2014

# Hiroshima University Faculty of Dentistry, Hiroshima University Hospital, Institute of Biomedical & Health Sciences

2014

# Contents

## Hiroshima University Faculty of Dentistry, Hiroshima University Hospital, Graduate School of Biomedical & Health Sciences


- **Basic Life Sciences**

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Department of Physiology and Oral Physiology

Department of Molecular Biology and Biochemistry

Department of Oral and Maxillofacial Pathobiology

Department of Bacteriology

Department of Cellular and Molecular Pharmacology

Department of Biomaterials

Department of Mucosal Immunology

- **Applied Life Sciences**

Department of Periodontal Medicine, and Department of Preventive and Restorative Dentistry (Periodontics and Endodontics)

Department of Molecular Oral Medicine & Maxillofacial Surgery, Department of Oral & Maxillofacial Surgery and Oral Medicine (Oral and Maxillofacial Surgery)

Department of Oral and Maxillofacial Surgery, and Department of Oral & Maxillo -facial Surgery and Oral Medicine (Oral and Maxillofacial Reconstructive Surgery)

Department of Advanced Prosthodontics, and Department of Preventive and Restorative Dentistry (Implants and Prosthodontics)

Department of Advanced Prosthodontics, and Department of Preventive and Restorative Dentistry (Prosthetic Dentistry)

Department of Orthodontics and Craniofacial Development Biology, and Department of Oral Health and Development (Orthodontics)

Department of Oral & Maxillofacial Radiology, Department of Oral & Maxillofacial Surgery and Oral Medicine (Oral and Maxillofacial Radiology)

- **Integrated Health Sciences**

Department of Biological Endodontics, and Department of Preventive and Restorative Dentistry (Operative and Conservative Dentistry)

Department of Pediatric Dentistry, and Department of Oral Health and Development (Pediatric Dentistry)

Department of Dental Anesthesiology, and Department of Oral & Maxillofacial

- Surgery and Oral Medicine (Dental Anesthesiology)
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- **Central Research Laboratory**
- **Division of Advanced General Dentistry, General Dentistry**
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- **Central Clinical Sections, Special Dental Clinic Section**
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- **Central Clinical Sections, Dental Technicians Section**
- **Central Clinical Sections, Dental Hygiene Section**
- **Dental Clinic**
- **Dental Medical Information Section**

# Basic Life Sciences
# Department of Calcified Tissue Biology

## (1) Staff and Students

Professor: Yuji Yoshiko

Assistant Professor: Tomoko Minamizaki, Hirotaka Yoshioka, Yuichiro Takei

Technical Assistant: Miho Kondo

Graduate Student: Kaoru Sakurai (Pediatric Dentistry), Yoko Fujino (Special Care Dentistry), Kazuko Kagawa (Advanced Prosthodontics), Saki Okita,Yuko Nakao (Orthodontic Dentistry), Faisal Ahmed

## (2) Main Research Activities

1： Bone and tooth formation and mineralization

2： Calciotropic and phosphotropic factors and mineral metabolism

3： Osteonetwork (Cross-talk among bone cells and extraskeletal cells).

## (3) Research Achievements

### A) Original Papers (including Case Reports)

1： Downregulation of renal type IIa sodium-dependent phosphate cotransporter during lipopolysaccharide-induced acute inflammation.: Ikeda S., Yamamoto H., Masuda M., Takei Y., Nakahashi O., Kozai M., Tanaka S., Nakao M., Taketani Y., Segawa H., Iwano M., Miyamoto K., Takeda E.: Am J Physiol Renal Physiol., 306(7), F744-F750, 2014.

2： Short-term dietary phosphate restriction up-regulates ileal fibroblast growth factor 15 gene expression in mice.: Nakahashi O., Yamamoto H., Tanaka S., Kozai M., Takei Y., Masuda M., Kaneko I., Taketani Y., Iwano M., Miyamoto K., Takeda E.: J Clin Biochem Nutr., 54(2), 102-108, 2014.

3： Identification of Activators of ERK5 Transcriptional Activity by High-Throughput Screening and the Role of Endothelial ERK5 in Vasoprotective Effects Induced by Statins and Antimalarial Agents.: Le N.T., Takei Y., Izawa-Ishizawa Y., Heo K.S. Lee H., Smrcka A.V., Millzai Smrckmrc, 12()-4.1<29>] TJ 0 Tc

Nomura A., Inoue F., Into T., Yoshiko Y., Niida S.: PLoS One, 9(5), e97177, 2014.

5： Functional Diversity of Fibroblast Growth Factors in Bone Formation: Takei Y., Minamizaki T., Yoshiko Y.: International Journal of Endocrinology, Article ID 729352, 2014.

## B) Reviews

1： Osteo-vasculo-corelation and microRNA: Takei Y., Yoshiko Y.: Japanese Journal of Clinical Chemistry, 43(2), 106-111, 2014.

## C) Books

## D) Other Publications

## E) Presentation at Scientific Meeting

1： Fibroblast growth factor (FGF) 10 negatively regulates the formation of caraniomaxillofacial skeleton.: Kagawa K., Yoshioka H., Kuremoto K., Takei Y., Minamizaki T., Tsuga K., Yoshiko Y.: The 98th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2014.

2： Effect of fibroblast growth factor (FGF) 10 on the formation of caraniomaxillofacial skeleton.: Kagawa K., Yoshioka H., Kuremoto K., Takei Y., Minamizaki T., Tsuga K., Yoshiko Y.: The 69th Chugoku-Shikoku Sectional Meeting of Japanese Association of Anatomists (Hiroshima), 2014.

3： Imaging mass spectrometry-based analysis of Klotho deficient mice kidney: Fujino Y., Minamizaki T., Miyawaki S., Kawakami A., Miyaji T., Sakurai K., Takei Y., Yoshioka H., Kozai K., Okada M., Yoshiko Y.: The 69th Chugoku-Shikoku Sectional Meeting of Japanese Association of Anatomists (Hiroshima), 2014.

4： Bone matrix protein MEPE-derived ASARM decreases bone volume independently of serum phosphate levels: Sakurai K., Minamizaki T., Kawamoto M., Fujino Y., Takei Y., Yoshioka H., Okada M., Kozai K., Yoshiko Y.: The 69th Chugoku-Shikoku Sectional Meeting of Japanese Association of Anatomists (Hiroshima), 2014.

5： Overexpressing fibroblast growth factor (FGF) 10 at mid- and late-embryonic stages perturbs craniomaxillofacial development in mice.: Kagawa K., Yoshioka H., Kuremoto K., Takei Y., Minamizaki T., Tsuga K., Yoshiko Y.: The 56th Annual Meeting of Japanese Association for Oral Biology (Fukuoka), 2014.

6： MEPE-ASARM, a substrate of Phex, decreases bone volume independently of serum phosphate levels: Sakurai K., Minamizaki T., Yoshioka H., Takei Y., Kozai K., Yoshiko Y.: The 32nd Annual Meeting of the Japanese Society for Bone and Mineral Research (Osaka), 2014.

7： MEPE-ASARM, a substrate of Phex, decreases bone volume independently of serum phosphate levels: Sakurai K., Minamizaki T., Yoshioka H., Takei Y., Kozai K., Yoshiko Y.: The American Society for Bone and Mineral Research 2014 Annual Meeting (Houston), 2014.

8： Imaging Mass Spectrometry-based Molecular Histology of the Klotho-Deficient Phenotype: Fujino Y., Okada M.: The 31st Annual Meeting of the Japanese Society for Disability and Oral Health (Sendai), 2014.

9： D-Aspartic acid, but not L-Aspartic acid, modulates osteoblast marker gene expression in MC3T3E-1 osteoblasts: Arima Y., Yoshiko Y., Namera, A., Nagao, M.: The 2nd International Conference of D-Amino Acid Research (Utsunomiya), IDAR 2014.

## (4) Status of Receiving Grants-in Aid for Scientific Research, etc.

1： Grants-in-Aid for Young Scientists (B) New: Takei Y., MicroRNA-mediated cellular network in calcified tissue. No.26861548. ¥1,600,000

2： Grants-in-Aid for Scientific Research (C) New: Yoshioka H., Development of bone regeneration strategies by controlling the epigenetic state of bone lining cells. No. 26462785, ¥1,690,000

3： Grants-in-Aid for Scientific Research (C) Continuance: Minamizaki T., Study of regulation of bone/tooth mineralization via downstream factor(s) of Klotho derived from breast cancer cells.. No. 25462858, ¥1,820,000

4： Ono Pharmaceutical Co.: Yoshiko Y., A Screen for regulators of mineralization involved in skeletal and extraskeletal organs. ¥4,000,000

5： Drug Discovery Support Network: Yoshiko Y., Development of anti-ectopic mineralization medicine. ¥11,822,598

## (5) Academic Awards, etc.

## (6) Patents

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# Basic Life Sciences
# Department of Physiology and Oral Physiology

## (1) Staff s and Students

Professor SUGITA, Makoto
Associate Professor HIRONO, Chikara
Assistant Professor KITAGAWA, Michinori
Research Assistant YAMAMOTO, Kuniyo
Graduate Students UENO, Kaori, YAMAMOTO, Kuniyo, TERACHI, Momomi

## (2) Main Research Activities

Molecular physiological study on function of ion channels and ion transporters

The neuronal mechanisms underlying the taste-evoked behavioral and emotional responses

The role of cell communication in proliferation and differentiation of the oral epithelium and salivary glands

Study on the system mechanisms of mastication and swallowing

## (3) Research Achievements

### A) Original Papers (including Case Reports)

TMEM16E (GDD1) exhibits protein instability and distinct characteristics in chloride channel/pore forming ability : Tran TT., Tobiume K., Hirono C., Fujimoto S., Mizuta K., Kubozono K., Inoue H., Itakura M., Sugita M., Kamata N. : J. Cell. Physiol., 229, 181-190, 2014.

### B) Review

### C) Publications

### D) Other publication

### E) Presentation at Scientific Meeting

Activation of the $Na^+$-$H^+$ exchanger by $Ca^{2+}$ and cAMP signals during bicarbonate secretion from rat

salivary ducts : Ueno K., Hirono C., Kitagawa M., Sugita M., Shiba Y. : The 91th Annual Meeting of the Physiological Society of Japan (Kagoshima), 2014.

Information processing in the brainstem neurons defined by genetic tracing of taste representation : Sugita M., Yamamoto K., Hirono C., Shiba Y. : The 91th Annual Meeting of the Physiological Society of Japan (Kagoshima), 2014.

Cellular characteristics of brainstem bitter taste-relaying neurons visualized by genetic tracing : Sugita M., Yamamoto K., Hirono C., Shiba Y. : The 47th Annual Meeting of Hiroshima University Dental Society (Hiroshima), 2014.

Analysis of bicarbonate secretion mechanisms based on intracellular pH and ionic current measurements in rat parotid intralobular ducts : Hirono C., Ueno K., Kitagawa M., Sugita M., Shiba Y.: The 56th Annual Meeting of Japanese Association for Oral Biology, Satellite Symposium 12 (Fukuoka), 2014.

Functional analysis of Hippo signaling pathway during salivary gland development in mice : Kitagawa M., Hirono C., Sugita M. : The 56th Annual Meeting of Japanese Association for Oral Biology (Fukuoka), 2014.

A functional role of molecular complex formation mediated by the CFTR R domain : Sugita M. : 2014 NIPS Research Meeting (Okazaki), 2014.

Quantitative and qualitative assessment of taste alteration in cancer patients treated with chemotherapy : Kikushige N., Nishi H., Ohge H., Sugiyama K., Ogawa T., Sugita M. : The 98th Meeting of Hiroshima University Dental Society (Hiroshima), 2014.

## (4) Status of Receiving Grants-in Aid for Scientific Research, etc.

Grant-in-Aid for Scientific Research (Challenging Exploratory Research): Sugita M., The neuronal mechanisms underlying the taste-evoked emotional responses. 24659826. ¥900,000.

Grant-in-Aid for Scientific Research (C): Kitagawa M., Functional analysis of Hippo signaling pathway on the formation and maintenance of salivary gland structure. 24592768. ¥1,200,000.

## (5) Academic Awards, etc.

## (6) Patents

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# Basic Life Sciences
# Department of Molecular Biology and Biochemistry

## (1) Staffs and Students

Professor: Chisa Shukunami
Associate Professor: Mitsuhide Noshiro
Assistant Professor: Katsumi Fujimoto
Assistant Professor (Special Appointment): Yuki Yoshimoto
Researcher: Veronica Sainik Ronald

## (2) Main Research Activities

Mechanisms regulating in the establishment of the junction between cartilage and tendon/ligament
The role of Pax1 during formation of vertebral column
Mechanisms of tendon/ligament formation
Mechanisms of periodontal ligaments formation
Pathogenic mechanisms involved in adolescent idiopathic scoliosis
Study on the regulatory mechanisms of lipid-metabolism and blood pressure control by clock proteins DEC1 and DEC2.
Mechanisms regulating differentiation of dental pulp stem cells

## (3) Research Achievements

### A) Original Papers (including Case Reports)

Sox9- and Scleraxis-Cre Lingeage Fate Mapping in Aortic and Mitral Valve Structures: Austin B, Yoshimoto Y, Shukunami C, Lincoln J: J. Cardiovasc. Dev. Dis., 1(2), 163-176, 2014.

The N-Terminal Cleavage of Chondromodulin-I in Growth-Plate Cartilage at the Hypertrophic and Calcified Zones During Bone Development: Miura S, Kondo J, Takimoto A, Sano-Takai H, Guo L, Shukunami C, Tanaka H, Hiraki Y: PLoS One, 9 (4), e94239, 2014.

A Novel Protein, CHRONO, Functions as a Core Component of the Mammalian Circadian Clock: Goriki A, Hatanaka F, Myung J, Kim JK, Yoritaka T, Tanoue S, Abe T, Kiyonari H, Fujimoto K, Kato Y, Todo T, Matsubara A, Forger D, Takumi T: PLoS Biol., 12(4), e1001839, 2014.

### B) Review

DEC1/STRA13/SHARP2 and DEC2/SHARP1 Coordinate Physiological Processes, Including Circadian Rhythms in Response to Environmental Stimuli: Kato, Y, Kawamoto, T, Fujimoto, K, Noshiro, M: Current Topics in Developmental Biology, 110, 339-372, 2014.

## C) Publications

## D) Other Publications

Molecular cloning of cytochrome P450 (CYP7A1) involved in bile acid biosynthesis: Mitsuhide Noshiro: Tanjusan, 13, 25, 2014

Lineage analysis of cells in the attachment sites of tendons/ligaments into the skeletal tissues: Aki Takimoto, Yuki Yoshimoto, Haruhiko Akiyama, Yuji Hiraki, Chisa Shukunami: The15th Locomotor Science Meeting (Tokyo), September 5th, 2014

Analysis of the regulatory mechanisms underlying cartilage-specific expression of Chondromodulin-I with *in vivo* screening in zebrafish: Hiroshi Yamashita, Chisa Shukunami, Yuji Hiraki: The15th Locomotor Science Meeting (Tokyo), September 5th, 2014

Increased expression of the ladybird homeobox 1 (lbx1), human adolescent idiopathic scoliosis related gene, causes scoliosis in zebrafish: Guo Long, Hiroshi Yamashita, Ikuyo Kou, Aki Takimoto, Taiji Adachi, Yuji Hiraki, Shiro Ikegawa, Chisa Shukunami: The15th Locomotor Science Meeting (Tokyo), September 5th, 2014

The homeobox transcription factor MSX1 regulates odontogenic/osteogenic differentiation of human dental pulp stem cells: Noriko Goto, Katsumi Fujimoto, Hiroko Ida-Yonemochi, Hayato Ohshima, Takeshi Kawamoto, Mitsuhide Noshiro, Chisa Shukunami, Katsuyuki Kozai, Yukio Kato: The15th Locomotor Science Meeting (Tokyo), September 5th, 2014

Establishment of an *in vivo* model to analyze the development of the periodontal ligament: Yuki Yoshimoto, Chisa Shukunami: The 56th Annual Meeting of Japanese Association for Oral Biology (Fukuoka), September 26th-28th, 2014

Molecular mechanisms regulating the establishment of the osteotendinous junction: Chisa Shukunami: The 32nd Annual Meeting of the Japanese Society for Bone and Mineral Research, Current Concept (Osaka), July 24th-26th, 2014.

Molecular mechanisms regulating tendon and ligament formation: Chisa Shukunami: The 11th Bone Biology Forum Lecture VI (Susono), 23rd August, 2014.

DEC1 controls circadian rhythms of adipose lipid-metabolizing genes: Mitsuhide Noshiro: The 21st Annual Meeting of Japanese Society for Chronobiology (Fukuoka), 9th November, 2014

*Scx*$^{+}$*/Sox9*$^{+}$ progenitors contribute to the establishment of the junction between cartilage and tendon/ligament: Yuki Yoshimoto: The 17th Annual Meeting of Skeletal Research Meeting (Tokyo), 29th, November, 2014

## (4) Status of Receiving Grants-in Aid for Scientific Research, etc.

Grant-in-Aid for Scientific Research (B): Chikara Kokubu, Chisa Shukunami, Yuji Hiraki, 24300154. ¥500,000
Grant-in-Aid for Scientific Research (B): Haruhiko Akiyama, Chisa Shukunami, 25293319. ¥100,000
Grant-in-Aid for Scientific Research (B): Chisa Shukunami, Haruhiko Akiyama, Aki Takimoto, 26293395. ¥5,600,000
Grant-in-Aid for challenging Exploratory Research: Chisa Shukunami, Aki Takimoto, Teruko Yamamoto, 5670871. ¥900,000
Grant-in-Aid for Scientific Research Activity Start-up: Yuki Yoshimoto, 26893164. ¥1,500,000
Grant-in-Aid for Scientific Research (C): Katsumi Fujimoto, 25462889. ¥1,100,000

## (5) Academic Awards, etc.

## (6) Patents

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# Department of Oral and Maxillofacial Pathobiology, Basic Life Sciences

## (1) Staffs and Students

| | |
|---|---|
| Professor | : Takashi Takata |
| Associate Professor | : Mutsumi Miyauchi |
| Assistant Professor | : Hisako Furusho, Mariko Ohbayashi |
| Visiting Researcher | : Phuong Thao Nyugen |
| Graduate Student | : Toshinori Ando (D4), Ajiravudh Subarnbhesaj (D4), Nurina Febriyanti Ayuningtyas(D3), Chea Chanbora (D3),Syunryo Yanagisawa(D3), Atsuhiro Nagasaki (D2) |

## (2) Main Research Activities

1 : Molecular pathological study on proliferation and development of oral squamous cell carcinoma

2 : Experimental pathological study on the mechanism of regeneration of periodontal tissues

3 : Experimental pathological study on relationship between odontogenic infection and systemic health condition

4 : Study on the criteria of diagnosis and cellular differentiation of odontogenic tumors and salivary gland tumors

## (3) Research Achievements

### A) Original Papers including case reports

1. Odontogenic carcinoma with dentinoid: A new odontogenic carcinoma. Mosqueda-Taylor A, Neville BW, Tatemoto Y, Ogawa I, Takata T. Head Neck Pathol. Dec;8(4):421-31. 2014.
2. Odontogenic tumors, WHO 2005: Where do we go from here? Wright JM, Odell EW, Speight PM, Takata T. Head Neck Pathol. Dec;8(4):373-82. 2014.
3. Head and neck pathology: Update of odontogenic tumors. Takata T. Pathology. Oct;46 Suppl 2. 2014.
4. Lactoferrin inhibits infection-related osteoclastogenesis without interrupting compressive

force-related osteoclastogenesis. Inubushi T, Kawazoe A, Miyauchi M, Yanagisawa S, Subarnbhesaj A, Chanbora C, Ayuningtyas NF, Ishikado A, Tanaka E, Takata T. Arch Oral Biol. 59(2):226-32. 2014.

5. F-spondin inhibits differentiation of clastic precursors via LRP8. Oka H, Kitagawa M, Takata T. J Periodontol. Posted online on October 9, 2014.
6. Infection with *Porphyromonas gingivalis* exacerbates endothelial injury in obese mice. Ao M, Miyauchi M, Inubushi T, Kitagawa M, Furusho H, Ando T, Ayuningtyas NF, Nagasaki A, Ishihara K, Tahara H, Kozai K, Takata T. PLOS ONE. Oct 21; 9(10)e110519. 2014.
7. BDNF mimetic compound LM22A-4 regulates cementoblast differentiation via the TrkB-ERK/Akt signaling cascade. Kajiya M, Takeshita K, Kittaka M, Matsuda S, Ouhara K, Takeda K, Takata T, Kitagawa M, Fujita T, Shiba H, Kurihara H. Int Immunopharmacol. 2014 Apr;19(2):245-52. doi: 10.1016/j.intimp.2014.01.028. Epub Feb 11. 2014.
8. Hinokitiol increases the angiogenic potential of dental pulp cells through ERK and p38MAPK activation and hypoxia-inducible factor-1 α (HIF-1) upregulation. Kim MK, Park HJ, Kim YD, Ryu MH, Takata T, Bae SK, Bae MK. Arch Oral Biol. Feb;59(2):102-10. 2014.
9. Bisphosphonate-related osteonecrosis of the jaw successfully treatedwith surgical resection and its histopathological features. Shintani T, Miyauchi M, Tani R, Yoshioka Y, Akagi E, Toratani S, Okamoto T. J Oral Maxillofac Surg. (in press)
10. A case of intermediate lesion between intercalated duct lesion and epithelial-myoepithelial carcinoma. Tokuyasu Y, Nakamoto S, Suzuki T, Ogawa I, Takata T. Jpn J Diag Pathol. Apr; 31(2):165-9, 2014.
11. A case of myxofibrosarcoma of the maxilla. Toratani S, Sakamoto A, Ochi Y, Miyauchi M, Ogawa I, Okamoto T. Jpn J Oral Maxillofac Surg. Jun;60(6):354-8, 2014.
12. A case of neck lymph node metastasis after surgery for tongue cancer with Churg-Strauss syndrome. Nakagawa T, Ohta K, Ono S, Seino S, Obayashi M, Ogawa I, Takata T, Takechi M. J Hiroshima Univ Dent Soc. Jun; 46(1):67-72, 2014.
13. A case of lichen planus suspected of palladium allergy to dental metals: Kitagawa M, Oumi F, Okamoto Y, Nagasaki A, Obayashi M, Shintani T, Toratani S, Ogawa I, Kurihara H. J JSEDP, 6(1):66-70, 2014.

## B Review

1. Odontogenic infection exerts harmful effects on pathological condition of metabolic syndrome. Miyauchi M, Furusho H, Inubushi T, Takata T. Hyogo Dentists, Association, Monthly 751(2): 2014.

## C Publications

## D) Other Publications

## E Presentation at Scientific Meeting

### 1 Special lectures in academic meetings

1. Oral and whole body health - dental infection of *Porphyromonas gingivalis* is a risk factor of non-alcoholic steatohepatitis (NASH) -. Takata T. 34th Myanmar Dental Conference (Yangon), 2014.
2. Oral administration of liposomalized lactoferrin inhibits bone resorption by periodontitis and other bone destructive diseases. Takata T, Inubushi T, Chanbora C, Miyauchi M. 6th Meeting of Asian Society of Oral Pathology and Medicine (Hyderabad), 2014.
3. Odontogenic infection of periodontal pathogen, *Porphyromonas gingivalis* exacerbates pathological progression of NASH. Miyauchi M, Furusho H, Hyogo H, Cyayama K, Kurihara H, Takata T. 10th symposium of Hiroshima liver project research center (Hiroshima), 2014.
4. A survey study of effects of periodontitis on pathological progression of NASH. Miyauchi M, Furusho H, Nagasaki A, Takata T. 30th Comprehensive meeting focusing on dental medicine (Tokyo), 2014.
5. Update of odontogenic tumors. Takata T. 30th Meeting of International Academy of Pathology (Bangkok), 2014.
6. Pathology of oral and maxillofacial lesions. 115th meeting of Chugoku-Sikoku division of the Japanese Society of Pathology (Hiroshima) 2014. Takashi Takata
7. Educational Seminar: Oral Pathology, The International Academy of Pathology, Japanese division (Okinawa), Takashi Takata, 2014.

### 2 Presentation at International Scientific Meeting

1. Immunohistochemical mapping of oxygen gradient in mouse oral epithelia. Furusho H, Ohta A, Sasaki H. 43rd Annual Meeting & Exhibition of the AADR (Charlotte), 2014.
2. Role of VEGF-Flt-1 signaling in oral cancer progression. Subarnbhesaj A, Miyauchi M, Inubushi T, Chanbora C, Nguyen PT, Takata T. 17th International Congress on Oral Pathology and Medicine (Istanbul), 2014.
3. Significance of fusion gene analysis for the differential diagnosis of mucoepidermoid carcinoma.

Nagasaki A, Ando T, Obayashi M, Ogawa I, Takata T. 17th International Congress on Oral Pathology and Medicine (Istanbul), 2014.

4. Role of VEGF-Flt-1 signaling in malignant behaviors of oral cancer. Subarnbhesaj A, Miyauchi M, Nguyen PT, Chanbora C, Ayuningtyas NF, Takata T. 30th Meeting of International Academy of Pathology (Bangkok), 2014.
5. Assessment of academic preparation and motivation to create a standard of entry behavior for International Dental Course Program at Faculty of Dentistry Hiroshima University. Suardita K, Oka H, Takata T, Setijanto D, Sugai M. 16th Ottawa Conference (Ottawa), 2014.
6. Interim assessment of educational program for undergraduate dental students with Japanese-English dual linguistic education system at Hiroshima University (the first and the second year). Oka H, Suardita K, Takata T, Nikawa H, Kato K, Sugai M. 16th Ottawa Conference (Ottawa), 2014.

## 3 Presentation at Domestic Scientific Meeting

1. Oncogenic role of TIMP-1 in sarcoma. Ando T, Umehara H, Nishizaka T, Miyauchi M, Takata T. 103rd annual meeting of the Japanese Society of Pathology (Hiroshima), 2014.
2. Role of VEGF-Flt-1 signaling in oral cancer progression. Subarnbhesaj A, Miyauchi M, Inuboshi T, Chanbora C, Nguyen PT, Takata T. 103rd annual meeting of the Japanese Society of Pathology (Hiroshima), 2014.
3. Bovine lactoferrin inhibits growth and invasion of oral squamous cell carcinoma. Chanbora C, Inubushi T, Subarnbhesaj A, Ayuningtyas N F, Miyauchi M, Ishikado A, Makino T, Takata T. 103rd annual meeting of the Japanese Society of Pathology (Hiroshima), 2014.
4. A case of central mucoepidermoid carcinoma which diagnosis is established by the identification of CRTC1-MAML2 fusion gene. Ogawa I, Suzuki R, Yanagisawa S, Nagasaki A, Ohkubo Y, Sakamoto H, Ohta S, Nakatani Y, Nagao T, Takata T. 103rd annual meeting of the Japanese Society of Pathology (Hiroshima), 2014.
5. Odontogenic infection of *Porphyromonas gingivalis* induces preterm and low weght birth.

8. Role of VEGF-Flt-1 signaling in malignant behaviors of oral cancer. Subarnbhesaj A, Miyauchi M, Chanbora C, Ayuningtyas NF, Nguyen PT, Takata T. 47th annual meeting of the Dental Association of Hiroshima University (Hirohsima ), 2014.
9. Liposomalized lactoferrin prevents pathological progression of RA through regulating Treg-Th17 cell balance Harada K, Kaneko A, Yanagisawa S, Subarnbhesaj A Inubushi T, Miyauchi M, Yamamoto D, Takahashi I, Takashi T. 47th annual meeting of the Dental Association of Hiroshima University (Hiroshima), 2014.
10. Odontogenic infection of *Porphyromonas gingivalis* induces pathological progression of non-alcoholic steatohepatitis (NASH). Furusho H 25th annual meeting of Japanese society of Oral Pathology(Niigata), 2014.
11. Liposomal bovine lactoferrin prevents pathological progression of rheumatoid arthritis. Yanagisawa S, Inubushi T, Harada K, Subarnbhesaj A, Miyauchi M, Imanaka M, Ishikado A, Makino T, TakataT. 25th annual meeting of Japanese society of Oral Pathology(Niigata), 2014.
12. Odontogenic infection of periodontal pathogen, *Porphyromonas gingivalis* exacerbates pathological progression of NASH. Miyauchi M, Furusho H, Nagasaki A, Takata T. Clinical Lipid Seminar 2014 (Hiroshima), 2014.
13. Significance of titanium allergy as preoperative test of implant: Kitagawa M, Obayashi M, Nagasaki A, Yanagisama S, Shintani T, Kagawa K, Hiasa K, Kubo T, Takachi M, Ogawa I, Kurihara H. 7th Annual Meeting of Japanese Society for Evidence and the Dental Professional (Okayama), 2014.
14. Odontogenic infection of *Porphyromonas gingivalis* exacerbates pathological progression of non-alcoholic steatohepatitis. –Effects of *Pg* infection and *Pg*-LPS on hepatocytes-. Hirata M Furusho H Miyauchi M Takata T 56th annual meeting of Japanese association for Oral Biology (Fukuoka), 2014.
15. Odontogenic infection of *Porphyromonas gingivalis* induces preterm birth. Miyauchi M, Frusho H Nagasaki A, Urabe T, Konishi H, Miyoshi H, Kudo M, Takata T. 22nd Meeting of Japan Placenta Association (Kyoto), 2014.
16. Odontogenic infection of *Porphyromonas gingivalis* induces pathological progression of non-alcoholic steatohepatitis (NASH). Furusho H, Miuauchi M, Takata T. 5th Asian Pacific Topic Conference (Hyogo), 2014.
17. Liposomal bovine lactoferrin prevents pathological progression of rheumatoid arthritis. Yanagisawa S, Inubushi T, Harada K, Kaneko A, Chanbora C, Ayuningtyas NF, Miyauchi M, Imanaka M, Ishikado A, Makino T, TakataT. 6th annual meeting of Japanese association for Lactoferrin (Ibaragi), 2014.
18. Bovine lactoferrin inhibits tumor angiogenesis. Ayuningtyas NF, Inubushi T, Chanbora C, Subarnbhesaj A, Miyauchi M, Saninggar KE, Maishi N, Imanaka H, Ishikado A, Makino T, Hida

K, Shindoh M, Takata T. 6th annual meeting of Japanese association for Lactoferrin (Ibaragi), 2014.

19. A case of low-grade cribriform cystadenocarcinoma of parotid gland. Tanaka Y, Ogawa I, Miyauchi M, Takata T, ArihiroK, Fujihara M. The 53rd Academic Meeting in Autumn of Japanese Society of Clinical Cytology (Shimonoseki), 2014.
20. Nagasaki A Participation of 17th International Congress on Oral Pathology and Medicine. 2th Graduate School of Biomedical & Health Sciences FD (Hiroshima), 2014.
21. Role of VEGF - Flt - 1 signaling in bone invasion of oral cancer. Mikuriya A, Subarnbhesaj A, Miyauchi M, Nguyen PT, Takata T. 62nd annual meeting of Japanese association of dental research (Osaka), 2014.
22. The effects of *Porphyromonas gingivalis* infection on hepatocytes. Sakamoto S, Furusho H, Nagasaki A, Miyauchi M, Hisatsune J, Sugai M, Tahara H, and Takata T. 62nd annual meeting of Japanese association of dental research (Osaka), 2014.
23. Assessment of Japanese-English dual linguistic education system at HUD-Feedbacks from the lecturers about present conditions and handlings -. Sugai M, Oka H, Suardita K, Nguyen PT, Takata T, Kato K, Nikawa H. 33th Annual Academic Meeting of Japanese Dental Education Association (Kitakyushu), 2014.
24. Assessment of Japanese-English dual linguistic education system at HUD-Study on the factors students expect for the present lectures/ practices-. Oka H, Suardita K, Nguyen PT, Takata T. 33th annual academic meeting of Japanese Dental Education Association (Kitakyushu), 2014.
25. Views of dental students in the home countries of international dental course students-survey for dental students in Airlangga University, Indonesia-. Takigawa Y, Kato M, Tanji T, Suardita K, Oka H, Takata T. 33th annual academic meeting of Japanese Dental Education Association (Kitakyushu), 2014.
26. The activity in a primary school by dental students – An extracurricular activity with HUD regular program students and international undergraduates: Kato M, Okamoto K, Saninggar KE, Kinanthi N, Dung NT, Oka H, Takata T. 33th annual academic meeting of Japanese Dental Education Association (Kitakyushu), 2014.
27. Hiroshima University short-term international study program Overview of dental sciences 2013 for mutual exchanges. Okamoto K, Oka H, Takata T, Sugai M. 33th annual academic meeting of Japanese Dental Education Association (Kitakyushu), 2014.

## 4 Case Reports at Scientific Meeting

1. Palatal tumor (Mucoepidermoid carcinoma). Obayashi M, Nagasaki A, Mizuta K, Ogawa I, Takata

T. 113rd Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Pathology (Ehime), 2014.

2. A tumor of pancreas (Solid-pseudopapillary neoplasm). Nagasaki T, Ogawa I, Takata T, Nishida T. 114th Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Pathology (Kouchi), 2014.
3. A tumor of buccal mucosa (Solitary fibrous tumor). Ogawa I, Sasaki N, Yoneda S, Tohmori H, Hirose T, Takata T 114th Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Pathology (Kouchi), 2014
4. A tumor of buccal mucosa (Solitary fibrous tumor). Ogawa T, Obayashi M, Kitagawa M, Takata T. 25th Annual Meeting of Japanese Society of Oral Pathology (Niigata), 2014.
5. Parotid tumor (Epithelial-myoepithelial carcinoma). Obayashi M, Ogawa I, Sakatani A, Fujihara M, Takata T. 115th Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Pathology (Hiroshima), 2014.
6. A tumor of breast (Adenoid cystic carcinoma). Nagasaki A, Ogawa I, Takata T, Nishida T. 115th Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Pathology (Hiroshima), 2014.
7. Parotid tumor (Polymorphous low-grade adenocarcinoma). Ogawa I, Obayashi M, Fujihara M, Takata T. 62nd Meeting of Hiroshima Pathological Conference (Hiroshima), 2014.
8. Parotid tumor (Mammary analogue secretory carcinoma of salivary gland). Ando T, Nagasaki A, Nishisaka T. 63rd Meeting of Hiroshima Pathological Conference (Hiroshima), 2014

9. A case of signet-ring cell adenocarcinoma of the palate – avariant of myoepithelial carcinoma? – Ogawa I, Kushitani K, Sakamoto A, Takata T. 59th Meeting of Japanese Salivary Gland Society (Tokyo), 2013.

## 5 Other lectures

1. The relationship between oral health and systemic health condition – Topic about chronic infectious disease and non-alcoholic steatohepatitis – T Takata. Alumni association of department of periodontology second, ANA-Crown Plaza Hotel (Hiroshima). 2014
2. Is the mouth the gate of evil? – Periodontitis and systemic health condition-T Takata. Open lecture of Hiroshima Prefectural University Food and life and community service (Hiroshima), 2014.

## 4 Status of Receiving Grants-in Aid for Scientific Research, etc.

1. Grants-in-Aid for Scientific Research (Scientific Research (B)) Continuance: Takashi Takata: Control of proliferation and bone invasion of oral cancer.
2. Grants-in-Aid for Scientific Research (Scientific Research (B)) New: Takashi Takata: A large-scale study on odontogenic tumors in Asia aiming for the revision WHO classification of head and neck tumors.
3. Grants-in-Aid for Scientific Research (Challenging Exploratory Research) New: Takashi Takata: Development of diagnostic/preventive methods for odontogenic infection induced preterm birth and low birth weight targeting of Galectin-3
4. Base of knowledge –Aichi Joint research project of emphasis research program new: Takashi Takata: Development of gas sensing device and analysis of relationships between human respiratory/skin gas and diseases.
5. Grants-in-Aid for Scientific Research (Scientific Research(C)) Continuance: Mutsumi Miyauch: Clarification of pathological progression mechanisms nonalcoholic steatohepatitis caused by dental infection of periodontal pathogen.
6. Grants-in-Aid for Scientific Research (Challenging Exploratory Research) Continuance: Takashi Takata: Study on the application of liposomal lactoferrin for prevention of Rheumatoid arthritis.
7. Grant-in-Aid for Scientific Research (Young Scientists (B)) New: Hisako Furusho: The role of TLR2 in NASH progression caused by *P. gingivalis* odonotogenicinfection.
8. Grants-in-Aid for Scientific Research (Research fellowship for young scientists) Continuance: Toshinori Ando: The function of Ameloblastin as a tumor suppressor gene.
9. Donated fund from Sanstar Co. Ltd. : Takashi Takata. Study on periodontitis
10. Donated fund for Hiroshima Prefecture tumor registration business. Continuance: Takashi Takata

11. Donated fund from Mitsubishi-Mihara Hospital. Continuance: Takashi Takata: Study on diagnosis for oral disease.

## (5) Academic Awards, etc.

1. Karin Harada $47^{th}$

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|---|---|---|
| | | Encouragement Award |
| 2. | Ajiravudh Subarnhesaj University | 47th annual meeting of the Dental Association of Hiroshima |

# Basic Life Sciences
# Department of Cellular and Molecular Pharmacology

## 1 Staff and Students

Professor: Takashi Kanematsu

Assistant professor: Tomoya Kitayama, Kae Harada, Satoshi Asano, Yousuke Yamawaki

Professor (Part-time): Katsuya Morita, Toshiyuki Sasaguri, Minoru Wakamori, Takayuki Tsukuba, Akira Toyofuku,

Research Associate: Jun Zhang, Kana Harada

Administrative Staff: Nozomi Hinada, Kousuke Yokobayashi

Graduate student: Rizia Sultana Kana Oue Masaki Hayashiuchi

Undergraduate student (Advanced Dental Research course): Takashi Ryoke (6th), Furutama Daisuke (6th), Sayaka Asano (6th), Masaki Yokoyama (5th), Seiki Tomoyuki (5th), Sakiho Tsuyama (5th).

## 2 Main Research Activities

1 Studies on the molecular mechanisms of $GABA_A$ receptor signaling in the central nervous system
2 Studies on the molecular mechanisms controlling insulin secretion
3 Studies on the regulatory mechanisms of food intake and energy metabolism
4 Studies on the roles of a new autophagy-related molecule in autophagy pathway
5 Physiological and pathophysiological roles of neurotransmitter transporters and nucleoside transporters.
6 Studies on the mechanisms for neuropathic pain and the development of novel medicaments.
7 Studied on the mechanisms of cell migration regulated by a new molecule.
8 Studies on the molecular mechanisms of thermogenesis in brown adipocytes.
9 Studies on the relationship immune systems and depression-like behavior.

## 3 Research Achievements

### A Original Papers

1 Phospholipase C-related catalytically inactive protein (PRIP) controls KIF5B-mediated insulin secretion. Asano S, Nemoto T, Kitayama T, Harada K, Zhang J, Harada K, Tanida I, Hirata M, Kanematsu T. Biology Open. 8;3(6): 463-474, 2014.

2 Phospholipase C-related catalytically inactive protein participates in the autophagic elimination of Staphylococcus aureus infecting mouse embryonic fibroblasts. Harada-Hada K, Harada K, Kato F, Hisatsune J, Tanida I, Ogawa M, Asano S, Sugai M, Hirata M, Kanematsu T. PLoS one 9 (5), e98285, 2014.

4 Phospholipase C-related catalytically inactive protein (PRIP) regulates lipolysis in adipose tissue by modulating the phosphorylation of hormone-sensitive lipase. Okumura T, Harada K, Oue K, Zhang J, Asano S, Hayashiuchi M, Mizokami A, Tanaka H, Irifune M, Kamata N, Hirata M, Kanematsu T. PLoS one 9 (6), e100559, 2014.

5 Palliation of bone cancer pain by antagonists of platelet-activating factor receptors. Morita K, Shiraishi S, Motoyama N, Kitayama T, Kanematsu T, Uezono Y, Dohi T. PLoS One, 9(3): e91746, 2014.

7 Enhanced desensitization followed by unusual resensitization in $GABA_A$ receptors in phospholipase C-related catalytically inactive protein-1/2 double-knockout mice. Toyoda H, Saito M, Sato H, Tanaka T, Ogawa T, Yatani H, Kawano T, Kanematsu T, Hirata M, Kang Y. Pflügers Archiv: European journal of physiology. 467(2):267-284, 2014.

8 Selective blockade of N-methyl-D-aspartate channels in combination with dopamine receptor antagonism induces loss of the righting reflex in mice, but not immobility. Kikuchi N, Irifune M, Shimizu Y, Yoshida K, Morita K, Kanematsu T, Morioka N, Nakata Y, Sakai N. Psychopharmacology. 232(1):39-46, 2014.

9 Relief of Cancer Pain by Glycine Transporter Inhibitors. Motoyama N, Morita K, Shiraishi S, Kitayama T, Kanematsu T, Uezono Y and Dohi T. Anesth Analg, 119(4): 988-995, 2014.

## B Reviews

## C Publications

## D Other Publications

1 Elucidating the mechanism of a novel molecule associated with energy metabolism and food intake regulation Takashi Kanematsu Funding Program for Next Generation World-Leading Researchers: 2030 , pp63, 2014.

## E Presentation at Scientific Meeting

1 Elucidating the mechanism of a novel molecule associated with energy metabolism and food

intake regulation: Takashi Kanematsu NEXT Symposium, (Tokyo) 2014.

2 Down regulation of zinc transporter 1 induces neuropathic pain via BDNF-KCC2 signaling pathway in spinal cord Kitayama T., Morita K., Kanematsu T. The 87th Annual Meeting of The Japanese Pharmacological Society (Morioka) 2014.

3 Mice lacking phospholipase C-related but catalytically inactive protein (PRIP) are protected from high-fat diet-induced obesity Oue K, Irifune M, Kanematsu T The 47th The meeting of Hiroshima University Dental Society, (Hiroshima), June 21, 2014.

4 PRIP participates in the autophagic elimination of Staphylococcus aureus infecting mouse embryonic fibroblasts. Harada-Hada K, Harada K, Asano S, Sugai M, and Kanematsu T. The 47th The meeting of Hiroshima University Dental Society, (Hiroshima), June 21, 2014.

5 Altered anesthetic action of propofol in phospholipase C-related catalytically inactive protein (PRIP) knockout mice. Masaki Hayashiuchi, Tomoya Kitayama, Mitsugi Okada, Takashi Kanematsu. The 47th The meeting of Hiroshima University Dental Society, (Hiroshima), June 21, 2014.

6 Elucidation of a new molecule regulating lipolysis and insulin secretion Takashi Kanematsu Showa University Seminar (Tokyo), 2014.

7 Elucidation of roles of PRIP in autophagic elimination of *Staphylococcus aureus* Kana Harada, Kae Harada-Hada, and Takashi Kanematsu. The 19th The Annual meeting of Japanese Society for Proteases in Pathophysiology (Osaka), 2014.

8 Food intake control by PRIP-mediated GABA signaling Takashi Kanematsu The 1th The Study Meeting for Oral Society (Osaka), 2014.

9 Regulation of cell migration by phospholipase C-related catalytically inactive protein Asano S., Kanematsu T. The 56th Annual Meeting of Japanese Association for Oral Biology, (Fukuoka), 2014.

10 Behavioral Responses to Chronic Restraint Stress in Mice Lacking Phospholipase C-related Inactive Protein Type-1 Nikaido Y., Yamashita S., Ozaki T., Migita K., Shibata Y., Furukawa T., Yamada J., Kanematsu T., Hirata M., Nakamura K., Ueno S. The 37th Annual Meeting of Japan Neuroscience Society (Yokohama), 2014.

11 Inhibition of fusion between autophagosome and lysosome in *Prip*-knockout MEFs Harada-Hada K, Harada K and Kanematsu T The 87th Annual Meeting of the Japanese Biomedical Society (Kyoto), 2014.

12 Different pain responses between Prip1-knockout and Prip1/Prip2-double knockout mice Kanematsu1 T., Kitayama T., Ueno S., Migita K. 24th Neuropharmacology Conference 2014, GABAergic Signaling in Health and Disease, (Washington, D.C.), 2014.

13 Anesthetic action of propofol in relation to types of $GABA_A$ receptors Hayashiuchi M., Okada M., Kanematsu T. The 31st Annual Meeting of Japanese Society for Disability and Oral Health (Sendai), 2014.

14 Regulation of cell migration by PRIP: PRIP regulates PDGF-induced PI(3,4,5)$P_3$ synthesis in the plasma membrane Asano S., Kanematsu T. The 37th Annual meeting of the molecular biology society of japan (Yokohama), 2014

15 Fat and energy metabolism in adipocytes Takashi Kanematsu The 2th The Study Meeting for Oral Society (Morioka), 2014.

F Special lectures in academic meeting

1 Elucidation of a new molecule that regulates insulin secretion and lipid metabolism Takashi Kanematsu NEXT symposium in Hiroshima University (Hiroshima) 2014.

2 PRIP-regulated GABA signaling involved in regulation of feeding behavior. Takashi Kanematsu The 56th Annual Meeting of Japanese Association for Oral Biology, (Fukuoka), 2014.

## (4) Grants

1 Grant-in-Aid for challenging Exploratory Research: Kanematsu T., Studies on molecular mechanisms in differentiation and dedifferentiation of adipocytes. Project number 26670809. Amount 2,800,000. (2014-2015)

2 Grant-in-Aid for Scientific Research (C): Kitayama T., Modulation of pain signaling via novel molecule of trafficking of granules regulator. Project number 24592798. Amount 5,460,000. (2012-2014)

3 Grant-in-Aid for Young Scientists (B): Harada Kae., Elucidation of an exclusive mechanism via PRIP against invasive bacteria. Project number 25861757. Amount 3,100,000 (2013) 15,000,000 (2013-2014).

4 Grant-in-Aid for Young Scientists (B): Asano S. Regulatory mechanisms of blood coagulation and repairing blood vessel via novel molecule. Project number 25861756. Amount 4,160,000. (2013-2014)

5 Grant-in-Aid for Young Scientists (B): Yamawaki Y.: Epigenetics in microglia as a mechanism of stress vulnerability. Project number 25861036. Amount 3,900,000. (2013-2014)

## (5) Academic Awards

Kana Harada, Young Investigator's Award of JSPP 2014, The 19th The Annual meeting of Japanese Society for Proteases in Pathophysiology.

## (6) Patents

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# Basic Life Sciences
# Department of Biomaterials

## (1) Staff and Students

Professor: Koichi Kato

Assistant Professor: Yuji Nomura, Isao Hirata, Ryo Nishikiori

Graduate Student: Yusuke Aida (Dept. Periodontal Med.), Aimi Naim (Dept. Orthodontics), Takahiro Sugino (Dept. Orthodontics), Tomomi Date (Dept. Orthodontics), Ky Try

## (2) Main Research Activities

Biomaterials and biodevices for regenerative medicine

Study on the interactions between biological systems and biomaterial surfaces

Development of novel disinfectants for dental materials.

## (3) Research Achievements

### A) Original Papers (including Case Reports)

Effect of thione primers on adhesive bonding between an indirect composite material and Ag-Pd-Cu-Au alloy: Imai H., Koizumi H., Shimoe S., Hirata I., Matsumura H., Nikawa H.: Dental Materials Journal, 33(5), 681-688, 2014.

Osteoclast response to bioactive surface modification of hydroxyapatite: Okazaki Y., Abe Y., Yoshida Y., Hiasa K., Hirata I.: Open Journal of Stomatology, 4(7), 340-344, 2014.

Seeding of mesenchymal stem cells into inner part of interconnected porous biodegradable scaffold by a new method with a filter paper: Yamanaka K., Yamamoto k., Sakai Y., Suda Y., Shigematsu Y., Kaneko T., Kato K., Kumagai T., Kato Y.: Dental Materials Journal, in press.

### B) Review

Biodental engineering: Matsumoto T., Egusa H., Kato K., Tsuji T.: Journal Oral Bioscience, in press.

### C) Other Publications

Effects on bone metabolism of heavy particle beam: Sawajiri M., Nomura Y., Terato H., Maruyama K.: Research report Radiology comprehensive heavy ion beam cancer treatment devices (Treatment

and diagnosis, biological), 60-61, 2014.

## D) Presentation at Scientific Meeting

Effect of Molecular Crowding on the Dynamics of Antigen-antibody Interactions at Solid/Liquid Interfaces: Hirata I., Kato K.: The 2nd Japan-China Symposium on Nanomedicine (Hiroshima, Japan), 2014.

Surface Design for Optimizing Mesenchymal Stem Cell Culture in a Serum-free Medium: Yamauchi Y., Hirata I., Kanawa M., Kato Y., Kato K.: The 2nd Japan-China Symposium on Nanomedicine (Hiroshima, Japan), 2014.

Antibody Microarrays Fabricated through Plasma-assisted Micropatterning for Use in Quality Control of Stem Cells: Nishikiori R., Watanabe K., Kato K.: The 2nd Japan-China Symposium on Nanomedicine (Hiroshima, Japan), 2014.

Constitutive cell arrangement for analyzing the epithelial-mesenchymal interactions Kato K., Kubota C., Sakakitani S., Nishikiori R. The 98th Hiroshima University Dental Society (Hiroshima, Japan), 2014.

Radiation effects of heavy ion particles on bone metabolism: Sawajiri M., Nomura Y., Terato H., Maruyama K., Tanimoto K.: 2013 Annual meeting of the research project with heavy ion at NIRS-HIMAC (Chiba), 2014.

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cells.: Nishikiori R., Watanabe K., Kato K.: The 64th General Session of the Japanese Society for Dental Materials and Devices (Hiroshima, Japan), 2014.

12 Effect of Wnt3a on cementoblast differentiation from bone marrow-derived mesenchymal stem cells.: Aida Y., Kurihara H., Kato K.: The 141st Meeting of the Japanese Society of Conservative Dentistry (Yamagata, Japan), 2014.

13 Molecular design of growth factors that have an affinity for biodegradable polyesters.: Nishio F., Hirata I., Kato K.: The 36th Annual Meeting of the Japanese Society for Biomaterials (Tokyo, Japan), 2014.

14 Surface design for optimizing mesenchymal stem cell culture in a serum-free medium: Yamauchi Y., Hirata I., Kanawa M., Kato Y., Kato: The 47th Hiroshima University dentistry society (Hiroshima), 2014.

## E) Special lectures in academic meetings

1 2-Dimensional antibody display as a platform for cellular analysis: Kato K.: The 2nd Japan-China Symposium on Nanomedicine (Hiroshima, Japan), 2014.

2 A cell culture substrate with antibody micropattern as an analytical platform for modeling epithelial-mesenchymal interactions.: Kato K.: 5th Taiwan-Japan Symposium on Nanomedicine (Taipei, Taiwan), 2014.

3 Microarrays for immunophenotyping of mesenchymal stem cells: Kato K.: 7th World Congress on Preventive and Regenerative Medicine (Taipei, Taiwan), 2014.

4 Potentials of micropatterned antibody arrays as platforms for cellular assays: Kato K.: 8th International Symposium on Nanomedicine (Ehime, Japan), 2014.

5 Perspectives of future dental materials: Kato K.: Seminar & Workshop of CPD in Dental Materials (Surabaya, Indonesia), 2014.

6 Two-dimensional antibody display as a platform for the analysis of cellular interactions: Kato K., Kubota C., Sakakitani S., Nishikiori R.: Internarional Symposium on Materials and Regenerative Medicine 2014 (Taipei, Taiwan), 2014.

7 Two dimensional antibody display as cell analysis platform: Kato K.: Institute for Frontier Medical Sciences, Kyoto University, a Joint Research Lecture (Kyoto, Japan), 2014.

8 Regenerative dental medicine: Bioengineering challenges: Kato K.: Seminar for School of Dentistry, Kyushu University (Fukuoka, Japan), 2014.

9 Designing of biomaterials and biodevices for early realization of regenerative medicine: Kato K.: The 2nd Chu-Sikoku Brainstorming, Block of Chu-Sikoku, Japanese Society for Biomaterials (Okayama, Japan), 2014.

10 Microfabrication Technology and Regenerative Dental Treatment: Kato K.: Clinical Research

Conference, Hiroshima University (Hiroshima, Japan), 2014.

## (4) Status of Receiving Grants-in Aid for Scientific Research, etc.

1: Grant-in-Aid for Scientific Research (B), Ministry of Education, Culture, Sports, Science and Technology, Representative Kato K.: Kato K.: Creation of artificial extracellular matrices that mimic biological tissue architecture: No.25293404. 2,700,000JPY

2: Grant-in-Aid for Scientific Research (B), Ministry of Education, Culture, Sports, Science and Technology, Representative Hirata J.: Development of cell culture substrates capable of controlling cell growth and differentiation: No5(ear)-2.4(ch)8( ()] TJ 0 Tc 0: De ( cs 0 scn /TT1 .004 Tw 9.96 0 0 9.96 106

## (5) Patents

1: Nomura Y., Sawajiri m.: Aqueous solution production technique and water vapor producing device including halogen dioxide: (JP2014-113404) (Medical Environment Techno Co.,Ltd., Mikasa Shoji Co.,Ltd.)

2: Nii T., Nomura Y., Sawajiri M., Ohata T.: A component for dealing with a tumor, and a manufacturing method for the same (JP2014-113404) (Medical Environment Techno Co.,Ltd.)

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# Applied Life Science Department of Periodontal Medicine Division of Preventive and Restorative Dentistry Department of Periodontics and Endodontics

## (1) Staffs and Students

Professor: Hidemi Kurihara

Associate Professor: Hideki Shiba

Associate Professor Lecturer:Tsuyoshi Fujita

Assistant Professor: Noriyoshi Mizuno, Yuushi Uchida, Katsuhiro Takeda, Tomoyuki Iwata, Kazuhisa Ouhara, Mikihito Kajiya, Shinji Matsuda

Assistant Professor (Special Appointment): Takayoshi Nagahara (- March), Khung Rathvisal October -

Resident: Yasuko Fumino Ogawa, Mizuho Kittaka (- March/studying abroad), Akihiro Konishi, Tsuyoshi Miyagawa, Kenji Wada(- March), Haruka Imai, Yusuke Obinata, Eri Kaneda, Takako Fujita, Ryoichi Yagi

Graduate Student: Yoshie Niitani (under leave of absence), Shu Ishida, Kei Kashiwai, Masahiro Yamakawa, Tetsuya Yoshimoto, Yusuke Aida, Naoko Tokunaga, Keita Takahashi, Kei Takahashi, NGUYEN QUOC TRUONG, Masahiko Suzukawa, Ai Okanobu, Manabu Takewaki, Shuichi Munenaga , Keichi Akutagawa, Nao Komatsu, Yoko Sato, Shinobu Matsui, Minami Yoshioka

Clinical Trainee: Takeshi Ueda, Tetsutaro Ishigaki (September-), Hiroshi Haraga, Masahiro Takase (December-)

## (2) Main Research Activities

1: Immunological study on the onset of periodontics

2: Study on periodontal tissue regeneration using bone marrow mesenchymal stem cells

3: Study on periodontal tissue regeneration using neurotrophines

4. Study on the relationship between periodontal disease and systemic disease

5: Study on physiological function and differentiation of the cells derived from periodontal ligament or dental pulp

6: Study on pathogenicity of periodontopathogenic bacteria

7: Study on interaction between periodontopathogenic bacteria and host cells

8: Clinical study on endodontal-periodontal therapy

9: Study on interaction between stress and periodontics

## (3) Research Achievements

## A) Original Papers (including Case Reports)

1. The effect of brain-derived neurotrophic factor on periodontal furcation defects.
   Jimbo R, Tovar N, Janal MN, Mousa R, Marin C, Yoo D, Teixeira HS, Anchieta RB, Bonfante EA, Konishi A, Takeda K, Kurihara H Coelho PG.
   PLoS One, 2014 Jan, 14;9(1), e84845
2. BDNF mimetic compound LM22A-4 regulates cementoblast differentiation via the TrkB-ERK/Akt signaling cascade.
   Mikihito Kajiya, Kei Takeshita, Mizuho Kittaka, Shinji Matsuda, Kazuhisa Ouhara, Katsuhiro Takeda, Takashi Takata, Masae Kitagawa, Tsuyoshi Fujita, Hideki Shiba, Hidemi Kurihara
   International Immunopharmacology 2014 April, 19(2), 245-52
3. miR-584 expressed in human gingival epithelial cells is induced by *Porphyromonas gingivalis* stimulation and regulates interleukin-8 production via lactoferrin receptor
   Ouhara K., Savitri I. J., Fujita T., Kittaka M., Kajiya M., Iwata T., Miyagawa T., Yamakawa M., Shiba H., Kurihara H.
   J. Periodontol., 2014 Jun, 85, 198-204
4. Detecting gene mutations in Japanese Alzheimer's patients by semiconductor sequencing.
   Yagi R, Miyamoto R, Morino H, Izumi Y, Kuramochi M, Kurashige T, Maruyama H, Mizuno N, Kurihara H, Kawakami H
   Neurobiol Aging, 2014 Jul, 35(7), 1780.e1-5
5. Amphotericin B down-regulates Aggregatibactor actinomycetemcomitans-induced production of IL-8 and IL-6 in human gingival epithelial cells
   Haruka Imai, Tsuyoshi Fujita, Mikihito Kajiya, Kazuhisa Ouhara,, Tsuyoshi Miyagawa, Shinji Matsuda, Hideki Shiba, Hidemi Kurihara
   Cellular Immunology, 2014 August, 290(2), 201-208.
6. Brain-derived neurotrophic factor prevents the endothelial barrier dysfunction induced by interleukin- -
   Matsuda S., Fujita T., Kajiya M., Kashiwai K., Takeda K., Shiba H., Kurihara H.
   J Periodontal Res. 2014 September, in press
7. Irsogladine maleate inhibits Porphyromonas gingivalis-mediated expression of toll-like receptor 2 and interleukin-8 in human gingival epithelial cells.
   Irma josefina Savitri, Kazuhisa Ouhara, Tsuyoshi Fujita, Mikihito Kajiya, Tsuyoshi Fujita, Mizuho Kittaka, Masahiro Yamakawa, Hideki Shiba, Hidemi Kurihara
   Journal of Periodontal Research, 2014 Sep, 20, doi: 10.1111/jre.12231.
8. Enhanced TLR-MYD88 signaling stimulates autoinflammation in SH3BP2 cherubism mice and defines the etiology of cherubism.
   Yoshitaka T, Mukai T, Kittaka M, Alford LM, Masrani S, Ishida S, Yamaguchi K, Yamada M,

Mizuno N, Olsen BR, Reichenberger EJ, Ueki Y

Cell Rep., 2014 Sep, 8(6), 1752-66

9. Smad2 is Involved in Aggregatibacter actinomycetemcomitans-induced Apoptosis.

   Yoshimoto T, Fujita T, Ouhara K, Kajiya M, Imai H, Shiba H, Kurihara H

   JOURNAL OF DENTAL RESEARCH, 2014 November,93(11), 1148-1154

10. -tricalcium Phosphate into a Complex of Bone Marrow Mesenchymal Stem Cells and Type I Collagen can Augment the Volume of Alveolar Bone Without Impairing Cementum Regeneration.

    Nagahara T, Yoshimatsu S, Shiba H, Kawaguchi H, Takeda K, Iwata T, Mizuno N, Fujita T, Kurihara H.

    J Periodontol., 2014 Dec, 12, Epub ahead of print

11. Nuclear Nrf2 induction by protein transduction attenuates osteoclastogenesis.

    Hiroyuki Kanzaki, Fumiaki Shinohara, Mikihito Kajiya, Sari Fukaya, Yutaka Miyamoto, Yoshiki Nakamura

    Free Radical Biology and Medicine, 2014December, 77, 239-248

12. A case of lichen planus suspected of palladium allergy to dental metals

    Kitagawa M., Oumi F., Okamoto Y., Nagasaki A., Obayashi M., Shintani T., Toratani S., Ogawa I., Kurihara H. J JSEDP, 6(1), 66-70, 2014.

## B) Review

## C) Publications

1. Environmental and systemic factors: The Periodontology (edited by Yuuichi Izumi, Atsuhiro Kinoshita, Yukihiro Numabe, Matsuo Yamamoto)

   Fujita T., Shiba H., Kurihara H.

   Nagasueshoten (Kyoto), 44-45, 57-58, 2014.

## D) Other Publications

1. The case example of dental practice network for HIV-patients in Hiroshima: The list of case examples of network-construction of dental practice (the revised edition): Welfare Labor Scientific Research in 2014 "Study on construction and maintenance of the medical system for HIV infection: Study on the system of dental practice for HIV infection: Yuuji Usami (the Nagoya Medical Center)

   Santanda T., Shiba H.: 18-27, 2014.

2. Medical security asked from the society: Standard precaution: Is your infection countermeasures for infection perfect?

   Noriyoshi Mizuno, Miyuki Nakaoka, Yoshie Niitani and Hidemi Kurihara

The Quintessence vol.33 No.10 2133-2137, 2014

## E) Presentation at Scientific Meeting

1. On AUDIT System of Hiroshima Safety Dental service Support network for the prevention of nosocomial infection for the dental clinic
   Iwata T., Mizuno N., Nakaoka M., Irie Y., Nagahara T., Shiba H., Sawa A. and Kurihara H
   The 29th Annual meeting of the Japanese Society for Infection Prevention and Control (2014 February, Tokyo)
2. Porphyromonas gingivalis infection exacerbated RA in mice model
   Masahiro Yamakawa, Kazuhisa Ouhara, Satoshi Yamasaki, Eiji Sugiyama, Hidemi Kurihara
   The 58th Annual General Assembly and Scientific Meeting of the Japan College of Rheumatology (2014 April, Tokyo)
3. BDNF regulates p75-JNK signaling cascade to induce gingival epithelial cells apoptosis.
   Kei Kashiwai, Mikihito Kajiya, Shinji Matsuda, Tsuyoshi Fujita, Katsuhiro Takeda, Hideki Shiba, Hidemi Kurihara
   The 57th spring meeting of the Japanese society of Periodontology (2014 May, Gifu)
4. Porphyromonas gingivalis infection exacerbated RA in mice model
   Masahiro Yamakawa, Kazuhisa Ouhara, Mikihito Kajiya, Mizuho Kittaka, Katsuhiro Takeda, Takako Fujita, Tsuyosi Fujita, Hideki Shiba, Hidemi Kurihara
   The 57th spring meeting of the Japanese society of Periodontology (2014 May, Gifu)
5. BDNF regulates p75-JNK signaling cascade to induce gingival epithelial cells apoptosis.
   Kei Kashiwai, Mikihito Kajiya, Shinji Matsuda, Tsuyoshi Fujita, Katsuhiro Takeda, Hideki Shiba, Hidemi Kurihara
   The 47th meeting of the Hiroshima University Dental Society (2014 June, Hiroshima)
6. The involvement of smad2 in Aggregatibacter actinomycetemcomitans-induced apoptosis in human gingival epithelial cells
   Tetsuya Yoshimoto, Tsuyoshi Fujita, Kazuhisa Ouhara, Mikihito Kajiya, Hideki Shiba, Hidemi Kurihara
   The 47th meeting of the Hiroshima University Dental Society (2014 June, Hiroshima)
7. Porphyromonas gingivalis infection exacerbated RA in mice model
   Masahiro Yamakawa, Kazuhisa Ouhara, Mikihito Kajiya, Mizuho Kittaka, Katsuhiro Takeda, Takako Fujita, Tsuyosi Fujita, Hideki Shiba, Hidemi Kurihara
   The 47th meeting of the Hiroshima University Dental Society (2014 June, Hiroshima)
8. TGF- -dependent apoptosis in human gingival epithelial cells.
   Tetsuya Yoshimoto, Tsuyoshi Fujita, Mikihito Kajiya, Hideki Shiba, Hidemi Kurihara
   The 92nd General Session & Exhibition of the International Association of Dental Research (2014 June, Capetown/South Africa)
9. Effects of Brain-derived neurotrophic factor on antiinflammation and bone-dentin related proteins expression in human pulp cells
   Tokunaga N., Takeda K., Kajiya M., Matsuda S., Fujita T., Shiba H. and Kurihara H.

The 35th Annual scientific meeting of JEA (2014 July, Niigata)

10. To establish anti-inflammatory cytokine producing Clumps of MSCs/ECM(C-MSCs) complex ex vivo
    Kei Takeshita, Mikihito Kajiya, Manabu Takewaki, Kazuhisa Ouhara, Tomoyuki Ouhara, Tsuyoshi Fujita, Hideki Shiba, Hidemi Kurihara
    The 35th Annual Meeting of the Japanese Society of Inflammation and Regeneration (2014 July, Okinawa)
11. Development of novel tissue engineering therapy by using clumps of mesenchymal stem cells/extracellular matrix complex
    Mikihito Kajiya, Hideki Shiba, Manabu Takewaki, Kei Takeshita, Khun Rathvisal, Nguyen Quoc Troung, Tomoyuki Iwata, Kazuhisa Ouhara, Katsuhiro Takeda, Tsuyoshi Fujita, Hidemi Kurihara
    The 30th Annual meeting of dental medicine to promote comprehensive research (2014 August, Tokyo)
12. BDNF regulates p75-JNK signaling cascade to induce gingival epithelial cells apoptosis.
    Kei Kashiwai, Mikihito Kajiya, Shinji Matsuda, Tsuyoshi Fujita, Katsuhiro Takeda, Hideki Shiba, Hidemi Kurihara
    The 56th Annual Meeting of Japanese Association for Oral Biology (2014 September, Fukuoka)
13. The involvement of smad2 in bacteria-induced apoptosis of human gingival epithelial cells
    Tetsuya Yoshimoto, Tsuyoshi Fujita, Hideki Shiba, Hidemi Kurihara
    The 56th Annual Meeting of Japanese Association for Oral Biology (2014 September, Fukuoka)
14. IgG titar against Porphyromonas gingivalis at Center of Oral Clinical Examination, Hiroshima University Hospital
    Kazuhisa Ouhara, Tomoaki Shintani, Yuushi Uchida, Mikihito Kajiya, Masae Kitagawa, Ikuko Ogawa, Tsuyoshi Fujita, Takamune Hino, Hideki Shiba, Hidemi Kurihara
    The 7th Annual Meeting of The Japanese Society for Evidence and the Dental Professional (2014 September, Okayama)
15. Significance of titanium allergy as preoperative test of implant
    Kitagawa M., Obayashi M., Nagasaki A., Yanagisama S., Shintani T., Kagawa K., Hiasa K., Kubo T., Takachi M., Ogawa I., Kurihara H.
    The 7th Annual Meeting of Japanese Society for Evidence and the Dental Professional (Okayama), 2014.
16. Development of novel tissue engineering therapy by using clumps of mesenchymal stem cells/extracellular matrix complex
    Mikihito Kajiya, Mizuho Kittaka, Hideki Shiba, Manabu Takewaki, Kei Takeshita, Tomoyuki Iwata, Kazuhisa Ouhara, Katsuhiro Takeda, Tsuyoshi Fujita, Hidemi Kurihara
    The 64th General Session of the Japanese Society for Dental Materials and Devices (2014 October, Hiroshima)
17. Brain-derived neurotrophic factor / hyaluronic acid complex enhances periodontal tissue regeneration
    Takeda K., Konishi A., Kajiya M., Matsuda S., Fujita T., Shiba H. and Kurihara H.
    The 64th General sessions of the Japanese society for Dental Materials and Devices (2014 October,

Hiroshima)

18. Effect of Wnt3a on the cementoblast differentiation of bone marrow-derived mesenchymal stem cells
    Yusuke Aida, Hidemi Kurihara, Koichi Kato
    The 141st Meeting of the Japanese Society of Conservative Dentistry (2014 October, Yamagata)
19. Elucidation of the mechanisms of drug-induced gingival hyperplasia using the model mice
    Ai Okanobu, Shinji Matsuda, Tsuyoshi Fujita, Mikihito Kajiya, Yushi Uchida, Hideki Shiba and Hidemi Kurihara
    The 57th fall meeting of the Japanese society of Periodontology (2014 October, Kobe)
20. Effect on the expression and activity of histone deacetylase by humoral factors secreted by periodontal cells
    Keita Takahashi, Tomoyuki Iwata, Eri Kaneda, Takayosi Nagahara, Syu Isida, Hideki Shiba, Hidemi Kurihara
    The 57th fall meeting of the Japanese society of Periodontology (2014 October, Kobe)
21. Development of novel tissue engineering therapy by using clumps of mesenchymal stem cells/extracellular matrix complex
    Mikihito Kajiya, Mizuho Kittaka, Hideki Shiba, Manabu Takewaki, Kei Takeshita, Tomoyuki Iwata, Kazuhisa Ouhara, Katsuhiro Takeda, Tsuyoshi Fujita, Hidemi Kurihara
    The 57th fall meeting of the Japanese society of Periodontology (2014 October, Kobe)
22. Control of inflammation by lipid raft in human gingival epithelial cells
    Haruka Imai, Tsuyoshi Fujita, Mikihito Kajiya, Kazuhisa Ouhara, Hideki Shiba, Hidemi Kurihara
    The 57th fall meeting of the Japanese society of Periodontology (2014 October, Kobe)
23. A case report of tooth transplantation and orthodontic treatment for recovering occulusal function
    Tsuyoshi Fujita and Hidemi Kurihara
    The 57th fall meeting of the Japanese society of Periodontology (2014 October, Kobe)
24. Effect on the expression and activity of histone deacetylase by humoral factors secreted by periodontal cells
    Keita Takahashi, Tomoyuki Iwata, Eri Kaneda, Takayosi Nagahara, Syu Isida, Minami Yoshioka, Hideki Shiba, Hidemi Kurihara
    The 98th Hiroshima University Dental Society (2014 November, Hiroshima)
25. To develop Clumps of MSCs/ECM(C-MSCs) complexs for novel allograft cell transplantation therapy
    Kei Takeshita, Mikihito Kajiya, Manabu Takewaki, Kazuhisa Ouhara, Tomoyuki Ouhara, Tsuyoshi Fujita, Hideki Shiba, Hidemi Kurihara
    The 98th Hiroshima University Dental Society (2014 November, Hiroshima)
26. A case of external root resorption by endodontal/periodontal therapy.
    Takayoshi Nagahara, Ryoichi Yagi, Katsuhiro Takeda, Hideki Shiba, Hidemi Kurihara
    2014 Workshop by Chugoku-Shikoku regional 3 universities of the Japanese society of Periodontology/ Chugoku-Shikoku regional branch of the Japanese academy of clinical periodontology (2014 November, Okayama
27. Establishment of mice model of drug-induced gingival hyperplasia
    A. Okanobu, S. Matsuda, T. Fujita, M. Kajiya, H. Shiba and H. Kurihara

The 62th Annual Meeting of Japanese Association for Dental Research (2014 December, Osaka)

28. Regulation of inflammatory cytokines via lipid raft in the gingival epithelial cells
    Haruka Imai, Tsuyoshi Fujita, Mikihito Kajiya, Kazuhisa Ouhara, Hideki Shiba, Hidemi Kurihara
    The 62th Annual Meeting of Japanese Association for Dental Research (2014 December, Osaka)
29. BMP-2 expression induced by LL37 in human pulp cells
    Khung R., Shiba H., Kajiya M., Ouhara K., Kurihara H.
    The 62th Annual Meeting of Japanese Association for Dental Research (2014 December, Osaka)
30. Problems clarified from questionnaire after HIV dental clinical system construction business by Hiroshima University Hospital.
    Iwata T., Shiba H., Mastui K., Shintani T., Okada M., Hamamoto K., Unei H., Saito S., Takata N.and Fujii T.
    The 28th Annual meeting of the Japanese Society for AIDS research (2014 December, Osaka)

## F) Special lectures in academic meetings

1. Hidemi Kurihara: Lecture in Sasebo-shi dental association 2014 January, Sasebo
2. Periodontal Disease during pregnancy and its influence on baby born: Hidemi Kurihara; The 7th National Scientific Meeting in Pediatric Dentistry 2014 Februaly, Surabaya/Indonesia
3. The practice of epidemiology and countermeasures in dentistory - mainly on the action by national and public university hospital consultative meeting for infection control - : Hidemi Kurihara; The 29th Annual meeting of the Japanese Society for Infection Prevention and Control (2014 February, Tokyo)
4. Hidemi Kurihara; Two-days-symposium (2014 February, Kaohsiung/Taiwan)
5. Periodontal disease and orthodontics: Hidemi Kurihara; ACIDS (Study meeting by Aichi gakuin University division of orthodontics) (2014 March, Nagoya)
6. Gingival Epithelium Regulation: Is it possible to prevent periodontal disease? : Tsuyoshi Fujita ; The International Association for Dental Research (2014 June, Capetown/South Africa)
7. Mesenchymal stem cells and cytokine therapy/ present and **prospectiveness: Hidemi Kurihara;** BioHorizons The 4th special lecture meeting (2014 July, Osaka)
8. Frontier of periodontology: Hidemi Kurihara; Hiroshima Pharmacist training workshop (2014 July, Hiroshima)
9. On management system for medical security in dental office: Hidemi Kurihara; dental hygienist lecture meeting for infection prophylaxis (2014 August, Hiroshima)
10. Information concerning performance of countermeasure for HIV infection in the Chugoku and Shikoku areas: Shiba H.; the first Liaison Council of AIDS treatment between AIDS core hospitals in the Chugoku and Shikoku areas (2014 August, Okayama)
11. Present and future perspective on Periodontal therapy: Hidemi Kurihara; Yamaguchi prefectural dental association Academic lecture (2014 September, Yamaguchi)
12. Cell Therapy for Periodontal Tissue Regeneration: Hidemi Kurihara; 2014 Annual meeting of American Academy of Periodontology (2014 September, Sun Francisco/USA)

13. The actual situation for infection control in dental office: Hidemi Kurihara; Society of Kochi oral science (2014 September, Kochi)
14. Expectation to Dental materials and devices for establishment of Evidence-Based Dentistry: Hidemi Kurihara; The 64th General Session of the Japanese Society for Dental Materials and Devices (2014 October, Hiroshima)
15. Whole concept of dentistry and periodontal therapy in medical and dental cooporation: Hidemi Kurihara; The 57th fall meeting of the Japanese society of Periodontology (2014 October, Kobe)
16. Hidemi Kurihara; Taiwan Academy of Periodontology (TAP) Annual Meeting of 2014 2014 November, Kaohsiung/Taiwan)
17. On management system for medical security in dental office: Hidemi Kurihara; dental hygienist lecture meeting for infection prophylaxis (2014 November, Shiojiri)
18. The present conditions and network-construction of the dental practice for the HIV-infected patients: Shiba H.: 2014-AIDS workshop in Hiroshima University Hospital (2014 November, Hiroshima)
19. Whole concept of dentistry and periodontal therapy in medical and dental cooporation: Hidemi Kurihara; Lecture in Sasebo-shi dental association 2014 December, Sasebo

## (4) Status of Receiving Grants-in Aid for Scientific Research.

1. Grants-in aid for scientific research: Hidemi Kurihara: #264630085
2. Grants-in aid for scientific research: Hidemi Kurihara: #243904670
3. Grants-in aid for scientific research: Hideki Shiba: #245931220
4. Grants-in aid for scientific research : Tsuyoshi Fujita: #245931230
5. Grants-in aid for scientific research: Mikihito Kajiya:# 268618140
6. Grants-in aid for scientific research: Yuushi Uchida:# 254629600
7. Grants-in aid for scientific research: Katsuhiro Takeda:# 254632180
8. Grants-in aid for scientific research: Hidemi Kurihara:# 256708850
9. Grants-in aid for scientific research :Tomoyuki Iwata: #258620490
10. Grants-in aid for scientific research: Shinji Matsuda: #268618150
11. Grants-in aid for scientific research : Kazuhisa Ouhara : #258620510
12. Hiroshima University the year of 2014 Grant for portent research: Tsuyoshi Miyagawa
13. Hiroshima University the year of 2014 Grant for portent research: Haruka Imai
14. Hiroshima University the year of 2014 Grant for portent research: Eri Kaneda
15. Mitsui Sumitomo Insurance welfare foundation the year of 2014 research aid: Mikihito Kajiya
16. GSK Japan Research Grant 2014-2015: Noriyoshi Mizuno
17. Research grants: Grants for research received from Hiroshima Prefecture: Hideki Shiba and others, Study on network-construction of dental practice for HIV infection
18. Grants on KCB-1D (Phase III) for marginal periodontitis by Kaken Pharmaceutical Co., Ltd.

(5) Award.

Tsuyoshi Miyagawa

The 17the prize for encouragement by Hiroshima University school of dentistry class reunion 2014

The irsogladine maleate inhibits the expression of inflammatory factor by the stimulation of *Aggregatibacter actinomycetemcomitans* in human gingival epithelia cell.

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# Applied Life Sciences Department of Molecular Oral Medicine & Maxillofacial Surgery
# Division of Oral & Maxillofacial Surgery and Oral Medicine
# Department of Oral and Maxillofacial Surgery

## (1) Staff and Students

Professor: Tetsuji Okamoto

Associate Professor: Shigeaki Toratani Director: Shigeaki Toratani(by-work)

Lecturer: Yasutaka Hayashidou

Assistant Professor: Ryouji Tani, Yukio Yoshioka, Kouichi Koizumi, Kohsei Okamoto, Taku Kanda, Kensaku Sumi, Tomoaki Hamana, Yasutaka Ishida, Sachiko Yamasaki(Oct~)

Administrative staff: Michiko Nii

Resident: Koh Nabeshima(~Jul),Yoku Ito, Sachiko Yamasaki(~Sep), Taishi Sakaue, Yuki Taguchi,tao"A XˆzHNI •—Z ˆØá Á˜ç‰ ™` –BEHH Vl¡"P45 Tm [(e)-4(r)-2.(ct)1(109.T)22 Tee:459(o)8(E-4(u

## (3) Research Achievements

### A) Original Papers (including Case Reports)

1: Yamamoto N, Toratani S. et al.: Anti-EGFR monoclonal antibody 12-93 inhibits the growth of human salivary adenocarcinoma via sub-G1 arrest and induction of apoptosis, *J Oral Maxillofac Surg, Med, Pathol* 26:183–187, 2014.

2: Yamasaki S, Taguchi Y. et al.: Generation of human induced pluripotent stem (iPS) cells in serum- and feeder-free defined culture and TGF- *PlosONE,* Published: January 29, DOI: 10.1371/journal.pone.0087151, 2014.

3: -2 release from oral squamous cell carcinoma cells through downregulation of HBp17/FGFBP-1, *In Vitro Cell. Devel. Biol.-Anim,* Oct;50(9):802-806, 2014.

4: Shigeaki Toratani,Koh Nabeshima,Kensaku Sumi,Taku kanda,Kohichi Koizumi,Yukio Yoshioka, Ryouji Tani,Tetsuji Okamoto,et al.: Prediction of the Cervical Lymph Node Metastases in the Early Oral Tongue Cancer Patients using Primary Site SUVmax (maximum standardized uptake values) on FDG-PET (18-fluorodeoxyglucose positron emission tomography), *The journal of Hiroshima University Dental Society* 46(1), 36-41, 2014-06

5: Shigeaki Toratani,Ogawa Ikuko,Tetsuji Okamoto,et al.: A case of myxofibrosarcoma of the maxilla *Japanese journal of oral and maxillofacial surgery* 60(6), 354-358, 2014-06

6: Mitsuyoshi T, Toratani S, Koizumi K, Okamoto T,Tanimoto K,et al.: A case of maxilally Protrusion treated by Orthognathic Surgery. *Journal of Hiroshima dental association* 41Vol.1P13-18(2014.03)

7 : Hayashido Y, Kitano H, Sakaue T, Fujii T, Suematsu M, Sakurai S, Okamoto T,et al.: Overexpression liferation and invasion of oral squamous cell carcinoma cells via mek/erk collagen. *Int J Oncol.* 2014 Nov;45(5):1875-82.

### B) Review

1 : Kenji Kamiya, Tetsuji Okamoto.: The problem which is radiation education to a health care worker from a nuclear power plant accident: Japan Association on Radiological Protection in Medicine Newsletter(0918-5658)70 Page5-8(2014.07)

### C) Publications

1: Diagnosis of injury :Dentistry of sports injury( Keiichi Ishigami, Toshiaki Uenoet al.); Kazuhiro Tsuga, Shigeaki Toratani,Taku Kanda: IGAKUJYOUHOUSYA（ Tokyo）, P57-61, 2015

## D) Other Publications

not applicable

## E) Presentation at Scientific Meeting

1: Generation and maintenance of human induced pluripotent stem cellsfrom human peripheral blood mononuclear cells in serum-free and feeder-free culture condition with use of Sendai virus vectors
Eri Akagi, SachikoYamasaki, et al.
The 68th Annual Meeting of the Japanese Stomatological Society (Tokyo), May 2014 .

2: Processing of Integrin αV by autophagy of Oral squamous carcinoma cells.
Mirei Suematsu, Yasutaka Hayashidou et al.:
The 68th Annual Meeting of the Japanese Stomatological Society (Tokyo), May 2014 .

3: Generation and long term maintenance of human induced pluripotent stemcells in serum-free and feeder-free culture conditions using Sendaivirus vectors.
Atsuko Hamada, Sachiko Yamasaki et al.
The 68th Annual Meeting of the Japanese Stomatological Society (Tokyo), May 2014

4: Clinical analysis of surgical-site infections in maxillofacial surgery with microvascular free-flap reconstructions at department of Oral and Maxillofacial Surgery, Hiroshima University hospital
F. Obayashi, Y. Ishida, et al.
68th Annual Meeting of the Japanese Somatological Society (Tokyo), Mar 2014

5: Report of oral cancer chemotherapy using Molecular target drug cetuximab.
Huyuyoshi Takatsu,et al.
68th Annual Meeting of the Japanese Somatological Society (Tokyo), Mar 2014

6: Anti-tumor effect of the combination chemotherapy with weekly paclitaxel and cetuximab for the metastatic adenoid cystic carcinoma arising at a hard palate.
Yukio YOSHIOKA, Huyuyoshi TAKATSU, Hirotaka NAKATAO, Yasuto HUKUI, Humitaka OHBAYASHI, Kouichi KOIZUMI, Ryoji TANI, Yasutaka HAYASHIDO, Shigeaki TORATANI, Kazunori HUJITAKA, Tetsuji OKAMOTO
The 43th local meeting of Japanese Society of Oral and Maxillofacial Surgeons (Tokushima), Apr 2014.

7: A case of Sinovial chondromatosi.
Taeko Ysui, Taku Kanda, Shigeaki Toratani, Tetsuji Okamoto
The 43th congress of the Chugoku/shikoku Japanese Society of Oral and Maxillofacial surgeons (Tokushima) Apr 2014.

8: Two Free-flap reconstruction cases of oral cancer with perioperative care by team medical stuffs.
Kensaku Matsui,et al.
The 43th congress of the Chugoku/shikoku Japanese Society of Oral and Maxillofacial surgeons (Tokushima) , Apr 2014.

9 : Reprogramming efficiencies of DPCs-derived hiPS cells with various virus vectors in serum- and feeder-free culture conditions.
Rie Akagi, Sachiko Yamasaki, Tetsuji Okamoto,et al
2014 World Forum on Biology (Georgia, USA), May 2014

10: Generation and maintenance of human induced pluripotent stem cells in serum-free and feeder-free culture conditions using Sendai virus vectors

Atsuko Hamada, Sachiko Yamasaki, Tetsuji Okamoto, et al.
2014 World Forum on Biology (Georgia, USA), May 2014

11: Report of Early Clinical Exposure in School of Dentistry, Faculty of Dentistry, Hiroshima University
Taku Kanda, Hidemi Kurihara, Motoyuki Sugai, et al
The 33th congress of the Japanese Dental Associaiton (Kokura), Jul 2014.

12: Clinical analysis of late-stage elderly oral cancer patients at department of Oral and Maxillofacial Surgery, Hiroshima University hospital
Y. Ito, M. Higaki, etal .
62th Chugoku-

2 Grants-in aid for scientific research: Tetsuji Okamoto :#26670865.
3: Grants-in aid for scientific research: Tomoaki Hamana :#26463044.
4: Grants-in aid for scientific research: Kohsei Okamoto :#26463008.
5: Grants-in aid for scientific research: Yukio Yoshio :#26463006.
6: Grants-in aid for scientific research : Sachiko Yaasaki :#26861723.
7: Grants-in aid for scientific research: Yasuto Fukui :refuse to accept
8: Grants-in aid for scientific research: Taishi Sakaue :#26893166.
9: Grants-in aid for scientific research: Takahiko Fujii :#26893167.
10: Grants-in aid for scientific research: Hanae Mukasa :#26893168.
11: Grants-in aid for scientific research: Tetsuji Okamoto:#24390456.
12: Grants-in aid for scientific research: Yasutaka Hayashidou :#24390455.
13: Grants-in aid for scientific research: Ryouji Tani :#24593032.
14: Grants-in aid for scientific research : Tomoaki Shintani :#25463109.
15: Grants-in aid for scientific research : Kouishi Koizumi :# 24593033.
16: Grants-in aid for scientific research: Yasutaka Ishida :#24792221.
17: Grants-in aid for scientific research: Koh Nabeshima :#25861945.
18: Grants-in aid for scientific research: Yoku Itoh :# 25861942.

## (5) Academic Awards, etc.

1: Sachiko Yamasaki: Encouragement award of Alumni Oral and Maxillofacial Surgery Hiroshima Univ. Hosp.2014

## (6) Patents

1. USA PTC: Generation of human induced pluripotent stem (iPS) cells in serum- and feeder-free defined culture and TGF-β1 regulation of pluripotency. Inventors: Tetsuji Okamoto, Sachiko Yamasaki, Applicant: Hiroshima University, Date: December 25, (2013)

2. Liver function disorder preservative, Inventors: Tetsuji Okamoto, Ryouji Tani, Kouichirou Tokuma (Hiroshima Univ, Nihon kefir Co., Ltd): Dec 3,(2008), 2008–308559

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# Applied Life Sciences Department of Advanced Prosthodontics
# Division of Preventive and Restorative Dentistry
# Department of Oral Implant

## (1) Staff and Students

Professor : Kazuhiro Tsuga

Associate Professor : Takayasu Kubo, Mineka Yoshikawa

Lcturer : Yasuhiko Abe, Kyou Hiasa

Assistant Professor : Katsunori Koretake, Hiroshi Oue, Yohei Okazaki

Resident : Maho Takeuchi, Mariko Maruyama, Shiho Kajihara

Graduate Student : Yusuke Makihara, Takahiro Mori, Chiaki Higa, Aya Hiraoka, Kan kato, Keisuke Yasuda, Yoshifumi Oki, Hiromichi kawano, Yukari Kinoshita, Masako Kobayashi, Yoko Shiotani, Yosuke Takeda, Azusa Kuroki, Miyuki Yokoi

Administrative Staff : Rinko Kurumi

## (2) Main Research Activities

1: Development and clinical application of new materials for oral implants.
2: Development of "bio-hybrid" artificial bone made of interconnected porous hydoroxyapatite and mesenchymal stem cells.
3: Elucidation of the effect of FGF on bone formation surrounding oral implants.
4: Biomechanics analysis of prostheses and their surrounding bone supported by implants.
5: Elucidation of the effect of prosthodontic treatments on the quality of life of elderly people.
6: Removal prosthodontics and swallowing function of elderly people.
7: Development and clinical application of functional oral rehabilitation utilizing tongue pressure measurement.

## (3) Research Achievements

### A) Original Papers (including Case Reports)

1: In Vitro Simulation of Tooth Mobility Resulting from Periodontal Attachment Loss: Abe Y, Nogami K, Yasuda K, Okazaki Y, Hiasa K: Open Journal of Stomatology, 4, 303-309, 2014.
2: Osteoclast Response to Bioactive Surface Modification of Hydroxyapatite: Okazaki Y, Abe Y, Yasuda

K, Hiasa K, Hirata I: Open Journal of Stomatology, 4, 340-344, 2014.

3: Tooth loss might not alter molecular pathogenesis in an aged transgenic Alzheimer's disease model mouse: Oue H, Miyamoto Y, Koretake K, Okada S, Doi K, Jung CG, Michikawa M, AkagawaY: Gerodontology, Epub ahead of print, 2014.

4: The influence of fixation in formalin on the measurement of stability of implants using resonance frequency analysis and Periotest M®: a study in a dog: Doi K, Kajihara S, Morita K, Makihara Y, Okada S, Akagawa Y: Br J Oral Maxillofac Surg, 52, 29-33, 2014.

## B) Review

## C) Publications

## D) Other Publications

## E) Presentation at Scientific Meeting

1: Evaluation of implant stability in novel implant/interconnected pours calcium hydroxyapatite complex: Makihara Y, Doi K, Kubo T, Oue H, Kajihara S, Morita K, Akagawa Y, Tsuga K: The 9th Scientific Meeting of the Asian Academy of Osseointegration (Sapporo), 2014.

2: Effect of intermittent parathyroid hormone administration on primary stability in rabbit osteoporosis model: Doi K, Kubo T, Makihara Y, Oue H, Kato K, Oki Y, Akagawa Y, Tsuga K: The 9th Scientific Meeting of the Asian Academy of Osseointegration (Sapporo), 2014.

3: Relationship of candy licking function, saliva secretion and bacterial counts on tongue surface: Yoshikawa M, Mori T, Shiotani Y, Yamazaki Y, Hiraoka A, Kawano H, Kinoshita Y, Tsuga K: 46th meeting of Hiroshima university dental society (Hiroshima), 2014.

4: Maximum tongue pressure and appropriate liquid thickness in ALS: Yoshikawa M, Hiraoka A, Takaki S, Nakamori M, Nagasaki T, Hosomi N, Tanimoto K, Tsuga K, Izumi Y: 4th Congress of European Society for swallowing disorders (Brussels), 2014.

5: Dysphagia and difficulties in taking medicine in the elderly requiring long-term care: Nozaki S, Katsuragi S, Nohara K, Yoshikawa M, Yoshida M, Ichimura K, Itami K, Umaki Y, Asaki S: 4th Congress of European Society for swallowing disorders (Brussels), 2014.

6: Effect of intermittent parathyroid hormeone (PTH) administration on primary stability in osteoporosis rabbit model: Oue H, Doi K, Oki Y, Makihara Y, Kajihara S, Koretake K, Kubo T, Akagawa Y, Tsuga K: The 23rd European Association for Osseointegration (Rome), 2014.

7: Evaluation of implant stability in implant/interconnected pours hydroxyapatite complex: Kajihara S, Doi K, Kubo T, Oue H, Makihara Y, Morita K, Kato K, Akagawa Y, Tsuga K: The 23rd European

Association for Osseointegration (Rome), 2014.

8: The influence of tooth loss and diet on learning and memory by behavioral study: Takeda Y, Koretake K, Oue H, Okada S, Akagawa Y, Tsuga K: Indonesian prosthodontic society and Japan prosthodontic society joint meeting (Bali), 2014.

## F) Special lectures in academic meetings

## (4) Status of Receiving Grants-in Aid for Scientific Research, etc.

1: MEXT Grant-in-Aid for Young Scientists (B): Oue H: Molecular biological elucidation for learning and memory impairment by tooth loss. (Grant No.26861641). 1,820,000

2: MEXT Grant-in-Aid for Research Activity Start-up: Kajihara S: The devwlopment of bFGF/polyphosphoric acid double-processing comlex. (Grant No.26893165). 1,500,000

3: MEXT Grant-in-Aid for Sientific Research (C): Koretake K: Treatment planning for edentulous patients applied over denture on single standing implant. (Grant No. 25462998). 1,400,000

4: MEXT Grant-in-Aid for Sientific Research (C): Tsuga K: Development of functional oral rehabilitation by sucking candy. (Grant No. 26462951). 1,300,000

5: The Japanese Society of Dysphagia Rehabilitation Grant-in-Aid for Scientific Research: Yoshikawa M: Relationship between vicarious mandible movement and deterioration of swallowing function with ALS progression. 200,000

## (5) Academic Awards, etc.

## (6) Patents

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# Applied Life Sciences Department of Advanced Prosthodontics
# Division of Preventive and Restorative Dentistry
# Department of Prosthetic Dentistry

## (1) Staff and Students

Professor : Kazuhiro Tsuga (since February)
Associate Professor : Hitoshi Abekura
Assistant Professor : Koh-ichi Kuremoto, Kazuya Doi, Kouji Morita, Wataru Mizumachi (until March)
Administrative staff : Michiko Miyagawa
Resident : Hiroki Tsuka, Tomoharu Hori , Masahiro Tsuboi (until March), Shinsuke Okada (since April), Keisuke Nogami (since April), Tomohisa Okura (until March) , Yosifumi Oki(until March), Akira Kato(until March) Hiromichi Kawano(until March), Miyuki Yokoi (since April)
Graduate Student : Kazuko Kagawa, Yosifumi Oki, Akira Kato (until March), Hiromichi Kawano, Miyuki Yokoi (since April)
Clinical Trainee : Isao Fujihara (until March)

## (2) Main Research Activities

1 The study of relationship between oral habits and psychosomatic stress responses measured by salivary chromogranin A.
2 The antimicrobial efficacy of chlorine dioxide element to add to dental material.
3 Exploration of amelogenic stem/progenitor cells for tissue-engineered tooth.
4 The roles of FGFR2b signaling in the regenerative capacity of tooth and bone.
5 Study of occulusal-supporting ability of individual maxillary and mandibular teeth
6 Relation between prosthetic treatment and general condition in elderly with dementia.
7 Establishment of bone regeneration by using interconnected porous hydroxyapatite and biopolymeric material

## (3) Research Achievements

### A) Original Papers (including Case Reports)

1 Runx/Cbfb signaling regulates postnatal development of granular convoluted tubule in the mouse

submandibular gland: Islam MN., Itoh S., Yanagita T., Sumiyoshi K., Hayano S., Kuremoto K., Kurosaka H., Honjo T., Kawanabe N., Kamioka H., Sakai T., Ishimaru N., Taniuchi I., Yamashiro T.: Dev Dyn., Epub ahead of print, 2014.

2 The influence of fixation in formalin on the measurement of stability of implants using resonance frequency analysis and Periotest M®: a study in a dog: Doi K., Kajihara S., Morita K., Makihara Y., Okada S., Akagawa Y.: Br J Oral Maxillofac Surg, 52, 29-33, 2014.

3 Inorganic polyphosphate adsorbed onto hydroxyapatite for guided bone regeneration: an animal study: Doi K., Kubo T., Takeshita R., Kajihara S., Kato S., Kawazoe Y., Shiba T., Akagawa Y.: Dent Mater J , 33, 179-86, 2014.

4 Tooth loss might not alter molecular pathogenesis in an aged transgenic Alzheimer's disease model mouse: Oue H., Miyamoto Y., Koretake K., Okada S., Doi K., Jung CG., Michikawa M., Akagawa Y.: Gerodontology, 2014. in press

## B) Review

## C) Publications

1 Repairing Method for Membrane Perforation in Sinus Augmentation Using a Bioabsorbable Membrene Ishida Y., Ohta K., Sasaki K., Abekura H., Kazuhiro Tsuga K., Takechi M.: J Hiroshima Univ Dent Soc., 46, 149-155, 2014.

2

## D) Other Publications

1 Clinic for hybrid resin CAD/CAM crown applied for Japanese health insurance system-Using experience from High technology modern medicine-: Abekura H.: Clinical forum (GC Co., Ltd.) Case Presentation No.1, 2014

2 For success in treatment by CAD/CAM crown (Japanese health insurance system)-The point for success are abutment tooth preparation and crown setting-: Abekura H.: CAD/CAM NEWS (Wada precision dental laboratories), Vo1.02, 2014

3 Application of inorganic polyphosphate for dental material field: Doi K., Shiba T., Akagawa Y.: Shikai-tenbo, Vol. 23.754-758, 2014

## E) Presentation at Scientific Meeting

# 2014

1 Significance of titanium allergy as preoperative test of implant: Kitagawa M., Obayashi M., Nagasaki A., Yanagisawa S., Shintani T., Kagawa K., Abekura H., Hiasa K., Kubo T., Takechi M., Ogawa I., Kurihara H.: The 7th Annual Meeting of The Japanese Society for Evidence and the Dental Professional (Okayama), 2014.

2 Approaches for insurance introduction of oral inspection at the oral inspection center of Hiroshima University Hospital: Shintani T., Kitagawa M., Yoshioka Y., Doi M., Arakawa M., Nakamoto T., Konishi Y., Ouhara K., Kou M., Nisi H., Morita K., Abekura H., Yoshikawa M., Kubo T., Takechi M., Okada M., Ogawa I., Kurihara H.: The 7th Annual Meeting of The Japanese Society for Evidence and the Dental Professional (Okayama), 2014.

3 Overexpressing fibroblast growth factor (FGF) 10 at mid- and late-embryonic stages perturbs craniomaxillofacial development in mice: Kagawa K., Yoshioka H., Kuremoto K., Takei Y., Minamizaki T., Tsuga K., Yoshiko Y.: The 56th Annual Meeting of Japanese Association for Oral Biology (Fukuoka), 2014.

4 Effect of fibroblast growth factor (FGF) 10 on the formation of caraniomaxillofacial skeleton: Kagawa K., Yoshioka H., Kuremoto K., Takei Y., Minamizaki T., Tsuga K., Yoshiko Y.: The 69th Chugoku-Shikoku Sectional Meeting of Japanese Association of Anatomists (Hiroshima), 2014.

5 Fibroblast growth factor (FGF) 10 negatively regulates the formation of caraniomaxillofacial skeleton: Kagawa K., Yoshioka H., Kuremoto K., Takei Y., Minamizaki T., Tsuga K., Yoshiko Y.: The 98th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2014.

6 A case report of functional oral rehabilitation using task candysucking for an advanced dementia patient: Maruyama M., Kuroki A., Kawano H., Hiraoka A., Mori T., Morita K., Sakurai Y., Yoshikawa M., Tsuga K.: The 98th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2014.

7 Effect of intermittent parathyroid hormone administration on primary stability in rabbit osteoporosis model: Oki Y., Doi K., Kubo T., Akagawa Y., Tsuga K.: Japanese Society of Oral Implantology 34th Annual Scientific Meeting of Chugoku Shikoku Branch (Yamaguchi), 2014.

8 Advantage of measuring bone turnover markers in dental implant patients: Okada S., Hiasa K., Abe Y., Kubo T., Tsuga K.: Japanese Society of Oral Implantology 34th Annual Scientific Meeting of Chugoku Shikoku Branch (Yamaguchi), 2014.

9 Inorganic polyphosphosphate promotes the differentiation of osteoblast-like cells on hydroxyapatite plate: Kato K., Morita K., Doi K., Kubo T., Tsuga K.: The 44th Conference of Japanese Society of Oral Implantology (Tokyo), 2014.

10 Evaluation of surface treatment and osteoblast differentiation promoting for hydroxyapatite plate adsorbed inorganic polyphosphate: Morita K., Doi K., Okazaki Y., Kubo T., Hirata I., Kato K., Tsuga K.: The 64th Conference of the Japanese society of dental materials and devices (Hiroshima), 2014.

11 Evaluation of implant stability in implant/interconnected pours hydroxyapatite complex on dog

mandible study: Kajihara S., Kubo T., Doi K., Oue H., Makihara Y., Morita K., Kato K., Tsuga K.: The 123th Scientific Meeting of Japan Prosthodontic Society (Sendai), 2014.

12 Effect of intermittent parathyroid hormone administration on primary stability in rabbit osteoporosis model Doi K., Oki Y., Kubo T., Oue H., Makihara Y., Kajihara S., Koretake K., Yamamori T., Sekine H., Akagawa Y., Tsuga K.: Annual Scientific Meeting of Japan Prosthodontic Society Hokkaido and Tohoku Branch (Koriyama), 2014.

13 Relationship between sucking function and swallowing dynamics in elderly people with dementia: Mori T., Hiraoka A., Kuroki A., Kawano H., Maruyama M., Takagi Y., Yoshikawa M., Tsuga K.: 53th Scientific Meeting of the Japanese Society of Stomatognathic Function (Matsudo), 2014.

14 Evaluation of implant stability in novel implant/interconnected pours calcium hydroxyapatite complex: Makihara Y., Doi K., Kubo T., Oue H., Kajihara S., Morita K., Akagawa Y., Tsuga K.: The 9th Scientific Meeting of the Asian Academy of Osseointegration (Sapporo), 2014.

15 Effect of intermittent parathyroid hormone administration on primary stability in rabbit osteoporosis model: Doi K., Kubo T., Makihara Y., Oue H., Kato K., Oki Y., Akagawa Y., Tsuga K.: The 9th Scientific Meeting of the Asian Academy of Osseointegration (Sapporo), 2014.

16 Evaluation of implant stability in implant/ interconnected pours hydroxyapatite complex: Kajihara S., Doi K., Kubo T., Oue H., Makihara Y., Morita K., Kato K., Akagawa Y., Tsuga K.: The 23rd European Association for Osseointegration (Rome), 2014.

17 Effect of intermittent parathyroid hormone (PTH) administration on primary stability in osteoporosis rabbit model: Oue H., Doi K., Oki Y., Makihara Y., Kajihara S., Koretake K., Kubo T., Akagawa Y., Tsuga K.: The 23rd European Association for Osseointegration (Rome), 2014.

18 Relationship of candy licking function, saliva secretion and bacterial counts on tongue surface: Yoshikawa M., Mori T., Shiotani Y., Yamazaki Y., Hiraoka A., Kawano H., Kinoshita Y., Tsuga K.: The 47th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2014.

19 Maximum tongue pressure and appropriate liquid thickness in ALS: Yoshikawa M., Hiraoka A., Takaki S., Nakamori M., Nagasaki T., Hosomi N., Tanimoto K., Tsuga K., Izumi Y.: 4th Congress of European Society for swallowing disorders (Brussels), 2014.

20 The influence of tooth loss and diet on learning and memory by behavioral study: Takeda Y., Koretake K., Oue H., Okada S., Akagawa Y., Tsuga K.: Indonesian prosthodontic society and Japan prosthodontic society joint meeting (Bali), 2014.

## F) Special lectures in academic meetings

1 Crown applied CAD/CAM system: Abekura H.: Academic lecture for Kyusyu dental university alumni association (Hiroshima branch) (Hiroshima), 2014.4.10

17 Correspondence to hybrid resin CAD/CAM crown approved by Japanese health insurance: Abekura H.: Annual Scientific Meeting of Japan Prosthodontic Society of Kanetsu branch (Nigata), 2014.11.23

18 Utilizing tongue pressure measurement and training for improving oral function: Tsuga K.: Workshop for medical-dental collaboration for home medical care in Minami-ward (Hiroshima), 2014.11.26

19 Proposal of training based on tongue pressure examination for improving oral function: Tsuga K.: Workshop for training anti-dysphagia supportive dentists (Gifu), 2014.12.7.

20 Evidence based dentistry with novel quantitative evaluation of oral function: Tongue pressure examination: Tsuga K.: Special lecture in Niigata University School of Dentistry (Niigata), 2014.12.12

## G) Others

1 Basic technical point of CAD/CAM crown (hybrid resin block)-from abutment tooth preparation to setting into oral cavity-: Production instruction by Abekura H. and editorial supervision by Japan Prosthodontic Society: Video contents on HP of GC Co., Ltd., 2014.5.19

2 Design of crown for decade tooth using a computer and fabrication with resin by machine: Abekura H.: Yomiuri newspaper (Evening paper), 2014.5.22

## (4) Status of Receiving Grants-in Aid for Scientific Research, etc.

1 Grant-in-Aid for Scientific Research (C): Tsuga K: Development of rader-chart for enhancing the anti-aging effect of prosthodontic treatments. (Grant No. 23592850). 1,520 thousand yen.

2 Grant-in-Aid for Scientific Research (C): Tsuga K: Developement of functional oral rehabilitation by sucking candy. (Grant No. 26462951). 1,300 thousand yen.

3 Grant-in-Aid for Scientific Research (C): Abekura H., Covariance structure analysis of sleep, diurnal bruxism, sociopsychological and TMD. No.25462999. 1,170 thousand yen.

4 Grant-in-Aid for Scientific Research (C): Kuremoto K., Acquirement of amelogenic stem/progenitor cells for tissue-engineered tooth. No. 23592875. 1,100 thousand yen.

5 Grant-in-Aid for Scientific Research (C): Doi K., Bone regeneration of applying polyphosphate on bone defect by implantitis. No. 24592918. 1,660 thousand yen

6 Grant-in-Aid for Young Scientists (B): Morita K., Bio-active effect of inorganic polyphosphoric to achieve new innovation for bone quality. No.25861845. 1,600 thousand yen.

7 Grant-in-Aid for Scientific Research (C): Mizumachi W., Development of occlusal support ability system in residual teeth based on clinical data processing. No.23592847. 1,430 thousand yen.

8 Grant-in-Aid for Young Scientists (B) Hori T., New development of chlorine dioxide-containing denture cleaner. No. 25861847. 1,800 thousand yen.

9 Step-Up Support Program for KAKENHI (Grant-in-Aid for Scientific Research) FY2014: Kuremoto K., Mechanistic exploration for the odontogenic differentiation and regeneration of stem cells from human apical papilla. No.189072. 1,000 thousand yen.

## (5) Academic Awards, etc.

## (6) Patents

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# Applied Life Sciences Department of Orthodontics and Craniofacial Development Biology
# Division of Oral Health and Development Department of Orthodontics

(1) Staffs and students

| | |
|---|---|
| Professor | Kotaro Tanimoto |
| Lecture | Hiroshi Ueda, Masato Kaku |
| Assistant Professor | Masahide Motokawa, Myongsun Koh, Yuki Asakawa, Ryo Kunimatsu, Naoto Hirose, Syunichi Kojima, Keisuke Sumi |
| Intern | Yayoi Matsuda, Tomomi Mitsuyoshi, Yuki Yoshimi, Yuji Tsuka, Hiromi Sumi |
| Graduate Student | Tetsuya Awada, Nanae Oki, Hanaka Shikata, Eri Fujii, Yuki Okamoto, Tahsin Raquib Abonti, Hirotaka Sugino, Tomomi Date, Yu Matsumura, Aimi Naim Bindi Abdulah, |

## (3) Research achievement

### A) Original article

1. Effects of pulpectomy on the amount of root resorption during orthodontic tooth movement.: Kaku M., Sumi H., Shikata H., Kojima S, Motokawa M., Fujita T., Tanimoto K., Tanne K. J. Endod, 40: 372-378, 2014.
2. Cranial bone regeneration after cranioplasty using cryopreserved autogenous bone by a programmed freezer with a magnetic field in rats.: Kaku M, Koseki H, Kojima S, Sumi H, Shikata H, Kojima S, Motokawa M, Fujita T, Tanimoto K, Tanne K.: Cryo Letters, 35:451-461, 2014.
3. Effects of occlusal hypofunction and its recovery on PDL structure and expression of VEGF and bFGF in rats.: Motokawa M, Kaku M, Matsuda Y, Kojima S, Sumi C, Kimura A, Tanimoto K. Clin Oral Investig. 2014 Sep 11. [Epub ahead of print]
4. Preferential and selective degradation and removal of amelogenin adsorbed on hydroxyapatites by MMP20 and KLK4 in vitro.: Zhu L, Liu H, Witkowska HE, Huang Y, Tanimoto K, Li W. Front Physiol, 24; 5:268. 2014.
5. Effects of low-intensity pulsed ultrasound on the expression of cyclooxygenase-2 in mandibular condylar chondrocytes.: Iwabuchi Y, Tanimoto K, Tanne Y, Inubushi T, Kamiya T, Kunimatsu R, Hirose N, Mitsuyoshi T, Su S, Tanaka E, Tanne K.: J Oral Facial Pain Headache, 28: 261-268. 2014.
6. Role of articular disc in condylar regeneration of the mandible.: Hayashi H, Fujita T, Shirakura M, Tsuka Y, Fujii E, Terao A, Tanimoto K.: Exp Anim, 63: 395-401. 2014.
7. Celecoxib exerts protective effects on extracellular matrix metabolism of mandibular condylar chondrocytes under excessive mechanical stress.: Su SC, Tanimoto K, Tanne Y, Kunimatsu R, Hirose N, Mitsuyoshi T, Okamoto Y, Tanne K.: Osteoarthritis Cartilage. 22: 845-851. 2014.
8. Factors related to stability following the surgicalcorrection of skeletal open bite.: Ito G., Koh M., Fujita T., Shirakura M., Ueda H., Tanne T.: Aust Orthod J 1: 61-66. 2014.
9. Inductive ability of human developing and differentiated dental mesenchyme. Zheng L, Warotayanont R, Stahl J, Kunimatsu R, Klein O, DenBesten PK, Zhang Y.Cells Tissues Organs. 198(2):99-110, 2013.
10. A case of skeletal class malocclusion treated by two-jaw surgery.: Mitsuyoshi T., Asakawa Y., Sumi K., Su S.C., Okamoto Y., Toratani S., Koizumi K., Okamoto T., Tanimoto K.: The Journal of Hiroshima Dental Association, 41-1, 13-18, 2014.
11. Clinical investigation into the prevalence of permanent teeth with amelogenesis imperfecta by Department of Orthodontics, Hiroshima University.: Oki N., Motokawa M., Kunimatsu R,. Hirose N., Yoshimi Y., Tanimoto K : Orthodontic Waves-Japanese Edition 73, 137-142, 2014.

12. Canine aligment in two deep bite cases achieved by distal movement of the lower posterior teeth.: Ishikawa E., Ohtani J., Ueda H., Kato M., Oki N., Tanimoto K.: The Journal of Chu-Shikoku Orthodontic Society 26, 49-60, 2014.
13. A treatment of a crowding with oligodontia by teeth autotransplantation.: Kojima S-T, Kaku M, Kubo T, Fujita T, Ono S, NagayasuS, Kojima S-I, Sumi H, Shikata H, Yamamoto T, Motokawa M, Tanimoto K.: The Journal of Hiroshima University Dental Society 46, 156-161, 2014.
14. A Treatment of an Adult Crowding Case with Missing of Bilateral Maxillary Central Incisoras by an Injury.: Kamiya T, Kaku M, Kojima S, Hiasa K, Tanimoto K. The Journal of Hiroshima University Dental Society 46, 143-148, 2014.

## B) General remarks

1. Tanimoto K.: Approach to the treatment of craniofacial anomaly accompanied by malocclusion – team approach and regeneration medicine-. Hiroshima City Dental General Incorporated Association Journal 21, 2-5, 2014.
2. Tanimoto K.: Orthodontic treatment and temporomandibular disorders – Aststematic approach correspond to the pathological condition –, J Hiroshima Dent Asso. 41, 5-12, 2014.

## C) Books

1. Tanne K., Ohtani J., Sunagawa H., Kaku M., Fujita T.: Treatment of Class II open bite malocclusion supported by skeletal anchorage. In Skeletal Anchorage in Orthodontic Treatment of Class II Malocclusion – Contemporary application of orthodontic implants, miniscrew implants and miniplates (Editor: Moschos M. Papadopoulos). Mosby Elsevier, London, New York, Toronto etc, 235-238, 2014.

## D) Other publications

## E) Presentation at Scientific Meeting

1. Effects of amelogenin on the metabolism of human osteoblast-

   R.,Yoshimi Y.,Hirose N.,Kojima S.,Kaku M.,Hirata I.,Kato K.,Tanne K.,Tanimoto K.:The 38th Annual Meeting of Japanese Cleft Palate Association (Sapporo), 2014.

2. Tissue regeneration by implantation of cryopreserved MSCs for the defect of parietal bones and sagittal suture: Kojima S., Kaku M., Kojima S., Tanimoto K.:The 38th Annual Meeting of Japanese Cleft Palate Association (Sapporo), 2014.
3. A treatment case of skeletal mandibular prognathism associated with Mitochondrial myopathy: Horie K.,Ishikawa E.,Koh M.,Date T.,Matsumura Y.,Nakao Y.,Ueda H.,Tanimoto K.:The 24th Annual Meeting of the Society for Jaw Deformities (Fukuoka), 2014.
4. Role of mechanoreceptor in the metabolism of chondrocytes under excessive mechanical stimuli: Okamoto Y., Asakawa Y., Shirakura M.,Kunimatsu R.,Hirose N.,Mitsuyoshi T.,Su S., Tanne K.,Tanimoto K.: The 27th Annual Meeting of The Japanese Society for Temporomandibular Joint (Fukuoka), 2014.
5. Effects of Matrix degradation via EP4 receptor in condylar chondrocytes under excessive mechanical stress: Mitsuyoshi T, SU Shaoching, Asakawa Y, Hirose N, Awada T, Okamoto Y, Tanne K and Tanimoto K.: The 27th Annual Meeting of the Society for the Temporomandibular Joint (Fukuoka), 2014.
6. A case report of CHARGE syndrome with cleft plate and bimaxillary hypoplasia: Yuko Nakao, Myongsun Koh, Tomomi Date, Kayo Horie, Yu Matsumura, Naoto Hirose, Hiroshi Ueda, Kotaro Tanimoto.: 57th Annual Meeting of Chu-Shikoku Orthodontic Society (Yamaguchi), 2014.
7. A case of report of Crouzon syndrome treated by two-jaw surgery: Yoshimi Y., Sumi K., Tsuka Y., Awada T., Fujii E., Abe T., Okita S., Tanimoto K.:The 57th Annual session of chu-shikoku orthodontic society (Yamaguchi), 2014.
8. Influences of pulp tissue on the experimental tooth movement: Sumi H., Kaku M., Motokawa M., Matsuda Y., Kojima S.,Shikata H., Kawata T., Tanne K., Tanimoto K.: The 73rd Annual Meeting of the Japanese Orthodontic Society (Makuhari), 2014.
9. Evaluation of upper airway morphology in obstructive sleep apnea patients by supine X-ray and CT:Matsumura Y., Koh M., Nagasaki T., Ueda H., Tanimoto K.:The 73rd Annual Meeting of the Japanese Orthodontic Society (Makuhari), 2014.
10. Evaluation of orthodontic treatment for twins with or without tooth extraction: Hirose N., Mineo W., Matsumura Y., Ueda H., Tanimoto K.:The 73rd Annual Meeting of the Japanese Orthodontic Society (Makuhari), 2014.
11. Influences of intervals of jiggling force on root resorption in rats: Matsuda Y., Motokawa M., Kaku M., Sumi H., Sumi C., Tanimoto K.: The 73th Annual Meeting of the Japanese Orthodontic Society (Makuhari), 2014.
12. Evaluation of the cleaning effect of the tooth surface by use of nano particks from shell: Kunimatsu R., Sumi K., Asakawa Y., Hirose N., Mitsuyoshi T., Yoshimi Y., Gunji H., Tanimoto K.: The 73th Annual Meeting of the Japanese Orthodontic Society (Makuhari), 2014.
13. A case of adult patient with maxillary protrusion accompanied by periodontitis using skeletal

anchorage system: Kunimatsu R., Asakawa Y., Mitsuyoshi T., Okamoto Y., Gunji H., Shao-Ching Su, Ida Y., Tanimoto K.: The 73th Annual Meeting of the Japanese Orthodontic Society (Makuhari), 2014.

14. Effects of Low-level Diode Laser Treatment on the Metabolism of Human Dental Pulp Cells: Gunji H., Kunimatsu R., Asakawa Y., Hirose N., Mitsuyoshi T., Yoshimi Y., Tsuka Y., Tanimoto K.: The 73th Annual Meeting of the Japanese Orthodontic Society (Makuhari), 2014.
15. Effects of Low-level Er;YAG laser treatment on the metabolism during orthodontic tooth movement Tsuka Y., Fujita T., Shirakura M., Kunimatsu R., Fujii E., Gunji H., Tanimoto K.: The 73th Annual Meeting of the Japanese Orthodontic Society (Makuhari), 2014.
16. Effects of occlusal hypofunction and its recovery on PDL structure and expression of VEGF and bFGF in rats: Motokawa M., Kaku M., Matsuda Y., Kojima S., Sumi C., Tanimoto K.: The 73th Annual Meeting of the Japanese Orthodontic Society (Makuhari), 2014.
17. Effects of Er;YAG laser during experimental tooth movement: Tsuka Y., Kunimatsu R., Fujii E., Gunji H., Tanimoto K.: The 53th Hiroshima University Dental Society (Hiroshima), 2014.
18. Influences of pulp tissue on the root resorption after orthodontic tooth movement: Sumi H., Kaku M., Motokawa M., Matsuda Y., Kojima S., Shikata H., Tahsin A., Kojima S., Yamamoto T., Tanimoto K.: The 53th Hiroshima University Dental Society (Hiroshima), 2014.
19. Two-jaw steotomy for treatment of a patient with facial asymmety caused by unilateral condylar hyperplasia.: Kubozono K., Nakagawa T., Ohta K., Ono S., Ohtani J., Tsubamoto N., Tanimoto K., Takechi M.: The 53th Hiroshima University Dental Society (Hiroshima), 2014.
20. Application of maxilla/alveolar distraction osteogenesis and two-jaw surgery to a patient with Crouzon syndrome : Nakagawa T., Ono S., Ohta K., Ohtani T., Ishikawa E., Ueda H., Tanimoto K. Takechi M.: The 53th Hiroshima University DentalSociety (Hiroshima), 2014.
21. A case of Mandibular retrognathia with gummy smile by Lefort and SSRO after distraction osteogenesis : Ono S., Nakagawa T., Kubozono K., Kaku M., Sumi H., Ohta K., Tanimoto K. Takechi M.: The 53th Hiroshima University DentalSociety (Hiroshima), 2014.
22. A survey of clinical practice by dental hygienist students in new out-patient clinic of Hiroshima University Hospital: Tokikazu T., Hase Y., Matsui K., Wakida A., Dainobu K., Okada M., Kawai C., Nakaoka M., Mizuno N., Ogawa A., Kubo T., Yoshikawa M., Doi K., Okamoto K., Ninomiya Y., Ueda H., Koh M., Tachikake M., Oda Y., Okada M., Ogawa T.: The 53th Hiroshima University DentalSociety (Hiroshima), 2014.
23. Effects of Low-level Nd;YAG laser treatment on the metabolism during orthodontic tooth movement: Tsuka Y., Kunimatsu R., Fujii E., Gunji H., Tanimoto K.:The 26th Annual Meeting of Japanese Society for Laser Dentistry (Tokyo), 2014.
24. Effects of diode laser treatment on the metabolism of human dental pulp cells: Kunimatsu R., Tsuka Y., Gunji H., Tanimoto K..: The 26th Annual Meeting of Japanese Society for Laser Dentistry

(Tokyo), 2014.

25. Effect of intervals and force magnitude of jiggling force on root resorption in rats: Matsuda Y., Motokawa M., Kaku M., Sumi C., Tanne K., Tanimoto K.: The 47th Annual Scientific Congress of Korean Association of Orthodontists (Seoul), 2014.
26. A crowding case with an upper central incisor presenting substitutional root resorption treated with auto-transplantation: Date T., Koh M., Horie K., Matsumura Y., Nakao Y., Yanoshita M., Hirose N., Ueda H., Tanne K., Tanimoto K.: The 47th Annual Scientific Congress of the Korean Association of Orthodontists (Seoul), 2014.
27. Comparative cephalometric analysis of open bite cases treated with orthodontic anchor screw and MEAW: Sugino H, Motokawa M, Matsuda Y, Oki N, Sumi C, Kimura A, Tanimoto K: The 47th Annual Scientific Congress of Korean Association of Orthodontists (Seoul), 2014.
28. Functional mechanism of Integrin as mechanoreceptor in the metabolism of chondrocytes under excessive mechanical stress: Okamoto Y., Asakawa-Tanne Y., Kunimatsu R., Hirose N., Mitsuyoshi T., Tanne K., Tanimoto K.: The 47th Annual Scientific Congress of Korean Association of Orthodontists (Seoul), 2014.
29. Effect of Nd: YAG laser irradiation in cultured osteoblasts: Tsuka Y., Kunimatsu R., Fujii E., Gunji H., Tanimoto K.: The 47th Annual Scientific Congress of Korean Association of Orthodontists (Seoul), 2014.
30. A case of skeletal malocclusion treated by two-jaw surgery: Mitsuyoshi T, Tanimoto K.: The 47th Annual Scientific Congress of Korean Association of Orthodontists (Seoul),2014.
31. Role of mechanoreceptor in the metabolism of chondrocytes under excessive mechanical stimuli.: Okamoto Y., Asakawa Y., Shirakura M., Kunimatsu R., Hirose N., Mitsuyoshi T., Su S.C., Irome K., Tanne K., Tanimoto K.: The 6th Euro TM joint Congress on temporomandibular joint (TMJ) in juvenile idiopathic arthritis (JIA) (Tampere), 2014.
32. Role of mechanoreceptor in the metabolism of chondrocytes under excessive mechanical stimuli.: Okamoto Y., Asakawa Y., Shirakura M.,Kunimatsu R.,Hirose N.,Mitsuye3 Tf TJ 9.96 .6.4hy T., Su SC.

MAOISCT (Kuching),2014

36. Irradiation effects of newly developed low temperature multi gas plasma jet on oral bacteria: Abonti

Education and Science in Dentistry (Hiroshima), 2014, young researchers to report the experience of own overseas education.

## (4) Scientific research grant -in-aid

1. Grant-in-aid for Scientific Research Challenging Exploratory Research: Tanimoto K.: Restoration of tooth enamel by biomineralization with oyster shell nano-powder and enamel matrix proteins. No. 26670885, 110,000yen
2. Grant-in-aid for Scientific Research (C): Ueda H.: Comprehensive clinical development in newly oral appliance for obstructive sleep apnea syndrome. No.20304446. 260,000yen
3. Grant-in-aid for Scientific Research (C): Kaku M.: Long term cryopreservation of mesenchymal stem cells, 1,200,000yen
4. Grant-in-aid for Scientific Research (B): Kunimatsu R.: Effects of diode laser on the metabolism of periodontal tissue and application of diode laser for orthodontic treatment. No. 25862016. 1,600,000yen.
5. Grant-in-aid for clinical and Scientific Research of Hiroshima University : Kunimatsu R: Bone regeneration in the treatment of bone defect in the cleft lip and palate
   by use of mesenchymal stem cells and diode laser. 500,000 yen
6. Grant-in-aid for Scientific Research : Kunimatsu R : Effects of diode laser on the metabolism of periodontal tissue and application of diode laser for orthodontic treatment. 1,000,000 yen.
7. Collaborative research with Unitak Co., Ltd; Ryo Kunimatsu : Effects of metabolism on the specialized hybrid-diode-laser for orthodontic treatment. 500,000 yen.
8. Grant-in-aid for young researcher of Hiroshima University : Kunimatsu R: Bone regeneration in the treatment of bone defect in the cleft lip and palate
   by use of mesenchymal stem cells and diode laser. 300,000 yen
9. Grant-in-aid Fujii of Hiroshima University : Kunimatsu R: Bone regeneration in the treatment of bone defect in the cleft lip and palate
   by use of deciduous dental pulp stem cells and diode laser. 1000,000 yen
10. Grant-in-Aid for Scientific Research (B): Hirose N.: Elucidation of the mechanical stress receptible mechanism by integrins, and establishment of PCR prevention with a integrins inhibitor. No.26861788. 1,600,000 yen
11. Grant-in-Aid for Scientific Research: Yoshimi Y.: Application to root resorption prevention and elucidation of periodontal tissue metabolic activity mechanism by functionality amelogenin peptide: No. 25893147. 1, 300,000yen.

12. Support fund for study from Hiroshima University: Suim H: Irradiation effects of newly developed low temperature multi gas plasma jet on oral bacteria 500,000yen.
13. Grant-in-Aid for Scientific Research: Sumi K.: Expansion to establishment of Jaw Cleft Treatment with Bone Regeneration by Use of MSCs having excellent vascular inducing.: No 2589314810. 1,100,000yen.
14. Grant-in-Aid for Scientific Research (B): Matsuda Y.: investigation of mechanism of root resorption induced by jiggling force and the prediction using GCF. No.258620190. 1,430,000yen
15. Grant-in-Aid for Scientific Research: Yoshimi Y.: Application to root resorption prevention and elucidation of periodontal tissue metabolic activity mechanism by functionality amelogenin peptide: No. 25893147. 500,000yen.
16. Grant-in-Aid for Scientific Research (B): Mi

(Tokyo), 2014, Excellent Poster presentation award.

9. Hirose N.: Ameloblastin in Hertwig's Epithelial Root Sheath Regulates Tooth Root Formation and Development.: Alumni Association of Hiroshima University Faculty of Dentistry Encouraging Prize, 2014.
10. Motokawa M.: Association between root resorption incident to orthodontic treatment and treatment factors: Alumni Association of Hiroshima University Faculty of Dentistry Encouraging Prize, 2014.

(6) Patent

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# ▪ Applied Life Sciences Department of Oral and Maxillofacial Radiology
# ▪ Division of Oral and Maxillofacial Surgery and Oral Medicine Department of Oral and Maxillofacial Radiology

## (1) Staff and Students

Professor :Keiji Tanimoto
Associate Professor :Minoru Fujita
Associate Professor/Lecturer :Yoshikazu Suei, Takashi Nakamoto
Assistant Professor :Toshikazu Nagasaki, Masahiko Ohtsuka, Masahiko Sawajiri, Masaru Konishi
Graduate Student : Mitsuko Shimizu, Kiyohito Ota, Atia Hossain, Kimio Okada, Preeyaporn Srimawong, Keiji Harada

## (2) Main Research Activities

1: Radiographic diagnosis of oral diseases
2: Radiographic study on mandibular osteomyelitis
3: Study of radiation dosimetry in X-ray region for diagnosis
4: Study on the videofluoroscopic examination of swallowing
5: Radiation effects of heavy ion particles on bone metabolism
6: Improvement of treatment results in the radiotherapy for oral cancers
7: Radiographic study to screen osteoporosis using panoramic radiographs of the jaw

## (3) Research Achievements

### A) Original Papers

1:Development and fundamental evaluation of cooked rice containing non-ionic water soluble contrast medium(Visipaque270®) for videofluoroscopic examination of swallowing : Konishi M., Nagasaki T., Yasuhara Y., Hossain A., Tanimoto K.: The Japanese journal of dysphagia rehabilitation, 18(2), 113-122, 2014.

2:Ultrasonographic examinations at department of oral and maxillofacial radiology of Hiroshima

university hospital: Konishi M., Fujita M., Suei Y., Nakamoto T., Tanimoto K.: The journal of Hiroshima University dental society, 46(1), 63-66, 2014.

Students－: Konishi M., Nagasaki Y., Sawajiri M., Tanimoto K.: 10th ACOMFR（Bali), 2014.

5 Irradiation Effect on Bone Metastasis of Breast Cancer Cell Srimawong P., Sawajiri M., Nishikiori R. Terato H., Maruyama K.., Tanimoto K., Nishikiori R. Terato H., Maruyama K. The 10th Asian Congress of Oral and Maxillofacial Radiology（ Bali）

6 : Irradiation Effect on Osteoclastogenesis Stimulated by Breast Cancer Cell: Sawajiri M., Srimawong P., Nishikiori R. Terato H., Maruyama K. The 55th Annual Meeting of The Japan Radiation Research Society (Kagoshima), 2014.

7: Relationship between swallowing function and maximum tongue pressure in ALS patients. Sonoda,Yoshikawa M, Hesaka A, Takagi S, Nakamori M, Nagasaki T , Hosomi N, Tsuga K, Tanimoto K, Matsumoto M, Izumi Y The 22nd Annual Meeting of the Dysphaia Research, (Tennessee),USA 2014.

8: Establishment of upper airway morphological evaluation of the OSA patient by CT. : Yu Matusmura Y, Koh M, Nagasaki T, Ueda H, Tanimoto K : The 73rd Annual Meeting of the Japanese Orthodontic Society, (Chiba), 2014.

9: Relationship between the swallowing videoendoscopic findings and the somatosensory test. : Nishimura R, Nagasaki T, Fukada E, Tanimoto K, Hara K, Takemoto T, Amano H, Sugiyama M : The 21st Annual Meeting of Japanese Society of Dental Welfare, (Hiroshima), 2014.

10: New advanced computer-aided diagnosis system to screen osteoporosis using dental panoramic radiographs. : Nakamoto T, Zaman MU, Taguchi A, Tanimoto K.: Computer Assisted Radiology and Surgery 28th International Congress and Exhibition (Fukuoka), 2014.

## F) Lecture

1: Radiographic diagnosis of various clinical cases: Konishi M., 80th Hiroshima university clinical seminar (Hiroshima), 2014.

## (4) Status of Receiving Grants-in Aid for Scientific Research, etc.

1: Research Grant (Mikasa Shoji Co., Ltd): Sawajiri M. : The effect of electrolysed water on radioactive extraction from internal exposure animal. ( no. 7109) ¥6,000,000

2: Grant-in-aid for scientific research from the Japan Society for the Promotion of Science: Sawajiri M. Research and development of the dental material having a functional antibacterial action. ( no. 24592917): ¥900,000.

## (6) Patents

# 2014

1: Nomura Y., Sawajiri M.,i: Aqueous solution production technique and water vapor producing device including halogen dioxide: (JP2014-113404) (Medical Environment Techno Co.,Ltd., Mikasa Shoji Co.,Ltd.)

2: Nii T., Nomura Y., Sawajiri M.,, Ohata T.: A component for dealing with a tumor, and a manufacturing method for the same (JP2014-113404) (Medical Environment Techno Co.,Ltd.)

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# Integrated Health Sciences Department of Biological Endodontics
# Division of Preventive and Restorative Dentistry
# Department of Operative and Conservative Dentistry

## (1) Staff and Students

Professor : Hideki Shiba
Associate Professor :
Associate Professor : Masashi Fujii
Assistant Professor : Makoto Arakawa, Shigeki Suzuki, Shintaro Nagayasu, Akane Mineoka, Naoyo Motoyama
Resident : Seiji Kobuke
Graduate Student : Sano Tomomi, Atsushi Hashikata, Hiroaki Hoshino

## (2) Main Research Activities

1 Studies on biological regeneration of dentin/pulp complex and periapical tissues
2 Studies on biological obturation of root canals at apical areas.
3 Relationship between HIV infection and dental caries
4 Development of new therapeutic agent for intractable pain
5 Studies on relationship between dental disease and systematic diseases
6 Development of new laboratory tests for diagnosis of dental diseases
7 Development of new preventive therapies for dental diseases based on new laboratory tests
8 Development of new host-noninvasive therapies using lasers

## (3) Research Achievements

### A) Original Papers (including Case Reports)

1 BDNF mimetic compound LM22A-4 regulates cementoblast differentiation via the TrkB-ERK/Akt signaling cascade: Kajiya M., Takeshita K., Kittaka M., Matsuda S., Ouhara K., Takeda K., Takata T., Kitagawa M., Fujita T., Shiba H., Kurihara H.: Int. Immunopharmacol., 19, 245-252, 2014.
2 miR-584 expressed in human gingival epithelial cells is induced by Porphyromonas gingivalis stimulation and regulates interleukin-8 production via lactoferrin receptor: Ouhara K., Savitri I. J., Fujita T., Kittaka M., Kajiya M., Iwata T., Miyagawa T., Yamakawa M., Shiba H., Kurihara H.: J. Periodontol., 85, 198-204, 2014.

3 Amphotericin B down-regulates Aggregatibacter actinomycetemcomitans-induced production of IL-8 and IL-6 in human gingival epithelial cells: Imai H., Fujita T., Kajiya M., Ouhara K., Miyagawa T., Matsuda S., Shiba H., Kurihara H.: Cell Immunol., 290, 201-208, 2014.

4 Smad2 is involved in Aggregatibacter actinomycetemcomitans-induced apoptosis: Yoshimoto T., Fujita T., Ouhara K., Kajiya M., Imai H., Shiba H., Kurihara H.: J Dent Res., 93, 1148-1154, 2014.

5 Introduction of a mixture of □-tricalcium phosphate into a complex of bone marrow mesenchymal stem cells and type I collagen can augment the volume of alveolar bone without impairing cementum regeneration: Nagahara T., Yoshimatsu S., Shiba H., Kawaguchi H., Takeda K., Iwata T., Mizuno N., Fujita T., Kurihara H.: J Periodontol., 12, 1-20, 2014.

6 Relief of cancer pain by glycine transporter inhibitors: Motoyama N, Morita K, Shiraishi S, Kitayama T, Kanematsu T, Uezono Y, Dohi T.: Anesth Analg., 119(4), 988-95, 2014.

7 Palliation of bone cancer pain by antagonists of platelet-activating factor receptor. Morita K, Shiraishi S, Motoyama N, Kitayama T, Uezono Y, Kanematsu T. and Dohi T. PLoS One, 9( 3): e91746, 2014.

8 Wnt Acts as a Pro-Survival Signal to Enhance Dentin Regeneration. Hunter D.J., Bardet C., Mouraret S., Liu B., Singh G., Sadoine J., Dhamdhere G., Smith A., Tran X.V., Joy A., Rooker S., Suzuki S., Vuorinen A., Miettinen S., Chaussain C. and Helms J.A. J Bone Miner Res. In press

9 Adhesive and migratory effects of phosphophoryn are modulated by flanking peptides of the integrin binding motif. Suzuki S., Kobuke S., Haruyama N., Hoshino H., Kulkarni A. B. and Nishimura F. PLoS One. 14;9(11):e112490. 2014.

10 The effects of Matrix trioxide aggregate (MTA) on adhesion, migration, and apoptosis of dental pulp cells. Suzuki S., Nagayasu S., Arakawa M., Kobuke S., Hoshino H., Hashikata A., Motoyama T. and Nishimura F. Jpn J Conserv Dent. Vol. 57. No. 6. 547-554. 2014.

11 A Treatment of a Crowding with Oligodontia by Teeth Autotransplantation. Kojima S., Kaku M., Kubo T., Fjita T., Ono S., Nagayasu S., Kojima S., Sumi H., Shikata H., Yamamoto T., Motokawa M. and Tanimoto K.J Hiroshima Univ.Dent.Soc. Vol. 46.No. 2. 156-161. 2014.

## B) Review

1 Induction of biological pulpal wound healing-SIBLING family: Suzuki S.: Shikai Tenbou: 2014-7 Vol. 124 No.1

## C) Publications

1 Environmental and systemic factors: The Periodontology (edited by Yuuichi Izumi, Atsuhiro Kinoshita, Yukihiro Numabe, Matsuo Yamamoto): Fujita T., Shiba H., Kurihara H.: Nagasueshoten (Kyoto), 44-45, 57-58, 2014.

## D) Other Publications

1 1: The case example of dental practice network for HIV-patients in Hiroshima: The list of case examples of network-construction of dental practice (the revised edition): Welfare Labor Scientific Research in 2014 "Study on construction and maintenance of the medical system for HIV infection: Study on the system of dental practice for HIV infection: Yuuji Usami (the Nagoya Medical Center): Santanda T., Shiba H.: 18-27, 2014.

## E) Presentation at Scientific Meeting

1 Effects of brain-derived neurotrophic factor on anti-inflammation and bone/dentin-related proteins expression in human pulp cells: Tokunaga N., Takeda K., Kajiya M., Matsuda S., Fujita T., Shiba H., Kuirhara H.: 35th Annual Scientific Meeting of JEA (Niigata), 2014.

2 BMP-2 expression induced by LL37 in human pulp cells: Khung R., Shiba H., Kajiya M., Ouhara K., Kurihara H.: The 62nd Annual Meeting of the Japanese Division of the IADR (JADR), (Osaka), 2014.

3 Problems clarified from questionnaire after HIV dental clinical system construction business by Hiroshima University Hospital: Iwata T., Shiba H., Mastui K., Shintani T., Okada M., Hamamoto K., Unei H., Saito S., Takata N.and Fujii T. The 28th Annual meeting of the Japanese Society for AIDS research.(Osaka), 2014.

4 On AUDIT System of Hiroshima Safety Dental service Support network for the prevention of nosocomial infection for the dental clinic: Iwata T., Mizuno N., Nakaoka M., Irie Y., Nagahara T., Shiba H., Sawa A. and Kurihara H. The 29th Annual meeting of the Japanese Society for Infection Prevention and Control.(Tokyo), 2014.

5 Evaluation of the association of Serum antibodies to periodontal bacteria and Lifestyle-related diseases–Report on Dental Check-up of Japanese American in Hawaii –: Mineoka A., Nishimura F., Kurihara H.: The 141th Japanese Society of Conservative Dentistry (Yamagata), 2014.

6 The role of CCR7 pathway on the pathogenesis of diet-induced obesity andinsulin resistance Tomomi S, Misaki I, Atsushi H, Takanaori S, Shintaro N, Akiko Y, Tomoichiro A, Nishimura F.: The 57th annual meeting of the japanese society of periodontology (Gifu), 2014.

7 The role of CCR7 pathway on the pathogenesis of diet-induced obesity andinsulin resistance Misaki I, Tomomi S, Atsushi H, Takanaori S, Shintaro N, Akiko Y, Tomoichiro A, Nishimura F.: The 57th Annual Meeting of the Japan Diabetes Society (Osaka), 2014.

8 The effects of Matrix trioxide aggregate (MTA) on adhesion, migration, and apoptosis of dental pulp cells: Shintaro Nagayasu, Shigeki Suzuki , Hiroaki Hoshino , Seiji Kobuke , Tomotoku Motoyama ,Fusanori Nishimura:The Japanese Society of Conservative Dentistry (Yamagata), 2014.

9 Usefulness of TCV-309, a selective Platelet-Activating Factor (PAF) antagonist, on chemotherapeutic agents-induced painful neuropathy: Naoyo Motoyama, Katsuya Morita, Hidemi

Kurihara, Toshihiro Dohi: The Japanese Society of Conservative Dentistry (Yamagata), 2014.

10 Selective Platelet-Activating Factor(PAF) antagonists as a potential therapeutic strategy for chemotherapeutic agents-induced painful neuropathy: Naoyo Motoyama, Katsuya Morita, Hidemi Kurihara, Toshihiro Dohi : The 34st Annual Meeting of the Japanese Society of Oral Therapeutics and Pharmacology (Osaka), 2014.

11 A proposal of translational research aiming at the support care of patients with cancer, Improvement of bone cancer pain by antagonists of platelet-activating factor (PAF) receptor: Katsuya Morita, Naoyo Motoyama, Seiji Shiraishi, Toshihiro Dohi: The 87th Annual Meeting of the Japanese Pharmacological Society JPS Symposia S3D-32 (Sendai), 2014.

F) Special lectures in academic meetings

1 Information concerning performance of countermeasure for HIV infection in the Chugoku and Shikoku areas: Shiba H.: The first Liaison Council of AIDS treatment between AIDS core hospitals in the Chugoku and Shikoku areas (Okayama), 2014.

2 The present conditions and network-construction of the dental practice for the HIV-infected patients: Shiba H.: 2014-AIDS workshop in Hiroshima University Hospital (Hiroshima), 2014.

(4) Status of Receiving Grants-

MAOISCT (Kuching),2014

36. Irradiation effects of newly developed low temperature multi gas plasma jet on oral bacteria: Abonti

Education and Science in Dentistry (Hiroshima), 2014, young researchers to report the experience of own overseas education.

## (4) Scientific research grant -in-aid

1. Grant-in-aid for Scientific Research Challenging Exploratory Research: Tanimoto K.: Restoration of tooth enamel by biomineralization with oyster shell nano-powder and enamel matrix proteins. No. 26670885, 110,000yen
2. Grant-in-aid for Scientific Research (C): Ueda H.: Comprehensive clinical development in newly oral appliance for obstructive sleep apnea syndrome. No.20304446. 260,000yen
3. Grant-in-aid for Scientific Research (C): Kaku M.: Long term cryopreservation of mesenchymal stem cells, 1,200,000yen
4. Grant-in-aid for Scientific Research (B): Kunimatsu R.: Effects of diode laser on the metabolism of periodontal tissue and application of diode laser for orthodontic treatment. No. 25862016. 1,600,000yen.
5. Grant-in-aid for clinical and Scientific Research of Hiroshima University : Kunimatsu R: Bone regeneration in the treatment of bone defect in the cleft lip and palate
   by use of mesenchymal stem cells and diode laser. 500,000 yen
6. Grant-in-aid for Scientific Research : Kunimatsu R : Effects of diode laser on the metabolism of periodontal tissue and application of diode laser for orthodontic treatment. 1,000,000 yen.
7. Collaborative research with Unitak Co., Ltd; Ryo Kunimatsu : Effects of metabolism on the specialized hybrid-diode-laser for orthodontic treatment. 500,000 yen.
8. Grant-in-aid for young researcher of Hiroshima University : Kunimatsu R: Bone regeneration in the treatment of bone defect in the cleft lip and palate
   by use of mesenchymal stem cells and diode laser. 300,000 yen
9. Grant-in-aid Fujii of Hiroshima University : Kunimatsu R: Bone regeneration in the treatment of bone defect in the cleft lip and palate
   by use of deciduous dental pulp stem cells and diode laser. 1000,000 yen
10. Grant-in-Aid for Scientific Research (B): Hirose N.: Elucidation of the mechanical stress receptible mechanism by integrins, and establishment of PCR prevention with a integrins inhibitor. No.26861788. 1,600,000 yen
11. Grant-in-Aid for Scientific Research: Yoshimi Y.: Application to root resorption prevention and elucidation of periodontal tissue metabolic activity mechanism by functionality amelogenin peptide: No. 25893147. 1, 300,000yen.

MAOISCT (Kuching),2014

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| | | Encouragement Award |
| 2. | Ajiravudh Subarnhesaj University | 47th annual meeting of the Dental Association of Hiroshima |

2014

# Contents

## Hiroshima University Faculty of Dentistry, Hiroshima University Hospital, Graduate School of Biomedical & Health Sciences


- **Basic Life Sciences**

Department of Calcified Tissue Biology

Department of Oral Biology

Department of Physiology and Oral Physiology

Department of Molecular Biology and Biochemistry

Department of Oral and Maxillofacial Pathobiology

Department of Bacteriology

Department of Cellular and Molecular Pharmacology

Department of Biomaterials

Department of Mucosal Immunology

- **Applied Life Sciences**

Department of Periodontal Medicine, and Department of Preventive and Restorative Dentistry (Periodontics and Endodontics)

Department of Molecular Oral Medicine & Maxillofacial Surgery, Department of Oral & Maxillofacial Surgery and Oral Medicine (Oral and Maxillofacial Surgery)

Department of Oral and Maxillofacial Surgery, and Department of Oral & Maxillo -facial Surgery and Oral Medicine (Oral and Maxillofacial Reconstructive Surgery)

Department of Advanced Prosthodontics, and Department of Preventive and Restorative Dentistry (Implants and Prosthodontics)

Department of Advanced Prosthodontics, and Department of Preventive and Restorative Dentistry (Prosthetic Dentistry)

Department of Orthodontics and Craniofacial Development Biology, and Department of Oral Health and Development (Orthodontics)

Department of Oral & Maxillofacial Radiology, Department of Oral & Maxillofacial Surgery and Oral Medicine (Oral and Maxillofacial Radiology)

- **Integrated Health Sciences**

Department of Biological Endodontics, and Department of Preventive and Restorative Dentistry (Operative and Conservative Dentistry)

Department of Pediatric Dentistry, and Department of Oral Health and Development (Pediatric Dentistry)

Department of Dental Anesthesiology, and Department of Oral & Maxillofacial