associate Professor	Hideyuki TERAZONO	
Tokunin Assistant Professor	Fumimasa NOMURA,	Masahito HAYASHI
Graduate Student	Tomonari KOUGUCHI,	Yuki TOMOE,
	Sachie OHHARA	

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. Shibata K, Terazono H, Hattori A, Yasuda K. Collagen Micro-Flow Channels as an for In vitro Blood-Brain Barrier Model. Jpn J Appl Phys 47(6):5208-5211, 2008.
2. Terazono H, Hattori A, Takei H, Takeda K, Yasuda K. Development of 1480 nm Photothermal High-Speed Real-Time Polymerase Chain Reaction System for Rapid Nucleotide Recongnition. Jpn J Appl Phys 47(6):5212-5216, 2008.

Meetings

1. Suzuki I, Hayashi J, Yasuda K. Detection of spontaneous firing pattern in cultured single neuron: application of a multi-electrode array chip combined with agarose microstructures. 6th International Meeting on Substrate-Integrated Micro Electrode Arrays, Reutlingen, Germany, July 2008.
2. Hayashi M, Yasuda K. Focusing of Microparticles in a Microfluidic Channel with V-shape Arranged Micropillars. 21st International Microprocesses and Nanotechnology Conference, Fukuoka, Japan, Oct, 2008.
3. Kaneko T, Nomura F, Tomoe Y, Suzuki I, Hayashi J, Yasuda K. Single-cell level measurement of conduction velocity in cardiomyocytes network. 48th Annual Meeting of the American Society for Cell Biology, San Francisco, USA, Dec, 2008.

Artificial Organs Engineering (CardioVascular Device Engineering)

Professor	Setsuo Takatani	
Assistant Professor	Mariko Kobayashi	
Adjunct Instructor	Tadahiko Shinshi	Hiroyuki Tanishiro
	Toshitaka Yasuda	
Research Associate	Satoshi Waguri	
PhD Graduate Student	Yoshimasa Yokoyama	Daisuke Sakota
Master's Graduate Student	Naoyuki Yokoyama	Ryuki Sakamoto

In our department, we are focusing on research and development of mechanical circulatory support devices and providing opportunities to learn state of the art treatment methodologies for profound heart failures requiring advanced treatment beyond the capabilities of the surgical and cardiology intervention.

(1) Education

Provide opportunities to learn treatment modalities for profound heart failure patients including mechanical circulatory support devices, both assist and replacement systems, circulatory maintenance with artificial hearts, clinical applications of artificial hearts and new technologies on the horizon.

(2) Research

a. Research and Development of Advanced CardioVascular Devices: Advanced mechanical circulatory support devices applicable from infants to adults, from extracorporeal to implantable systems will be researched and developed to treat end-stage heart failure patients. Through CAD/CAM design and precision machining, in vitro performance and durability testing, and ex vivo and in vivo biological performance studies, clinically applicable devices will be obtained.

b. Basic Research on Cell Biomechanics, Biorheology, and Thrombosis Studies: The research focuses upon blood cells and device interaction, specifically mechanical effects of the cardiovascular devices upon blood cell elements including RBCs, WBCs and platelets, cell aggregation and adhesion phenomena, lysis and coagulation process on the artificial surface. The study will lead to understanding of mechanism leading to hemolysis, coagulation in the cardiovascular devices to attain biocompatible devices.

c. Research and Development of Sensors and Control Algorithm: This study aims at development of sensors for cardiovascular dynamics measurement and possible application in controlling the artificial organs. The optical interaction with blood cells, tissues and organs will be investigated to develop an appropriate sensing technique and sensors. This study will be conducted in connection with the basic research of (2) to understand mechanical effects of blood pumps upon blood cell elements leading to hemolysis and arteriosclerosis process. In relation to understanding the recovery process of myocardium during ventricular unloading with the mechanical circulatory devices, a semi-conductor micro-pressure sensor that can used for prolonged duration in biological environment will be researched and developed.

d. Research and Development of Optimal Methods for Promoting Myocardial Recovery, Understanding of Recovery Process and Next Generation Devices: Aiming at understanding recovery process of myocardium during mechanical unloading, this study constructs a global model of cardiovascular system covering from molecular level to organ level. Next generation optimal therapy by combining mechanical circulatory support device with regenerative medicine, cell transplantation and pharmaceutical regimens will be researched.

Peer Reviewed Journal Publications

1. Yasuda T, Saito T, Kihara T, Takatani S, Funakubo A. Development of a reflected optical fiber system for measuring oxygen saturation in an integrated artificial heart-lung system. ***Artif Organs*** 2008; 32(3): 229-234.
2. Hijikata W, Shinshi T, Asama J, Li L, Hoshi H, Takatani S, Shimokohbe A. A magnetically levitated centrifugal blood pump with a simple-structured disposable pump head. ***Artif Organs*** 2008; 32(7): 531-540.
3. Sakota D, Sakamoto R, Sobajima H, Yokoyama N, Waguri S,. Ohuchi K, and Takatani S. Mechanical damage of red blood cells by rotary blood pumps: Selective destruction of aged red cells and sub-hemolytic trauma. ***Artif Organs*** 2008; 32(10): 785-791.
4. Pai CN, Shinshi T, Asama J, Takatani S, Shimokohbe A. Development of a compact, centrifugal rotary blood pump with magnetically levitated impeller using a titanium housing. ***Journal of Advanced Mechanical Design, Systems***

and Manufacturing 2008; 2(3): 343-355.

5. Sakota D, Sakamoto R, Sobajima R, Yokoyama N, Yokoyama Y, Waguri S, Ohuchi K, and Takatani S. Time-resolved optical spectroscopic quantification of the red blood cell damage cause by the cardiovascular devices. ***Proc of SPIE*** 2008; 6864: 10-1,8.
6. Kakino S, Takagi Y, Takatani S. Absolute transmitted light plethysmography for assessment of dental pulp vitality through quantification of pulp chamber hematocrit by a three-layer model. ***Journal of Biomedical Optics*** 13(5), 054023 (September/October 2008).

Review, Book Chapter

1. Takatani S. In remembrance of Dr. Tetsuzo Akutsu: a man who started artificial heart research. ***J Artif Organs*** 2008; 11: 1-3.

Internation Conference Presentations

Invitation

1. Takatani S, Koso M, Sakota D, Sakamoto R, and Yasuda T. Shear induced blood trauma and alteration of red blood cell deformabilty in rotary blood pump. ***13th International Congress of Biorheology and 6th International Conference on Clinical Hematology***, State Park, PA USA, July 9-13, 2008.

General

1. Sakota D, Sakamoto R, Ohuchi K, Sobajima H, Yokoyama Y, Yokoyama N, Waguri S, Takatani S. Time-resolved optical spectroscopic quantification of the red blood-cell damage by the cardiovascular devices. ***SPIE Photonics West***, Jan 19-24, 2008, San Jose, USA.
2. Honjo O, Merklinger SL, Poe JB, Guerguerian AM, Alghanmdi AA, Takatani S, Van Arsdell GS. Mechanical lung assist augments forward pulmonary blood flow in primary bidirectional cavopulmonary shunt physiology in neonatal pigs. ***88th Annual Conference of the American Association for Thoracic Surgeons***, May 10-14, 2008, San Diego, USA.
3. Sobajima H, Daly A, Marhefka J, Takatani S, Kameneva MV, Drag-reducing polymer as a test fluid for evaluation of blood trauma in blood pumps. ***54th Annual Conference of ASAIO***, June 19-21, 2008, San Francisco, USA.
4. Yokoyama Y, Steinseifer U, Kawaguchi O and Takatani S. Estimation of the cardiac function based on the cardiac external work vs. torque load of rotary blood pump. ***16th Congress of the International Society for Rotary Blood Pumps ISRBP***, Houston, USA Oct 2-4, 2008.
5. Yokoyama N, Ohsawa H, Waguri S, Machida S, Yoshikawa M, Fujimoto T, Takatani S. Development of an implantable centrifugal "TinyPump VAD" for ventricular assistance in infants and children. ***16th Congress of the International Society for Rotary Blood Pumps ISRBP***, Houston, USA, Oct 2-4, 2008.
6. Sakota D, Sakamoto R, Yokoyama N, Kobayashi M, Takatani S. Glucose depletion enhances shear stress induced mechanical damage in red blood cells by rotary blood pumps. ***16th Congress of the International Society for Rotary Blood Pumps ISRBP***, Houston, USA, Oct 2-4, 2008.
7. Hijikata W, Sobajima W, Shinshi T, Takatani S, Shimokohbe A. Hemolytic characteristics of a mag-lev BioPump: Experimental and computational analysis. ***16th Congress of the International Society for Rotary Blood Pumps ISRBP***, Houston, USA, Oct 2-4, 2008.
8. Someya T, Hijikata W, Ushiyama T, Kobayashi M, Waguri S, Shinshi T, Arai H, and Takatani S. Development of a disposable mag-lev centrifugal blood pump (MedTech Dispo) intended for one month support in bridge-to-bridge application. ***16th Congress of the International Society for Rotary Blood Pumps ISRBP***, Houston, USA, Oct 2-4, 2008.
9. Ugaki S, Kasahara S, Kotani Y, Honjo O, Yokoyama N, Ohuchi K, Takatani S, Sano S. TinyPump assisted venous drainage makes transfusion-free cardiopulmonary bypass feasible and preserved cardiopulmonary function in neonatal piglets. ***16th Congress of the International Society for Rotary Blood Pumps ISRBP***, Houston, USA, Oct 2-4, 2008.
10. Suzuki Y, Watanabe Y, Fujita H, Takatani S. Development of a rotary blood pump impeller based on clarification of basic hydro-characteristics for low Reynolds number and pulsatile wing flow. ***16th Congress of the International Society for Rotary Blood Pumps ISRBP***, Houston, USA, Oct 2-4, 2008..
11. Sato Y, Imai T, Suzuki Y, Fujita H, Takatani S. Development of a mixed flow pediatric pump. ***16th Congress of the International Society for Rotary Blood Pumps ISRBP***, Houston, USA, Oct 2-4, 2008.

12. Watanabe Y, Fujita H, Takatani S, Suzuki Y. Measurement of fluid force acting on the impeller of a noncontact, levitated pediatric ventricular assist device. ***16th Congress of the International Society for Rotary Blood Pumps ISRBP***, Houston, USA, Oct 2-4, 2008.

Department of Pharmacovigilance

1. Staffs and Students (April, 2008)

Professor	Masayoshi Harigai	
Associate Professor	Ryuji Koike	Toshihiro Nanki
Assistant Professor	Michi Tanaka	Yukiko Komano
Graduate Student	Ryoko Sakai	
Secretary	Reiko Watanabe	

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 an epidemiological study 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. Observational study of pulmonary infections in patients with rheumatic diseases receiving immunosuppressive therapy
4. Retrospective study of pulmonary complications in patients with rheumatic diseases
5. Pneumocystis pneumonia in patients with rheumatoid arthritis receiving etanercept

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. Saito E, Koike T, Hashimoto H, Miyasaka N, Ikeda Y, Hara M, Yamada H, Yoshida T, Harigai M, Ichikawa Y, Additional members of the GB-0998 Study Group. Efficacy of high-dose intravenous immunoglobulin therapy in Japanese patients with steroid-resistant polymyositis and dermatomyositis. Mod Rheumatol. 18: 34-44, 2008.
2. Takeuchi T, Tatsuki Y, Nogami Y, Ishiguro N, Tanaka Y, Yamanaka H, Kamatani N, Harigai M, Ryu J, Inoue K, Kondo H, Inokuma S, Ochi T, Koike T. Postmarketing surveillance of the safety profile of infliximab in 5000 Japanese patients with rheumatoid arthritis. Ann Rheum Dis. 67: 189-94, 2008.
3. Nishimura K, Harigai M, Omori M, Sato E, Hara M. Blood-brain barrier damage as a risk factor for corticosteroid-induced psychiatric disorders in systemic lupus erythematosus. Psychoneuroendocrinology. 33: 395-403, 2008.
4. Harigai M, Kawamoto M, Hara M, Kubota T, Kamatani N, Miyasaka N. Excessive Production of IFN-γ in Patients with Systemic Lupus Erythematosus and Its Contribution to Induction of B Lymphocyte Stimulator/B Cell-Activating Factor/TNF Ligand Superfamily-13B. J Immunol. 181：2211-2219, 2008.
5. Hirose W, Nishikawa K, Hirose M, Nanki T, Sugimoto H. Response of early active rheumatoid arthritis to tumor necrosis factor inhibitors: evaluation by magnetic resonance imaging. Mod Rheumatol. 19: 20-26, 2009.
6. Watanabe K, Nanki T, Sugihara T, Miyasaka N. A case of polyarteritis nodosa with periurethral aseptic abscesses and testicular lesions. Clin Exp Rheumatol. 26: 1113-1115, 2008.
7. Miyasaka N and CHANGE Study Investigators. Clinical investigation in highly disease-affected rheumatoid arthritis patients in Japan with adalimumab applying standard and general evaluation: the CHANGE study. Mod Rheumatol. 18: 252-62, 2008.
8. Mizoguchi F, Nanki T, Miyasaka N. Pneumatosis cystoides intestinalis following lupus enteritis and peritonitis. Intern Med. 47: 1267-1271, 2008.
9. Mizoguchi F, Nanki T, Takada K, Miyasaka N. Recurrent pulmonary embolism due to intracardiac thrombi in systemic sclerosis. Clin Exp Rheumatol. 26: 157, 2008.

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
Hitoshi Saeki (From January to March, 2008)
Ryoko Azuma (From April to December, 2008)

2. Purpose of Education

Main purpose of education of the department is to provide students opportunity to study clinical labolatory medicine and medical technology. The staffs lecture on clinical laboratory medicine and give technical training of clinical laboratory tests to not only 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. Two residents of the medical hospital of university were also trained mainly for ultrasonography but for general laboratory medicine.

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 methods and technology for peripheral neuropathies.
5) Development of diagnostic methods and technology using transcranial magnetic stimulation.

4. Clinical Services

Clinical laboratory is doing speedy, high quality and advanced laboratory tests all day all the time. In the night time, the tests for blood transfusion are also done and appropriate blood products are provided from the laboratory in cooperation with blood transfusion service of the hospital. Smear test for tubercle bacillus and cell counting of the cerebrospinal fluid was added to the emergency testing items. This year, the machinery for emergency inspection and the ultrasonic diagnostic equipments were updated and all the reports of ultrasonography came to be provided online. The information on the sensitivity to antibiotics of pathogens is also online provided to every ward.

5. Publications

Original Article

1. Irioka T, Akaza M, Nakao K, Kanouchi T, Yokota T, Mizusawa H. Chiasmal optic neuritis following mumps parotitis. J Neurol 2008 ; 255 : 773 - 774.
2. Kawaguchi-Ihara N, Murohashi I, Nara N, Tohda S. Promotion of the self-renewal capacity of human acute leukemia cells by Wnt3A. Anticancer Research 2008 ; 28 : 2701 - 2704.
3. Kobayashi T, Terada Y, Kuwana H, Tanaka H, Okado T, Kuwahara M, Tohda S, Sakano S, Sasaki S. Expression and function of the Delta-1/Notch-2/Hes-1 pathway during experimental acute kidney injury. Kidney Int 2008 ; 73 : 1240 - 1250.
4. Morita-Hoshi Y, Tohda S, Miura O, Nara N. An autopsy case of multicentric Castleman's disease associated with interstitial nephritis and secondary AA amyloidosis. Int J Hematol 2008 ; 87 : 69 - 74.
5. Nemoto Y, Kanai T, Tohda S, Totsuka T, Okamoto R, Tsuchiya K, Nakamura T, Sakamoto N, Fukuda T, Miura O, Yagita H, Watanabe M. Negative feedback regulation of colitogenic CD4+ T cells by increased granulopoiesis. Inflamm Bowel Dis 2008 ; 14 : 1491 - 1503.
6. Nishina K, Unno T, Uno Y, Kubodera T, Kanouchi T, Mizusawa H, Yokota T. Efficient In Vivo Delivery of siRNA to the Liver by Conjugation of α-Tocopherol. Molecular Therapy 2008 ; 16(4) : 734 - 740.

Blood Transfusion service

1. Staffs (April, 2008)

Director (Professor) Shigeki ARII
Assistant Director (Associate Professor)
Michiko KAJIWARA

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 2008)

1) The amount of blood products used

Red cell component products	11,960 Units	(6,115 bags)
Platelet concentration	23,625 Units	(1,957 bags)
Fresh frozen plasma	8,960 Units	(2,967 bags)

2) Autologous blood collection and transfusion

Autologous blood collection	527 cases	(672 times, 1,300 Units)
Autologous blood transfusion	479 cases	(1,125 Units)

3) The number of clinical tests of transfusion

ABO blood typing	7,498
Rh blood typing	7,498
Anti red blood cell antibody test	3,267
Cross match	9,504

4) Hematopoietic stem cell harvest

Autologous peripheral blood stem cell harvest	13 cases	22 times
Allogenic peripheral blood stem cell harvest	2 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	10 cases	10 times
Allogenic peripheral blood stem cell transplantation	2 cases	2 times
Autologius peripheral mononuclear cell transplantation	1 case	1 time
Allogenic bone marrow transplantation	6 cases	6 times
Allogenic umbilical cord blood transplantation	5 cases	5 times

Department of Blood Purification

Professor	Sei SASAKI	
Associate Professor	Tatemitsu RAI	
Assistant Professor	Akihito OHTA	
Hospital Staff	Rie OKUTSU	Wataru AKITA

(1) Education

The Department of Blood Purification has been engaged in such educational activities as follows.

1) Clinical clerkship of 5th and 6th year students of Medical School
2) Clinical lectures of 4th year students of Medical School
3) Lectures of postgraduate master course students of Medical School
4) Clinical lectures of 2nd year students of School of Health Sciences
5) Hospital training of postgraduate master course students of Medical School (29 students)
6) Hospital training of dialysis therapy (8 trainees)
7) Hospital training of clinical engineering technologists (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) Regenerative medicine of the kidney
4) New techniques in blood purification

(3) Clinical Services

The achievements of clinical services of The Department of Blood Purification in 20008 are as follows.

1) Hemodialysis (HD)
   - Number of newly started HD patients 49
   - Number of maintenance HD patients 236
   - Total number of HD sessions 4031
2) Plasma exchange (PE)
   - Number of PE patients 12
   - Total number of PE sessions 50
3) Peritoneal dialysis (PD)
   - Number of newly started PD patients 3
   - Number of PD patients 19
4) Blood absorption
   - Number of patients 3
   - Number of sessions 29
5) Postoperative acute renal failure
   - Number of patients 12
6) Multiple organ failure
   - Number of patients 5
7) Number of clinical departments involved in blood purification 26

(4) Publications

Original Articles

1. Chiga M, Rai T, Yang SS, Ohta A, Takizawa T, Sasaki S, Uchida S. Dietary salt regulates the phosphorylation of OSR1/SPAK kinases and the sodium chloride cotransporter through aldosterone. *Kidney Int.* 74:1403-9, 2008.
2. Fujii H, Mori Y, Kayamori K, Igari T, Ito E, Akashi T, Noguchi Y, Kitamura K, Okado T, Terada Y, Kanda E, Rai T, Uchida S, Sasaki S. A familial case of mitochondrial disease resembling Alport syndrome. *Clin. Exp. Nephrol.* 12:159-63, 2008.
3. Kobayashi T, Terada Y, Kuwana H, Tanaka H, Okado T, Kuwahara M, Tohda S, Sakano S, Sasaki S. Expression and

function of the Delta-1/Notch-2/Hes-1 pathway during experimental acute kidney injury. *Kidney Int.* 73:1240-50, 2008.
4. Kuwana H, Terada Y, Kobayashi T, Okado T, Penninger JM, Irie-Sasaki J, Sasaki T, Sasaki S. The phosphoinositide-3 kinase gamma-Akt pathway mediates renal tubular injury in cisplatin nephrotoxicity. *Kidney Int.* 73:430-445, 2008.
5. Noda Y, Horikawa S, Kanda E, Yamashita M, Meng H, Eto E, Li Y, Kuwahara M, Hirai K, Pack C, Kinjo M, Okabe S, Sasaki S. Reciprocal interaction with G-actin and tropomyosin is essential for aquaporin-2 trafficking. *J. Cell Biol.* 182:587-601, 2008.
6. Okutsu R, Rai T, Kikuchi A, Ohno M, Uchida K, Sasaki S, Uchida S. AKAP220 colocalizes with AQP2 in the inner medullary collecting ducts. *Kidney Int.* 74:1429-33, 2008.
7. Terada Y, Kuwana H, Kobayashi T, Okado T, Suzuki N, Yoshimoto T, Hirata Y, Sasaki S. Aldosterone-stimulated SGK1 activity mediates profibrotic signaling in the mesangium. *J. Am. Soc. Nephrol.* 19:298-309, 2008.

Review Articles

1. Noda Y, Sasaki S. The role of actin remodeling in the trafficking of intracellular vesicles, transporters and channels: focusing on aquaporin-2. *Pflugers. Arch.* 456:737-745, 2008.
2. Noda Y, Sasaki S. Actin-binding channels. *Prog. Brain. Res.* 170:551-557, 2008.
3. Sasaki S. Invited Review: Introduction for special issue for aquaporin. Expanding the world of aquaporins: new members and new functions. *Pflugers. Arch.* 456:647-9, 2008.
4. Sasaki S. Is oxytocin a player in antidiuresis? *J. Am. Soc. Nephrol.* 19:225-32, 2008.

Hyperbaric Medical Center

1. Staffs (April, 2008)

Center Chief and Junior Associate Professor
Kazuyoshi YAGISHITA
Associate Professor Nobuo YAMAMI
Tokunin Assistant Professor Seiichiro TOGAWA

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 effect of HBO.

This HBO can stimulate the interest of medical students, basic researchers, and clinical doctors, and this hyperbaric medical center can provide opportunities to study hyperbaric oxygen therapy field.

3. Research Subjects

1) Diving medicine
2) Treatment of soft tissue injury related with sports activities
3) Hyperbaric oxygen therapy
4) Oxidative stress

4. Clinical Services

Hyperbaric Medical Center in Tokyo Medical and Dental University hospital is the center institute of hyperbaric oxygen therapy and hyperbaric oxygen research in Japan, and one of the largest hyperbaric oxygen chamber in the world is set up in this 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 arterior disturbance, and peripheral ischemic disease. In 2007, 7970 times hyperbaric oxygen therapy (HBO) in 958 patients were performed in our university hospital, which is the most patients number in one institute in a year in Japan. In addition, for the purpose of rapid recovery, we now perform HBO aggressively for soft tissue injury related with sports activities including compartment syndrome, ankle sprain, knee ligament injury

Center for Cell Therapy

Director	Tomohiro Morio (Associate Professor, Department of Pediatrics and Developmental Biology)	
Vise Director	Michiko Kajiwara (Blood Transfusion Department)	
Staff		
Management Representative, Quality Control Manager		
	Michiko Kajiwara	
Manufacturing Control Manager	Norio Shimizu (Associate Professor, Department of Virology, Medical Research Institute)	
Technician	Yoshiko Baba (Blood Transfusion Department)	
Assistant	Atsushi Oyama,	Shizuko Minegishi
Collaborators	Nakaba Ochiai,	Miki Mizukami
Office	Akiko Hoshikawa,	Ayako Tsuji

(1) Education

Our center was ISO9001:2000-certified (JQA-QMA11047: Scope of Registration: Cell Processing for Activated T-cells) for the first time in Japan as a cell processing center involved in culture of human cells for clinical application. All the procedures are indicated in the manual and standard operation procedure (SOP); and all the processes are documented and stored securely for a future review. The workers in the center are required to receive the in-house training; and the individual is allowed to carry out the particular procedures after passing the examination. We also have an on-the-job training for the internal auditing once a year. We have successfully renewed ISO9001 approval after intensive investigation on February 2009. We are able to offer a training for those who wish to process cells at our center, and to give an advice and an appropriate training for constructing SOP in various fields of regeneration medicine.

(2) Research

1) Quality control of clinical grade products for cell therapy and for regeneration medicine

We are committed to the development of the system (1) to detect multiple microbes with high sensitivity and low cost, (2) to easily monitor DNA damage during cell processing (3) to monitor long-term adverse effect with using humanized NOG-SCID, and (4) to set criteria for standard cells suitable for clinical use. This research work is supported by grant-in-aid by Ministry of Health, Labour, and Welfare, (MHLW) and is conducted by Dr. Morio, Director of Center for Cell Therapy, as a research leader. Dr. Shimizu is a member of another project supported by MHLW, and conducts research work to evaluate quality of cell therapy products.

2) Development of the sensitive & inexpensive method to detect multiple microbes in a short period

With tremendous support from Department of Virology, we have constructed a novel PCR-based system to detect 11 different viruses, HSV1, HSV2, VZV, EBV, CMV, HHV6, HHV7, HHV8, BK virus, JC virus, Parvovirus B19, in a rapid, sensitive, and inexpensive way. The system is open to the Tokyo Medical and Dental University (TMDU) Medical Hospital. The viral load can also be measured by real time quantitative PCR method. Additionally, many other microorganisms are now defectable in our system. Those include HIV1, HIV2, HTLV1, HTLV2, HBV, HCV, Norovirus, *Pneumocyctis jiroveci, and Cryptosporidium parvum.* We are defermined to further broaden our repertoire of microbes.

Finally, we are planning to carry out multi-center joint research to verify the validity of our system in monitoring of post-hematopoietic stem cell transplant (HSCT) opportunistic infections.

3) Ex-vivo expanded T-cell therapy for post-HSCT opportunistic infection

Our team is selected as a member of the research projects, “Research on advanced technology and safety assurance in the field of cord blood transplantation” and “Research on the development of novel transplantation technique in HSCT” supported by grant-in-aid of MHLW. We will commence a clinical trial for ex-vivo expanded

4) Ex-vivo expanded cord blood T-cell therapy for post-HSCT

The project has been conducted in close collaboration with Lymphotec, Institute of Biomedical Research and Innovation Laboratory, and National Research Institute for Child Health and Development.

5) Development of short tandem repeat-based individual identification system.

We currently employ a short tandem repeat-based individual identification system with 18 different probes.

6) Transplantation of mesenchymal stem cells derived from synovial membrane for cartilage bone defect.

The team led by Dr. Ichiro Sekiya and Takeshi Muneta at Section of Orthopedic Surgery has developed an innovative technique to expand chondrocytes from autologous synovial membrane. The team has been working on the mechanism of chondrogenesis as well as clinical application of local administration of mesencymal stem cells.

(3) Clinical

Center for Cell Therapy at TMDU is equipped with four independent cell processing rooms (CPRs) and one examination room for quality control of the cell products. Most of the particles are filtered through a HEPA filter, and thus the center is kept in clean condition. The clean level of our examination room is class 100,000 and that of CRPs is class 10,000. One of the CPRs for handling potentially harmful micro-organisms is kept at -50Pa and thus is in P3-compatible level. Other three CPRs are kept at +10Pa to eliminate all the microbes from the room. The workers in CPRs are required to wear dust-free garments, mask, and gloves.

The cell processing is carried out according to SOP, and all the products in key processes are checked for their sterility and quality. We are expecting to have more projects from different fields to boost regenerative medicine at our university.

The ongoing projects include cartilage bone regeneration (Section of Orthopedic Surgery), vascular regeneration (Geriatric Medicine), post-HSCT expanded CD4-T cell therapy (Department of Pediatrics, Department of Hematology). Additionally, manipulation of hematopoietic stem cells has been carried out at CPR by staffs of Blood Transfusion Department.

Our achievement in Year 2008

1) Ex-vivo expanded T-cell therapy	93 cases
2) Examination for multiple viruses with our innovative & sensitive PCR system	993 cases
3) Harvest of peripheral blood stem cells	25 cases
4) Vascular regeneration with HSC	1 case
5) Cartilage bone regeneration	3 case
6) Bone regeneration	SOP under construction

Clean Room, University Hospital, Faculty of Dentistry

1. Staffs (April, 2008)

Associate Professor	Mitsuhiro SUNAKAWA
Assistant Professor	Hiroyuki MATSUMOTO

2. Purpose of Education

Main objective of the education by the cleasn room staff is to educate the appropriate nosocomial infection control methods to all the dental practician, that is, dentists, co-dental staffs, post-graduate students and under-graduate students, in the University Hospital, Faculty of Dentistry, Tokyo Medical and Dental University.

3. Research Subjects

1) Development of disposable materials for dental clinic use
2) Clinical investment of the oral lesion of the patients with HIV
3) Survey of the consciousness of dentists and dental students on prevention and control of nosocomial infection

4. Clinical Services

Clean room is prepared to provide comprehensive dental care for immuno-compromised hosts and patients with infectious pathogens in a highly infection-controlled environment.

5. Publications

1) Sunakawa, M., Kaneko, T., Kaneko, M., Suda, H.: p38MAPK and GFAP are up-regulated by MO tooth pulp stimulation. Abstracts of The 86th General Session and Exhibition of the IADR, #3511, 2008,(CD-Rom)
2) Sunakawa, M., Kaneko, T., Kaneko, M., Kawamura, J., Suda, H.: NMDARs, GFAP, and p38MAPK mRNA up-regulation following MO tooth-pulp stimulation. Journal of KACD, 33(6):719, 2008.

Bioethics Research Center

1. Staffs and Students (April, 2008)

Director	Shuki MIZUTANI	
Tokunin Professor	Masayuki YOSHIDA	
Tokunin Assistant Professor	Yuka OZASA,	Hideto ISHII,
	Masumi AI	
Research Associate	Minori KOKADO,	Mizuko OSAKA,
	Ryuko ONISHI,	Mitsunoei NOMURA,
	Daisuke MORI	
Post-Graduate Fellow	Mariko TANI	
Research Collaboration	Akio KAWAKAMI (Dept. Vascular Medicine)	

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 and faculties based on the research ethics guideline revised 2008, 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) Signaling mechanisms of vascular endothelium
2) A role of triglyceride-rich lipoprotein in atherosclerosis
3) A role of lipid absorption in intestine and subsequent metabolic pathways
4) Annexin II, a novel fibrinolytic molecule, and its clinical application
5) Molecular Imaging of the vascular injury and inflammation

4. Clinical Services

BERC serves as an out patient clinics at the University Hospital in the field of Genetic Medicine. Our Genetic Medicine department is approved by the Japanese Medical Genetics Society for the Genetics Board.

5. Publications

Original Article

1. Ishiyama I, Nagai A, Muto K, Tamakoshi A, **Kokado M,** Mimura K, Tanzawa T, Yamagata Z.: Relationship between public attitudes toward genomic studies related to medicine and their level of genomic literacy in Japan. ***AJMG*** Part A. Volume 146A, Issue 13, 1 :1696-1706
2. Hagita S, **Osaka M,** Shimokado K, **Yoshida M, 2008,** Oxidative stress in mononuclear cells plays a dominant role in their adhesion to mouse femoral artery after injury, ***Hypertension,*** 51: 797-802
3. Haraguchi G, Kosuge H, Maejima Y, Suzuki J, Imai T, **Yoshida M,** Isobe M, **2008**, Pioglitazone reduces systematic inflammation and improves mortality in apolipoprotein E knockout mice with sepsis, ***Intensive Care Med*** 34: 1304-12
4. **Kawakami A, Osaka M, Tani M,** Azuma H, Sacks FM, Shimokado K, **Yoshida M, 2008,** Apolipoprotein CIII links hyperlipidemia with vascular endothelial cell dysfunction, ***Circulation,*** 118: 731-42
5. Nakamura N, **Yoshida M**, Umeda M, Huang Y, Kitajima S, Inoue Y, Ishikawa I, Iwai T, **2008,** Extended exposure of lipopolysaccharide fraction from Porphyromonas gingivalis facilitates mononuclear cell adhesion to vascular endothelium via Toll-like receptor-2 dependent mechanism, ***Atherosclerosis,*** 196: 59-67
6. Tsujimura Y, Obata K, Mukai K, Shindou H, **Yoshida M,** Nishikado H, Kawano Y, Minegishi Y, Shimizu T,

Karasuyama H, 2008, Basophils play a pivotal role in immunoglobulin-G-mediated but not immunoglobulin-E-mediated systemic anaphylaxis, ***Immunity,*** 28: 581-9

7. **Kawakami A, Osaka M,** Aikawa M, Uematsu S, Akira S, Libby P, Shimokado K, Sacks FM, **Yoshida M, 2008,** Toll-Like 2 Receptor Mediates Apolipoprotein CIII-Induced Monocyte Activation, ***Circ Res*** 103: 1402-1409
8. Yamada H, **Yoshida M,** Nakano Y, Suganami, Satoh N, Mita T, Azuma K, Itoh M, Yamamoto Y, Kamei Y, Horie M, Watada H, Ogawa Y, **2008,** In Vivo and In Vitro Inhibition of Monocyte Adhesion to Endothelial Cells and Endothelial Adhesion Molecules by Eicosapentaenoic ***Acid Arterioscler. Thromb. Vasc. Biol.*** 12: 2173-2179
9. **Ishii H,** Tsukada T, **Yoshida M, 2008,** Angiotensin II type-I receptor blocker, candesartan,improves brachial-ankle pulse wave velocity independently from its blood pressure lowering effects in type 2 diabetes patients, ***Internal Medicine,*** 47: 2013-2018
10. Chiba T, Shinozaki S, Nakazawa T, **Kawakami A,** Ai M, Kaneko E, Kitagawa M, Kondo K, Chait A, Shimokado K. Leptin deficiency suppresses progression of atherosclerosis in apoE-deficient mice. ***Atherosclerosis,*** 196; 68-75, 2008.
11. Ogita K, **Ai M,** Tanaka A, Ito Y, Hirano T, Yoshino G, Shimokado K. Serum concentration of small dense Low-density lipoprotein-cholesterol during oral glucose tolerance test and oral fat tolerance test. ***Clin Chim Acta.*** 387; 36-41; 2008.
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Review Article

1. **Yoshida M, 2008,** Regulation of cholesterl biosynthesis and absorption: ultimate management of dyslipidemia with statin and ezetimibe ***Immun., Endoc. & Metab. Agents in Med. Chem.*** 8: 177-182

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 I and 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.

Fundamental Oral Health Care Science

1. Staffs and Students (April, 2008)

Professor	Kumiko Sugimoto
Junior Associate Professor	Emiko Tanaka
Research Student	Sato Matsukawa
Research Student	Rei Muroga

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 taste sensitivity with aging
2) Functional Roles of molecules expressed in taste buds
3) Challenging education in oral health care sciences
4) Independent living of the disabled and resource of living
5) Living of the patients with amyotrophic lateral sclerosis (ALS) and their families

Oral Health Care Education

1. Staffs and Students (April, 2008)

Professor Kayo TERAOKA

2. Purpose of Education

Oral health care education is the special field of study which deals with establishment of theoretic and skill for oral 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

Preventive Oral Health Care Science

1. Staffs and Students (2008)

Professor	Astuhiro KINOSHITA
Junior Associate Professor	Keiko KONDO
Assistant Professor on Special Assignment	Akiko HORIE
Secretary	Masayo SUNAGA

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) Development of education system for the patients to prevent oral diseases, and for the dental hygienist students.
In our university, we execute a project, Establishment of a Computer Assisted Education System on Clinical Simulation for Medical and Dental Practice Training, which was adopted as a project in Support Program for Distinctive University Education in 2005, and develop computer simulation materials on clinical education by utilizing a plenty of clinical digital contents of our Medical and Dental hospitals. In this study, we develop computer simulation materials for patients and dental hygienist students to learn preventive oral health care sciences, utilize them to our students, and evaluate and analyze their educational effect. We will illustrate whether it is possible or not to apply this self-learning system using computer assisted simulation as a new teaching method in addition to conventional lectures and practices in the oral health care clinical education.

2) Development of new assessment programs (self assessment, achievement assessment) in technical education for dental hygienist students.
On dental hygienist education, to learn expertise, it is important to take process to pile up the basic skills. Our study is aiming to develop a new assessment program which ensures the acquisition of dental hygienist skills with utilizing student's self assessment in each step of learning and instructor's assessment and feedback. We develop a computer assisted education system which helps students to recognize the goal and assess their own skills in each step of practice.

3) Development of new dental model on technical education for dental hygienists
Practices using dental models are very important on technical education for dental hygienists. We develop new mannequin dental models which will bring more educational effects in dental hygienist education.

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. Kawakatsu N, Oda S, Kinoshita A, Kikuchi S, Tsuchioka H, Akizuki T, Hayashi C, Kokubo S, Ishikawa I, Izumi Y. Effect of rhBMP-2 with PLGA/gelatin sponge type (PGS) carrier on alveolar ridge augmentation in dogs. J Oral Rehabil. 2008 Sep;35(9):647-655.

Abstract

1. Yoshiko Miura, Keiko Kondo, Masayo Sunaga, Yoshiyuki Sasaki, Shiro Mataki, Atsuhiro Kinoshita, Yoko Kawaguchi: Development of a Clinical Skill Feedback System in Dental Hygiene Education. 8th International Conference of Asian Academy of Preventive Dentistry, p186, Nov. 6-8, poster, 2008, Jeju, KOREA, 2008.
2. Yoshino T, Aoki A, Oda S, Takasaki AA, Mizutani K, Sasaki KM, Kinoshita A, Watanabe H, Ishikawa I, Izumi Y: Long-term Histological Analysis of Bone Tissue Alteration and Healing Following Er:YAG Laser Irradiation in

Comparison with Electrosurgery. 11th Congress of World Federation for Laser Dentistry, Hong Kong, China, July 28-30 (July 30, Oral), 2008.

Pediatric Oral Health Care Science

1. Staff

Professor Masaaki ISHIKAWA

2. Purpose of Education

Pediatric oral health care science is a branch of oral health care sciences which deals with children' s total oral health. Main objects of pediatric oral health care science in the undergraduate course is to provide students who are going to dental hygienists knowledge of growth and development in teeth, dentition, occlusion, craniofacial morphology, and oral function such as mastication and phonation. Students are also taught skills and manners concerning the practice of oral health care to children and the team approach in dental treatment for children.

3. Research Subjects

1) Morphological and functional factors to acquire normal masticatory organ
2) Development of the effective training method for children with retarded oral function
3) Current condition of eating disorders in small children
4) Oral health care for disabled children

Geriatric Oral Health Care Science

1. Staffs (April, 2008)

Professor	Kazuhiro SHIMOYAMA, DDS, PhD
Junior Associate Professor	Naomi YOSHIDA, RDH, B.Sc., Mph, PhD.

2. Purpose of Education

Geriatric Oral Health Care Science is an academic discipline of oral health care science, which contributes maintenance and improvement of health and quality of life for elderly people through the preservation of oral health. It is an interdisciplinary field based on Oral Health Care Science, which needs to cooperate with wide-ranging fields such as healthcare, medical care and welfare. Our education goal for undergraduate students is to be acquired the fundamental knowledge and skill of Geriatric Oral Health Care for preservation and improvement of health for elderly people. They will be cultivated the conducible ability of maintenance and improvement of health and self-support for elderly through lectures and preclinical/clinical practice.

3. Research subjects

1) Oral care for elderly people
2) Improvement of oral hygiene for elderly people who require nursing care
3) Effects of geriatric oral health care science education on students
4) Development of teaching materials and programs for improvement of dental hygiene education

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

Community Oral Health Care Science

1. Staffs and Student(April,2008)

Professor	Hidemi YOSHIMASU
Junior Associate Professor	Mitsue ONODERA

2. Purpose of Education

Community oral health care science is a branch of oral health care sciences. Students are taught oral health diagnosis, nutritional sciences, diet education, introduction to care nursing, oral and maxillofacial surgery, and oral health care of medically compromised patient .

3. Research Subjects

1) Oral health care of patients with oral cancer, cleft lip and palate and other oral diseases
2) Oral health related QOL of patients with oral cancer, cleft lip and palate, dry mouth.
3) Basic research of tooth brush, peeling sponge and tooth paste
4) Oral health care before and after dental implant treatment
5) Morphological and functional research of patients with cleft lip and palate
6) Research for safety in supplements in oral functions
7) Basic research for pathophysiological roles of gap junction

4. Clinical Services

1) High quality oral cleaning programs in collaboration with dental hygienists at Oral Health Care Clinic
2) Diagnosis and treatment of patients with oral and maxillofacial diseases in Oral and Maxillofacial Surgery Clinic.

5. Publications