



Hiroshima University Graduate School
of Biomedical and Health Sciences
(Dentistry) and Hiroshima University
Hospital (Dental Departments)

Research Achievements
2023

Contents

Hiroshima University School of Dentistry, Hiroshima University Hospital, Graduate School of Biomedical and Health Sciences

○Program of Dentistry

- [Department of Maxillofacial Anatomy and Neuroscience](#)
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- [Department of Molecular Biology and Biochemistry](#)
- [Department of Oral and Maxillofacial Pathobiology/Collaborative Research Laboratory Oral Inflammation Regulation](#)
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- [Department of Cellular and Molecular Pharmacology](#)
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- [Department of Periodontal Medicine, and Division of Preventive and Restorative Dentistry \(Department of Periodontics\)](#)
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- [Department of Oral and Maxillofacial Surgery, and Division of Oral and Maxillofacial Surgery and Oral Medicine \(Department of Oral and Maxillofacial Reconstructive Surgery\)](#)
- [Department of Advanced Prosthodontics, and Division of Preventive and Restorative Dentistry \(Department of Oral Implant\)](#)
- [Department of Advanced Prosthodontics, and Division of Preventive and Restorative Dentistry \(Department of Prosthetic Dentistry\)](#)
- [Department of Orthodontics and Craniofacial Development Biology, and Division of Oral Health and Development \(Department of Orthodontics\)](#)
- [Department of Oral & Maxillofacial Radiology, Division of Oral and Maxillofacial Surgery and Oral Medicine \(Department of Oral and Maxillofacial Radiology\)](#)
- [Department of Biological Endodontics, and Division of Preventive and Restorative Dentistry \(Department of Endodontics and Operative Dentistry\)](#)
- [Department of Pediatric Dentistry, and Division of Oral Health and Development \(Department of Pediatric Dentistry\)](#)
- [Department of Dental Anesthesiology, and Division of Oral and Maxillofacial Surgery and Oral Medicine \(Department of Dental Anesthesiology\)](#)

○Program of Oral Health Sciences

- [Department of Public Oral Health](#)
- [Department of Oral Epidemiology](#)
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- [Department of Anatomy and Functional Restorations](#)
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○ **Graduate School of Biomedical and Health Sciences (Dentstry)**

Central Research Laboratory

[Center for Cause of Death Investigation Research](#)

○ **University Hospital (Dental Departments)**

- [Division of General Dentistry, Department of General Dentistry](#)
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- [Central Clinical Divisions, Dental Laboratory](#)
- [Central Clinical Divisions, Dental Hygiene Section](#)
- [Central Clinical Divisions, Division of Medical Informatics and Systems Management](#)

Department of Maxillofacial Anatomy and Neuroscience

(1) Staff and Students

Professor : Ryuji Terayama

Associate Professor: Kenta Uchibe

Assistant Professor: Shohei Kohno

(2) Main Research Activities

- 1: Studies on nociceptive transmission of orofacial region
- 2: Roles of glial cells in the development of neuropathic pain
- 3: Effects of administration of drugs on neuropathic pain
- 4: Roles of retinoic acid signaling in skeletal development
- 5: Studies on heterotopic ossification and related diseases
- 6: Studies on regulatory mechanisms of osteoblast differentiation

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Terayama R, Tsuji K, Furugen H, Duong M, Nakatani A, Uchibe K, Effects of peripheral nerve injury on the induction of c-Fos and phosphorylated ERK in the brainstem trigeminal sensory nuclear complex. *Ann Neurosci.* 2023 Jul;30(3):177-187. doi: 10.1177/09727531231156505.
- 2: Nakatani A, Kunimatsu R, Tsuka Y, Sakata S, Ito S, Kado I, Putranti NAR, Terayama R, Tanimoto K, High-frequency near-infrared semiconductor laser irradiation suppressed experimental tooth movement-induced inflammatory pain markers in the periodontal ligament tissues of rats. *Lasers Med Sci.* 2023 Apr 20;38(1):109. doi: 10.1007/s10103-023-03761-x.
- 3: Ishida E, Furusho H, Renn TY, Shiba F, Chang HM, Oue H, Terayama R, Ago Y, Tsuga K, Miyauchi M. Mouse maternal odontogenic infection with *Porphyromonas gingivalis* induces cognitive decline in offspring. *Front Pediatr.* 2023 Aug 11;11:1203894. doi: 10.3389/fped.2023.1203894. eCollection 2023.
- 4: Kharaghani D, Kohno S, Minamizaki T, Hoshino T, Yoshiko Y. 2,3-Diphospho-D-glyceric acid inhibits calciprotein particle growth and calcification in MOVAS cells but not in MC3T3-E1 cells. *Colloids Interface Sci Commun.* 2022 Sep 20;50:100668. Doi: 10.1016/j.colcom.2022.100668

B) Review

C) Publications

- 1: Chondrocytes; Latest Osteoporosis Science (2nd ed.): Uchibe K, Yu X, Yambe S, Shukunami C: Japanese Journal of Clinical Medicine (in Japanese), 81-1, 90-94, 2023.

D) Other Publications

E) Presentation at Scientific Meeting

- 1: Terayama R, Uchibe K, Differential changes in the induction of c-Fos and phosphorylated ERK in the trigeminal spinal tract nucleus after peripheral nerve injury, The 64th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 2: Ogashira S, Hoshino T, Kohno S, Yoshiko Y, Mir125b1-derived miR-125b-5p negatively regulates osteoblast differentiation, The 38th Annual Meeting of the Japanese Society for Bone and Mineral Research (Tokyo), 2023
- 3: Oshiro R, Kohno S, Hoshino T, Hatano R, Tanimoto K, Yoshiko Y, Transcriptomic analysis of calciprotein particle-mediated calcification in mouse vascular smooth muscle cells, The 128th Annual

- Meeting of The Japanese Association of Anatomists (Sendai), 2023
- 4: Yimiti D, Uchibe K, Shukunami C, Miyaki S, Retinoic acid receptor agonist inhibits ectopic ossification and promotes Achilles tendon repair, The 38th Annual Meeting of the Japanese Society for Bone and Mineral Research (Tokyo), 2023.
 - 5: Uchibe K, Terayama R, Targeted bone growth by local retinoid administration, The 64th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.

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

1. Grant-in Aid-for Scientific Research (C):Kenta Uchibe, 22K10017, ¥4,160,000
2. Grant-in Aid-for Scientific Research (C):Shohei Kohno, 21K09816, ¥4,160,000
3. Grant-in Aid-for Scientific Research (C):Shohei Kohno, 21K09331, ¥100,000
4. Research Grant from Public Trust Cardiovascular Research Fund, Shohei Kohno, ¥2,000,000
5. Research Grant from Kobayashi Foundation, Shohei Kohno, ¥3,500,000

(5) Academic Awards, etc.

(6) Patents

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Department of Physiology and Oral Physiology

(1) Staffs and Students

Professor : SUGITA, Makoto

Associate Professor : SAKAYORI, Nobuyuki (from October)

Assistant Professor : SAKAYORI, Nobuyuki (until September)

Assistant Professor : MIYABE, Risako

Research Assistant : YOKOYAMA, Emi

Graduate Students : YAMAMOTO, Kuniyo; TAHARA, Eiki; IWAMOTO, Yuma; MATSUO, Katsuhiro

(2) Main Research Activities

- 1: The neuronal bases of taste perception and the taste-evoked behavioral and emotional responses
- 2: The roles of essential fatty acids in brain development and behaviors
- 3: The mechanisms of loss/recovery of consciousness induced by general anesthetics
- 4: The molecular mechanisms of ion and fluid transport in salivary glands
- 5: Studies on the function and dysfunction of ion channels and transporters

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Effect of irinotecan administration on amiloride-sensitive sodium taste responses in mice: Obayashi N, Sakayori N, Kawaguchi H, Sugita M: Eur J Oral Sci, 131(2), e12922, 2023.
- 2: Resting saliva volume as a risk factor for hypogeusia: A retrospective study: Shintani T, Naito M, Obayashi N, Ando T, Kawaguchi H, Yanamoto S, Kajiya M, Sugita M: Physiol Behav, 267, 114224, 2023.
- 3: Taste-taste associations in chemotherapy-induced subjective taste alterations: findings from a questionnaire survey in an outpatient clinic: Obayashi N, Sugita M, Shintani T, Nishi H, Ando T, Kajiya M, Kawaguchi H, Ohge H, Naito M: Support Care Cancer, 31(9), 552, 2023.

B) Review

- 1: Nutrition and brain development: Sakayori N, Sugita M: Seishinka, 42(4), 442-449, 2023.

C) Publications

D) Other publication

- 1: The roles of dietary essential fatty acids in offspring's eating behaviors: Sakayori N: The report on the 40th suisan yushi gijyutsu konwakai, 1-14, 2023.

E) Presentation at Scientific Meeting

- 1: The effects of maternal dietary essential fatty acids on offspring's anxiety-related behaviors: Sakayori N, Kikuchi T, Omokawa D, Katakura M, Sugita M: The 32nd Annual Meeting of the Japan Society for Lipid Nutrition (Kawagoe), 2023.
- 2: The effects of polyunsaturated fatty acids on dopaminergic differentiation of the neural stem cells: Takahashi R, Sakayori N, Katakura M: The 96th Annual Meeting of the Japanese Biochemical Society (Fukuoka), 2023
- 3: The effects of maternal dietary essential fatty acids on offspring's sucrose intake: Sakayori N: The 11th Meeting of the Japan Society for DOHaD (Fukushima), 2023.

- 4: The roles of polyunsaturated fatty acids in midbrain dopaminergic neurogenesis and ingestive behaviors: Sakayori N: The 46th Annual Meeting of the Japan Neuroscience Society (Sendai), 2023.
- 5: The roles of dietary essential fatty acids in offspring's eating behaviors: Sakayori N: The 40th Suisan Yushi Gijyutu Konwakai (online), 2023.
- 6: The roles of essential fatty acids on brain development and function: Sakayori N: The 56th Hiroshima Shigakukai Sokai (Hiroshima), 2023.
- 7: Comprehensive behavioral analyses of mice derived from mothers fed a diet high in omega-6 and low in omega-3 fatty acids: Sakayori N, Fujii K, Katakura M, Kobayashi K, Takao K, Sugita M: The 77th Annual Meeting of the Japan Society of Nutrition and Food Science (Sapporo), 2023.
- 8: The roles of polyunsaturated fatty acids in brain development: Sakayori N: The 6th Spring Neurodevelopmental Biology Meeting (Sendai), 2023.
- 9: Ingestive behaviors in mouse offspring are affected by maternal dietary balance of polyunsaturated fatty acids: Sakayori N: The 100th Anniversary Annual Meeting of The Physiological Society of Japan (Kyoto), 2023.
- 10: Distinct neural firing changes are observed in unit recording from the rat prefrontal cortex during anesthesia: Miyabe R: The 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 11: Mineralization-Promoting Ability of Hexaraphane® in Human Odontoblasts: Furusawa Y, Kimura M, Okunishi I, Ouchi T, Kato-Yamada T, Kurashima R, Sugita M, Shibukawa Y, Furusawa M: 2023 AADOCR/CADR Annual Meeting & Exhibition (Portland), 2023.
- 12: Functional characterization of bitter taste-relaying neurons in the parabrachial nuclei: Sugita M, Yamamoto K: The 100th Anniversary Annual Meeting of The Physiological Society of Japan (Kyoto), 2023.
- 13: Variation of stimulated saliva in various age group from children to the elderly: Analysis of caries risk test results: Obayashi N, Sugita M, Shintani T, Ando T, Miyata R, Kawaguchi H, Naito M, Kajiya M: The 33th Annual Meeting of Japanese Association of Oral Medicine (Utsunomiya), 2023.
- 14: Responses to conditioned taste stimuli of amygdalar neurons defined by genetic tracing after acquisition and extinction of conditioned taste aversion memory: Sugita M: The 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.

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

- 1: Grant-in-Aid for Scientific Research (B): Sakayori N., The roles of dietary essential fatty acids in feeding behaviors. 21H03357. \2,800,000.
- 2: Lotte Research Promotion Grant: Sakayori N., The roles of dietary essential fatty acids in the brain reward system. \1,000,000.
- 3: Grant-in-Aid for Research Activity Start-up: Miyabe R., Understanding of brain network involved in consciousness using by general anesthetics. 22K21063. ¥1,100,000.
- 4: Grant-in-Aid for Scientific Research (C): Sugita M., Genetic tracing to reveal the whole brain mapping of taste information processing. 21K09828. \1,100,000.

(5) Academic Awards, etc.

- 1: Sakayori N, Fujii K, Katakura M, Takao K, Sugita M: Topics Award, The 77th Annual Meeting of the Japan Society of Nutrition and Food Science, 2023

(6) Patents

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Department of Molecular Biology and Biochemistry

(1) Staff and Students

Professor: Chisa Shukunami

Associate Professor: Shigenori Miura (July 2023-)

Assistant Professor: Katsumi Fujimoto

Graduate Student: Xinyi Yu, Shinsei Yambe

Undergraduate Student: Masahito Namba, Duong Ngoc Trac, Ryutaro Yoshino, Shun Nakakubo

Research Student: Feng Kun

(2) Main Research Activities

- 1: Mechanisms regulating in the establishment of the junction between cartilage and tendon/ligament
- 2: The role of Pax1 during formation of vertebral column
- 3: Mechanisms of tendon/ligament formation
- 4: Mechanisms of periodontal ligaments formation
- 5: Mechanisms regulating differentiation of dental pulp stem cells
- 6: Morphogenesis of the head and neck region

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Potential function of Scx+/Sox9+ cells as progenitor cells in rotator cuff tear repair in rats.: Fukuma Y., Tokunaga T., Tanimura S., Yoshimoto Y., Mashimo T., Kaneko T., Tian X., Ideo K., Yonemitsu R., Matsushita K., Sugimoto K., Yugami M., Hisanaga S., Nakamura T., Uehara Y., Masuda T., Shukunami C., Karasugi T., Miyamoto T.: **Biochem Biophys Res Commun**, 676: 84-90, 2023.
- 2: Scleraxis-lineage cells are required for correct muscle patterning.: Ono Y., Schlesinger S., Fukunaga K., Yambe S., Sato T., Sasaki T., Shukunami C., Asahara H., Inui M.: **Development (Cambridge, England)**, 150(10): dev201101, 2023.
- 3: Dexamethasone is Not Sufficient to Facilitate Tenogenic Differentiation of Dermal Fibroblasts in a 3D Organoid Model.: Kroner-Weigi N., Chu J., Rudert M., Alt V., Shukunami C., Docheva D.: **Biomedicine**, 11(3): 772, 2023.
- 4: Remnant tissue enhances early postoperative biomechanical strength and infiltration of Scleraxis-positive cells within the grafted tendon in a rat anterior crucial ligament reconstruction model.: Kawakami J., Hisanaga S., Yoshimoto Y., Mashimo T., Kaneko T., Yoshimura N., Shimada, M., Tateyama M., Matsunaga H., Shibata Y., Tanimura S., Takata K., Arima T., Maeda K., Fukuma Y., Uragami M., Ideo K., Sugimoto K., Yonemitsu R., Matsushita K., Yugami M., Uehara Y., Nakamura T., Tokunaga T., Karasugi T., Sueyoshi T., Shukunami C., Okamoto N., Masuda T., Miyamoto T.: **PLoS One**, 18(11): e0293944, 2023.
- 5: Chondromodulin is necessary for cartilage callus distraction in mice.: Yukata K., Shukunami C., Matsui Y., Takimoto A., Goto T., Takahashi M., Mihara A., Seto T., Sakai T., Hiraki Y., Yasui N.: **PLoS One**, 18(2): e0280634, 2023.
- 6: Fuiten, A. M., Yoshimoto, Y., Shukunami, C. & Stadler, H. S.: Digits in a dish: An in vitro system to assess the molecular genetics of hand/foot development at single-cell resolution.: **Front Cell Dev Biol**, 11: 1135025, 2023

B) Review

C) Publications

D) Other Publications

E) Presentation at Scientific Meeting

- 1: Heterogeneity of Scx+/Sox9+ cells that contribute to the formation of chondro-tendinous junction/chondro-ligamentous junction and the effects of Scx deletion on tendogenic, ligamentogenic, and chondrogenic differentiation: Xinyi Yu, Yuki Yoshimoto, Shinsei Yambe, Haruhiko Akiyama, Taiji Adachi, Ryosuke Kawakami, Chisa Shukunami: The 41st Annual Meeting of the Japanese Society for Bone and Mineral Research, 2023.
- 2: Functional roles of Sclerostin in the fibrocartilaginous enthesis : Shinsei Yambe, Yuki Yoshimoto, Yu Xinyi, Haruhiko Akiyama, Taiji Adachi, Chisa Shukunami : The 41st Annual Meeting of the Japanese Society for Bone and Mineral Research, 2023.
- 3: Deep tissue imaging of the tendon, ligament, and cartilage formation processes using ScxTomato;Sox9EGFP mouse embryos: Xinyi Yu, Ryosuke Kawakami, Takeshi Imamura, Chisa Shukunami: The 22nd Locomotor Science Meeting, 2023.
- 4: Regulation of the stiffness in the fibrocartilaginous enthesis by Sclerostin : Shinsei Yambe, Koichiro Maki, Taiji Adachi, Chisa Shukunami : The 22nd Locomotor Science Meeting, 2023.
- 5: Construction of an *in vitro* model of the annulus fibrosus of the intervertebral disc utilizing mechanical stress: Shigenori Miura: The 22nd Locomotor Science Meeting, 2023.
- 6: Sclerostin, a marker for mature fibrochondrocytes, modulates the stiffness gradient to maintain tissue integrity of the fibrocartilaginous enthesis. : Shinsei Yambe, Yuki Yoshimoto, Xinyi Yu, Haruhiko Akiyama, Taiji Adachi, Chisa Shukunami : 33rd Australian & New Zealand Bone and Mineral Society Annual Scientific Meeting (ANZBMS), 2023.
- 7: Regulation of the stiffness gradient in the fibrocartilaginous enthesis by Sclerostin : Shinsei Yambe : Online International Seminar, 2023.
- 8: Collagen-based microfluidic device for functional analysis of vascular endothelial cells : Hayate Yamamoto, Jumpei Muramatsu, Shigenori Miura, Hiroaki Onoe: The 48th Annual Meeting of the Society for Chemistry and Micro-Nano Systems, 2023.
- 9: Identification of marker genes for predicting the osteogenic, chondrogenic, and adipogenic differentiation potentials of **bone marrow-derived mesenchymal stem cells** (MSC) : Masami Kanawa, Akira Igarashi, Katsumi Fujimoto, Veronica Sainik Ronald, Tania Saskianti, Ayumu Nakashima, Yukihito Higashi, Hidemi Kurihara, Yukio Kato, Takeshi Kawamoto : The 22nd Annual Meeting of the Japanese Society for Regenerative Medicine, 2023

F) Special lectures in academic meetings

Properties of cell populations that contribute to fibrocartilaginous enthesis formation : Chisa Shukunami, hosted by Prof. Denitsa Docheva (Department of Musculoskeletal Tissue Regeneration) and Prof. Maximilian Rudert (Orthopaedic Hospital König-Ludwig-Haus KLH), Würzburg University, 2023.

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

- 1: Grant-in-Aid for Scientific Research (B): Chisa Shukunami (Principal Investigator), 21H03107. ¥2,850,000.
- 2: Fund for the Promotion of Joint International Research (Fostering Joint International Research (B)): Chisa Shukunami (Principal Investigator), 21KK0161. ¥2,600,000.
- 3: 2023 Joint Usage/Research Center Program for Transdisciplinary Collaboration on Viral Research, Stem Cell Science and System Biology at Institute for Life and Medical Sciences, Kyoto University. Chisa Shukunami (Principal Investigator), ¥900,000.
- 4: Grant-in-Aid for Scientific Research (C): Chisa Shukunami (Co-Investigator), 22K10017. ¥50,000.
- 5: Grant-in-Aid for Scientific Research (A): Shigenori Miura (Co-Investigator), 23H00555. ¥1,500,000.
- 6: Grant-in-Aid for Scientific Research (C): Katsumi Fujimoto (Principal Investigator), 22K11803. ¥900,000.
- 7: Grant-in-Aid for Scientific Research (C): Katsumi Fujimoto (Co-Investigator) , 21K09792. ¥100,000.
- 8: Grant-in-Aid for Scientific Research (C): Katsumi Fujimoto (Co-Investigator) , 23K09162. ¥100,000.
- 9: Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima

- University (Next-Generation Fellows) Research Funds: Xinyi Yu, Clarification of the mechanism of tendon and ligament-specific transcriptional regulation by Scx. ¥400,000.
- 10: Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University (Next-Generation Fellows) Research Funds: Shinsei Yambe, Elucidation of enthesis formation and maintenance regulated by Scleraxis. ¥600,000
- 11: HU SPRING Research Grant Program : Shinsei Yambe (Principal Investigator), ¥1,000,000.

(5) Academic Awards, etc.

Functional roles of Sclerostin in the fibrocartilaginous enthesis : Shinsei Yambe, Yuki Yoshimoto, Yu Xinyi, Haruhiko Akiyama, Taiji Adachi, Chisa Shukunami : The 41st Annual Meeting of the Japanese Society for Bone and Mineral Research: ANZBMS 2023 Travel Award, 2023

(6) Patents

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Department of Oral and Maxillofacial Pathobiology Collaborative Research Laboratory Oral Inflammation Regulation

(1) Staffs and Students

Professor	: Mutsumi Miyauchi
Assistant Professor	: Hisako Furusho
	: Fumie Shiba (Collaborative Research Laboratory)
Research Assistant	: Masae Kitagawa
Graduate Student	: Kennto Okamoto (D4) (Department of Molecular Oral Medicine and Maxillofacial Surgery)

(2) Main Research Activities

- 1: Study on correlation between periodontitis and preterm birth/ low birth weight
- 2: Study on development of prognostic/diagnostic examination system of preterm birth targeting serum Galectin-3
- 3: Study on correlation between odontogenic infection and NASH
- 4: Study on correlation between odontogenic infection and brain disease
- 5: Study on correlation between odontogenic infection and atrial fibrillation
- 6: Study on development of diagnosis/inspection system using expiratory air
- 7: Study on epidemiological study on the relationship between periodontal disease and systemic diseases using large-scale data of Hiroshima Branch of National Health Insurance Society
- 8: Study on regulation of periodontitis and stomatitis (Collaborative Research Laboratory)

A) Original Papers (including Case Reports)

- 1 : Molecular mechanisms of inhibitory effects of bovine lactoferrin on invasion of oral squamous cell carcinoma: Chea C, Miyauchi M, Inubushi T, Okamoto K, Having S, Takata T: *Pharmaceutics* 2023, 15(2), 562; <https://doi.org/10.3390/pharmaceutics15020562>.
- 2 : Relationship between fibrosis, endocardial endothelial damage, and thrombosis of left atrial appendage in atrial fibrillation: Miyauchi S, Tokuyama T, Hiyama T, Takahashi S, Miyauchi M, Okubo Y, Okamura S, Miyamoto S, Oguri A, Takasaki T, Katayama K, Nakano N: *JACC Clin Electrophysiol.* 2023 Jul;9(7 Pt 2):1158-1168. doi: 10.1016/j.jacep.2023.01.029. Epub 2023 Mar 22.
- 3 : Bovine lactoferrin suppresses tumor angiogenesis through NF-κB pathway inhibition by binding to TRAF6: Ayuningtyas NF, Cea C, Saninggar KE, Ando T, Karina ES, Tanimoto T, Inubushi T, Maishi N, Hida K, Shindo M, Miyauchi M, Takata T: *Pharmaceutics* 2023, 15(1), 165; DOI: 10.3390/pharmaceutics15010165.
- 4 : *Porphyromonas gingivalis*-odontogenic infection is the potential risk for progression of nonalcoholic steatohepatitis-related neoplastic nodule formation: Sakamoto S, Nagasaki A, Shrestha M, Shintani T, Watanabe A, Furusho H, Chayama K, Takata T, Miyauchi M: *Sci Rep.* 2023 Jun 8;13(1):9350. doi: 10.1038/s41598-023-36553-y.
- 5 : Ghost cell odontogenic carcinoma arising in dentinogenic ghost cell tumor, peripheral: a case report. Sakamoto S, Ando T, Mizuta K, Ono S, Konishi M, Miyauchi M, Ogawa I: *Pathol Int.* 2023 Aug;73(8):367-372. doi: 10.1111/pin.13351. Epub 2023 Jul 4.

- 6 : Mouse maternal odontogenic infection with *Porphyromonas gingivalis* induces cognitive decline in offspring: Ishida E, Furusho H, Renn TY, Shiba F, Chang HM, Oue H, Terayama R, Ago Y, Tsuga K, Miyauchi M: *Front Pediatr*. 2023 Aug 11;11:1203894. doi: 10.3389/fped.2023.1203894. eCollection 2023.
- 7 : AXL activates YAP through the EGFR–LATS1/2 axis and confers resistance to EGFR-targeted drugs in head and neck squamous cell carcinoma: Okamoto K, Ando T, Izumi H, Kobayashi SS, Shintani T, Gutkind JS, Yanamoto S, Miyauchi M, Kajiya M.: *Oncogene*, 2023 Sep;42(39):2869-2877. doi: 10.1038/s41388-023-02810-7. Epub 2023 Aug 17.
- 8 : Ultrasonographic features of mass lesions in the oral submucosal epithelium using intraoral ultrasonography: Konishi M, Ando T, Miyauchi M, Kakimoto N: *Head Neck*, 2023 Sep 7. doi: 10.1002/hed.27509.
- 9 : CD40-CD40 ligand interaction between periodontal ligament cells and cementoblasts enhances periodontal tissue remodeling in response to mechanical stress: Yamamoto Y, Fujihara C, Nantakeerapat T, Matsumoto M, Noguchi T, Kitagawa M, Yamada S, Takata T, Kitaura H, Murakami S: *J Periodontal Res*. 2023 Dec;58(6):1261-1271. doi: 10.1111/jre.13182. Epub 2023 Sep 18.
- 10: Research on bone tissue regeneration using heparin and its derivatives: Saito A: *The Journal of Hiroshima University Dental Society*, (55)2, 70-84. 2023.
- 11: Transformation of odontogenic keratocyst into solid variant of OKC (SOKC)/keratoameloblastoma during long-term follow-up: Yamasaki S, Shintani T, Ando T, Miyauchi M, Yanamoto S: *Mol Med Rep*. 2024 (impress).
- 12: Low tongue pressure and depression using Kihon Checklist for assessing frailty status among community-dwelling Japanese older adults: A pilot study: Yoshikawa M, Nishikawa Y, Kitagawa M, Nagao A, Hiraoka A, Haruta A, Takeuchi M, Yoshida M, Tsuga K: *J Oral Rehabil*. 2024 (impress)
- 13: A case of supermassive cemento-ossifying fibroma in the mandible. Article type: Case report: Koizumi K, Mishima T, Ito N, Furusho H, Ando T, Yanamoto S, *J Oral Maxillofac Surg Med Pathol*. 2024 (impress)
- 14: Periodontal treatment during the blanking period improves the outcome of atrial fibrillation ablation: Miyauchi S, Ouhara K, Shintani T, Tokuyama T, Okubo Y, Okamura S, Miyamoto S, Oguri N, Uotani Y, Takemura T, Tari M, Hiyama T, Miyauchi M, Kajiya M, Mizuno N, Nakano Y : *J Am Heart Assoc*. 2024 (inpress)

B) Reviews

- 1 : The mechanism of inhibition of alveolar bone destruction by *Equisetum arvense* extract in a rat model of LPS-induced periodontitis: Shiba F, Furusho H, Miyauchi M: *Endotoxin and Innate Immunity*, (Koryosha)(Tokyo), 24, 1-6, 2023.

C) Publications

E) Presentation at Scientific Meeting

1) Special lectures in academic meetings

- 1 : “Understanding oral cytology examination: A troubleshooting seminar for cytotechnologists” – Taking

the first step toward improving diagnostic accuracy in oral cytology: Unehara R, Mori T, Mishima S, Ochi M, Ohue Y, Shimizu T, Kaneko Y, Ishida K, Ando T, Ogawa I, Aikawa T, Yanamoto S, Miyauchi M, Arihiro K: The 62th Annual Autumn Meeting of Japanese Society of Clinical Cytology (Hakata), 2023.

2) Presentation at International Scientific Meeting

- 1 : A case report of Cemento-ossifying fibroma and odontoma associated with Sturge-Weber syndrome in the jaw: Furusho H, Satou A, Matsumura T, Nakano M, Sawaki K, Yoshioka Y, Akashi S, Mizukawa N, Iida S, Kakimoto N, Miyauchi M: the 21st International congress of Oral Pathology and Medicine (Taipei), 2023.

3) Presentation at Domestic Scientific Meeting

- 1 : Evaluation of the Healing-Promoting Effect of Sodium Azulenesulfonate Solution in a Model of 5 Fluorouracil-Induced Oral Mucositis: Shiba F, Maekawara S, Furusho H, Takata T, Shimizu R, Miyauchi M: The 8th Annual Meeting of Japanese Association of Supportive Care in Cancer (Nara), 2023.
- 2 : Comparison of oral cytology and histology in Hiroshima University Hospital : Unehara R, Kamio Y, Nakamura M, Mori T, Fujita N, Mishima S, Ochi M, Oue Y, Shimizu T, Kaneko Y, Ishida K, Ando T, Ogawa I, Miyauchi M, Arihiro K: The 37th Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Clinical Cytology (Hiroshima), 2023.
- 3 : *Porphyromonas gingivalis* infects atrial tissue and progresses atrial fibrosis that is a cause of atrial fibrillation: Nakajima A, Phat PT, Furusho H, Matsuo M, Nishi H, Miaushi M: 2023 JDA Student Clinician Research Program (Tokyo), 2023.
- 4 : Deciphering the mechanism of cancer immune evasion induced by disruption of the Hippo pathway: Ando T, Okamoto K, Yanamoto S, Miyauchi M, Kajiya M: The 34th Annual Meeting of the Japanese Society of Oral Pathology (Osaka), 2023.
- 5 : Periodontitis relates to atrial fibrosis in patients with atrial fibrillation– Histological evaluation of human left atrial appendage: Yamane S, Suenaka S, Furusho H, Nishi H, Miyauchi M: The 34th Annual Meeting of the Japanese Society of Oral Pathology (Osaka), 2023.
- 6 : Evaluation of the Healing-Promoting Effect of Low Concentration Sodium Azulenesulfonate Solution in a 5-FU-Induced Oral Mucositis Model: Shiba F, Furusho H, Shimizu R, Miyauchi M: the 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 7 : AXL activates YAP and confers resistance to EGFR inhibitors: Okamoto K, Ando T, Kajiya M, Miyauchi M, Yanamoto S.: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023.
- 8 : A case of transformation from odontogenic keratocyst to SOKC/keratoameloblastoma during long term follow-up: Yamasaki S, Shintani T, Hayashido Y, Ando T, Miyauchi M, Yanamoto S: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023.
- 9 : The Antinociceptive effect of Equisetum arvense extract: Shiba F, Maekawara S, Furusho H, Inoue A, Ohta K, Miyauchi M: The 68th Congress of the Japanese Society of Oral And Maxillofacial Surgeons (Osaka), 2023.
- 10 : YAP/TAZ confers resistance against splicing inhibitors in head and neck squamous cell carcinoma: Ando T, Okamoto K, Shintani T, Yanamoto S, Miyauchi M, Kajiya M: The 82nd Annual Meeting of the Japanese Cancer Association (Yokohama), 2023.
- 11: Gingipain inhibition suppresses *P. gingivalis* odontogenic infection-induced liver fibrosis in NASH: Furusho H, Renn TY, Shiba F, Miyauchi M: The 69th Autumn Annual Meeting of the Japanese Society

of Pathology (Kurume), 2023.

4) Case report

- 1 : Maxillary tumor (Ossifying fibroma and complex odontoma associated with Stargie-Weber syndrome) : Furusho H, Sato A, Taniguchi K, Yamasaki R, Ichimura K, Kakimoto N, Miyauchi M
74th Meeting of Hiroshima Pathological Conference (Hiroshima), 2023.
- 2 : Mandibular cyst (Developmental odontogenic cyst with characteristic features of glandular odontogenic cyst and odontogenic keratocyst): Kataoka N, Ando T, Asada Y, Fukutani T, Tani R, Suei Y, Kakimoto N, Yanamoto S, Miyauchi M, Ogawa I, Kajiya M: The 142nd Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Pathology (Hiroshima), 2023.

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

- 1 : Grants-in-Aid for Scientific Research (Scientific Research(C)): Masae Kitagawa (Representative, New), Development of a Rapid Diagnostic Set for Oral Bacteria Associated with Systemic Disease Using Saliva
- 2 : Grants-in-Aid for Scientific Research (Scientific Research(C)): Mutsumi Miyauchi (Co-Investigator, New), Development of a Rapid Diagnostic Set for Oral Bacteria Associated with Systemic Disease Using Saliva
- 3 : Grant-in-Aid for Scientific Research (Scientific Research(B)): Mutsumi Miyauchi (Representative, Continuance), Comprehensive study on the effects of periodontal pathogen on the pathophysiology of atrial fibrillation
- 4 : Grant-in-Aid for Scientific Research (Scientific research (C)): Mutsumi Miyauchi (Co-Investigator, Continuance), Evaluation of epigenetic aging changes in hard tissues and its application to age estimation
- 5 : Grants-in-Aid for Scientific Research (Grant-in-Aid for Early-Career Scientists): Fumie Shiba (Representative, New), A Novel Mechanism of Stomatitis Pathogenesis Based on Transcriptome Analysis of a Stomatitis Initiation Stage Model.
- 6 : Collaborative research fund from Earth Co. (Continuance): Mutsumi Miyauchi (Study on oral disease)
- 7 : Donated fund for Hiroshima Prefecture tumor registration business (Continuance): Mutsumi Miyauchi (Study on diagnosis for oral diseases)
- 8 : Donated fund from Mitsubishi-Mihara Hospital (Continuance): Mutsumi Miyauchi (Study on diagnosis for oral disease)

(5) Academic Awards

- 1 : Okamoto K: Best Oral presentation Award: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons
- 2 : Sakiko Yamane: Student Poster award: The 34th Annual Meeting of the Japanese Society of Oral

Pathology (Osaka)

3 : Ayako Nakashima: The Second Place Award: 2023 JDA Student Clinician Research Program

(6) Patents

- 1 : Shiba F, Bono H, Tamura K, Miyauchi M: Patent for oral inflammation control (Application No. 2023-097198) (Applicant: Hiroshima University, Earth Corporation)
- 2 : Shiba F, Bono H, Tamura K, Miyauchi M: Patent for oral inflammation control (Application No. 2023-097197) (Applicant: Hiroshima University, Earth Corporation)
- 3 : Shiba F, Asai R, Miyauchi M: Patent for oral inflammation control (Application No. 2023-142274) (Applicant: Hiroshima University, Earth Corporation)

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Department of Bacteriology

(1) Staff and Students

Professor: Hitoshi Komatsuzawa
 Associate Professor: Miki Matsuo
 Assistant Professor: Le Nguyen Tra Mi
 Researcher: Keiko Tsuruda, Ikue Hayashi
 Graduate Student: Yoshimasa Yasutomi

(2) Main Research Activities

- 1: Isolation and characterization of drug-resistant bacteria
- 2: Elucidation of virulence and drug resistance factors of pathogenic bacteria
- 3: Search for novel antimicrobial susceptibility factors
- 4: Elucidation of the mechanisms of oral microbiome formation
- 5: Bacteriophage research

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Isolation of *Streptococcus mutans* temperate bacteriophage with broad killing activity to *S. mutans* clinical isolates. Sugai K, Kawada-Matsuo M, Nguyen-Tra Le M, Sugawara Y, Hisatsune J, Fujiki J, Iwano H, Tanimoto K, Sugai M, Komatsuzawa H. iScience. 14;26(12):108465, 2023.
- 2: Complete genome sequence of cfr(B)-carrying *Enterococcus raffinosus* isolated from bile in a patient in Japan. Ishida-Kuroki K, Hisatsune J, Segawa T, Sugawara Y, Masuda K, Tadera K, Kashiya S, Yokozaki M, Le MN, Kawada-Matsuo M, Ohge H, Komatsuzawa H, Sugai M. J Glob Antimicrob Resist. 34:43-45, 2023.
- 3: Comprehensive Analysis of Bacteriocins Produced by the Hypermucoviscous *Klebsiella pneumoniae* Species Complex. Le MN, Nguyen TH, Trinh VM, Nguyen TP, Kawada-Matsuo M, Kayama S, Sugai M, Komatsuzawa H. Microbiol Spectr. 15;11(3):e0086323, 2023.
- 4: Complete genome sequence of *optrA*-carrying *Enterococcus faecalis* isolated from open pus in a Japanese patient. Segawa T, Hisatsune J, Ishida-Kuroki K, Sugawara Y, Masuda K, Tadera K, Kashiya S, Yokozaki M, Le MN, Kawada-Matsuo M, Ohge H, Komatsuzawa H, Sugai M. J Glob Antimicrob Resist. 33:276-278, 2023.
- 5: Disinfectant Susceptibility of Third-Generation-Cephalosporin/Carbapenem-Resistant Gram-Negative Bacteria Isolated from the Oral Cavity of Residents of Long-Term-Care Facilities. Haruta A, Kawada-Matsuo M, Le MN, Yoshikawa M, Kajihara T, Yahara K, Kitamura N, Kutsuno S, Arai C, Takeuchi M, Sugawara Y, Hisatsune J, Tsuga K, Ohge H, Sugai M, Komatsuzawa H. Appl Environ Microbiol. 31;89(1):e0171222, 2023.
- 6: Different CprABC amino acid sequences affect nisin A susceptibility in *Clostridioides difficile* isolates. Ide N, Kawada-Matsuo M, Le MN, Hisatsune J, Nishi H, Hara T, Kitamura N, Kashiya S, Yokozaki M, Kawaguchi H, Ohge H, Sugai M, Komatsuzawa H. PLoS One. 2023 Jan 20;18(1):e0280676.
- 7: Oral and Rectal Colonization by Antimicrobial-Resistant Gram-Negative Bacteria and Their Association with Death among Residents of Long-Term Care Facilities: A Prospective, Multicenter, Observational, Cohort Study. Kajihara T, Yahara K, Yoshikawa M, Haruta A, Kawada-Matsuo M, Le MN, Arai C, Takeuchi M, Kitamura N, Sugawara Y, Hisatsune J, Kayama S, Ohta K, Tsuga K, Komatsuzawa H, Ohge H, Sugai M. Gerontology. 69(3):261-272, 2023.

B) Review

C) Publications

D) Other Publications

E) Presentations at Scientific Meetings

- 1: Complete sequences of bacteriocin plasmids of *S. epidermidis* and their antibacterial activity: Miki Matsuo, Mi Nguyen-Tra Le, Junzo Hisatsune, Motoyuki Sugai, Hitoshi Komatsuzawa: The 95th Annual Meeting of Japanese Society for Bacteriology (Tokyo), 2022.
- 2: Analysis of antimicrobial susceptibility and drug resistance genes of Enterococci. Ayumi Fujii1, Miki Matsuo, Kanako Masuda, Junzo Hisatsune, Kayoko Tadera, Seiya Kashiyama, Michiya Yokozaki, Tomonao Aikawa, Hiroki Ohge, Hitoshi Komatsuzawa: The 96th Annual Meeting of Japanese Society for Bacteriology (Himeji), 2023.
- 3: Isolation and characterization of drug-resistant bacteria from nasal and oral cavities. Tomoki Kawayanagi, Miki Matsuo, Mi Nguyen Tra Le, Toru, Takeshita, Junzo Hisatsune, Satoru Kusaka, Ryota Nomura, Hideki Shiba2, Motoyuki Sugai, Hitoshi Komatsuzawa: The 96th Annual Meeting of Japanese Society for Bacteriology (Himeji), 2023.
- 4: Different CprABC amino acid sequences affect nisinA susceptibility in *Clostridioides difficile*. Noriaki Ide, Miki Matsuo, Mi Nguyen Tra Le, Junzo Hisatsune, Toshinori Hara, Seiya Kashiyama, Michiya Yokozaki, Hiroki Ohge, Motoyuki Sugai, Hitoshi Komatsuzawa: The 96th Annual Meeting of Japanese Society for Bacteriology (Himeji), 2023.
- 5: Comprehensive analysis of bacteriocins produced by *Klebsiella pneumoniae* complex. Mi Nguyen-Tra Le1, Thao Huu-Huong Nguyen, Tam Phuc-Bao Nguyen, Van Minh Trinh, Miki Matsuo, Shizuo Kayama, Motoyuki Sugai, Hitoshi Komatsuzawa: The 96th Annual Meeting of Japanese Society for Bacteriology (Himeji), 2023.
- 6: A Novel Bacteriocin Resistance Mechanism Mediated by Cell Surface Charge in *Staphylococcus aureus*. Yujin Suzuki, Miki Kawada-Matsuo, Mi Nguyen Tra Le, Hitoshi Komatsuzawa: The 96th Annual Meeting of Japanese Society for Bacteriology (Himeji), 2023.
- 7: Disinfectant Susceptibility of Oral Cephalosporin/Carbapenem-Resistant Gram-Negative Bacteria. Azusa Haruta, Miki Kawada-Matsuo, Mineka Yoshikawa, Maho Takeuchi, Mi Le Nguyen Tra, You Sugawara, Toshiki Kajihara, Hiroki Ohge, Kazuhiro Tsuga, Hitoshi Komatsuzawa: The 96th Annual Meeting of Japanese Society for Bacteriology (Himeji), 2023.
- 8: Analysis of two ABC transporters responsible for Nukacin resistance. Naoki Sadaoka, Miki Matsuo, NGUYEN TRA MI LE, Hideki Shiba, Hitoshi Komatsuzawa: The 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 9: Analysis of the susceptibility to antibacterial agents and the genes responsible for vancomycin resistance in Enterococcus isolates from inpatients at Hiroshima University Hospital. Ayumi Fujii, Miki Matsuo, Le Nguyen Tra Mi, Hitoshi Komatsuzawa: The 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 10: Isolation of bacteriophage which shows antibacterial activity against *Streptococcus mutans*. Katsuhito Sugai, Miki Matsuo, Le-Nguyen-Tra Mi, Hitoshi Komatsuzawa: The 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 11: Isolation and characterization of drug resistant bacteria isolated from oral and nasal cavity. Tomoaki Kawayanagi, Miki Matsuo, Le Nguyen-Tra Mi, Mikari Asakawa, Toru Takeshita, Hideki Shiba, Hitoshi Komatsuzawa: The 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 12: Analysis of bacteriocin Pep5 from *Staphylococcus epidermidis* and validation of Pep5 resistance factors via bacterial surface charge in *Staphylococcus aureus*. Yujin Suzuki, Miki Matsuo, Mi Nguyen-Tra Le, Hitoshi Komatsuzawa: The 66th Japan Staphylococcal Conference (Sendai), 2023.

F) Special lectures in academic meetings

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

- 1: Japan Agency for Medical Research and Development (AMED): Miki Kawada-Matsuo, Research and development on inhibition of the establishment of drug-resistant bacteria in the oral and respiratory tracts., 23fk0108606h0001, 7,500 千円
- 2: Grant-in-Aid for Scientific Research (C) : Miki Kawada-Matsuo: Fundamental research to establish

a risk diagnostic method for oral-derived highly multidrug-resistant *Staphylococcus aureus* 21K09858. 1,430 千円

- 3: Le Nguyen Tra Mi, Grant-in-Aid for Early-Career Scientists from the Ministry of Education, Culture, Sports, Sciences, and Technology of Japan. Temperature-driven regulation system of hypermucoviscosity in carbapenem-resistant *Klebsiella pneumoniae*. Grant No. 21K16947. 1,430 千円
- 4: Grant-in-Aid for Scientific Research (B) : Hitoshi Komatsuzawa: Involvement of Bacteriophages in the Formation of Oral Bacterial Flora by Phageome Analysis. 23H03074 5,720 千円

(5) Academic Awards, etc.

(6) Patents

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Department of Cellular and Molecular Pharmacology

(1) Staff and Students

Professor: Yukio Ago
 Assistant Professor: Satoshi Asano
 Graduate Student: Eiji Imado (Dental Anesthesiology) (~March)
 Kohei Jino
 Ami Ono (Orthodontics and Craniofacial Developmental Biology)
 Teru Uehara (Oral Oncology) (October~)

(2) Main Research Activities

- 1: Studies on the mechanisms of action of the drugs in depression, schizophrenia, anxiety, and neurodegenerative diseases.
- 2: Studies on the roles of gene-environment interactions in brain development.
- 3: Studies on the roles of cell migration, adhesion, and proliferation in biological and pathological processes.

(3) Research Achievements

A) Original Papers

- 1: Akter S, Shimba A, Ikuta K, Al Mahmud R, Yamada S, Sasanuma H, Tsuda M, Sone M, Ago Y, Murai K, Tanaka H, Takeda S. Physiological concentrations of glucocorticoids induce pathological DNA double-strand breaks.
Genes to Cells 28: 53–67, 2023.
- 2: Asano S, Ono A, Sakamoto K, Hayata-Takano A, Nakazawa T, Tanimoto K, Hashimoto H, Ago Y. Vasoactive intestinal peptide receptor 2 signaling promotes breast cancer cell proliferation by enhancing the ERK pathway.
Peptides 161: 170940, 2023.
- 3: Ago Y, Van C, Condro MC, Hrcir H, Diep AL, Rajbhandari AK, Fanselow MS, Hashimoto H, MacKenzie-Graham AJ, Waschek JA. Overexpression of VIPR2 in mice results in microencephaly with paradoxical increased white matter volume.
Experimental Neurology 362: 114339, 2023.
- 4: Mukai A, Irifune M, Shimizu Y, Doi M, Kikuchi Y, Katayama S, Oue K, Yoshida M, Ago Y, Okada Y, Morioka N, Nakata Y, Sakai N. N-methyl-D-aspartate receptors and glycinergic transmission, respectively, mediate muscle relaxation and immobility of pentobarbital in mice.
Neuroscience Letters 802: 137175, 2023.
- 5: Ishimoto K, Konishi Y, Otani S, Maeda S, Ago Y, Hino N, Suzuki M, Nakagawa S. Suppressing effect of black tea polyphenol theaflavins in a mouse model of ovalbumin-induced food allergy.
Journal of Natural Medicines 77(3): 604–609, 2023.
- 6: Sakamoto K, Kittikulsuth W, Miyako E, Steeve A, Ishimura R, Nakagawa S, Ago Y, Nishiyama A. The VIPR2-selective antagonist KS-133 changes macrophage polarization and exerts potent anti-tumor effects as a single agent and in combination with an anti-PD-1 antibody.
PLoS One 18(7): e0286651, 2023.
- 7: Ishida E, Furusho H, Renn TY, Shiba F, Chang HM, Oue H, Terayama R, Ago Y, Tsuga K, Miyauchi M. Mouse maternal odontogenic infection with *Porphyromonas gingivalis* induces cognitive decline in offspring.
Frontiers in Pediatrics 11: 1203894, 2023.

B) Review

- 1: Ago Y, Yokoyama R, Asano S, Hashimoto H. Roles of the monoaminergic system in the antidepressant effects of ketamine and its metabolites.
Neuropharmacology 223: 109313, 2023.

- 2: Ago Y, Asano S. A new method for assessing depressive-like behaviors in female mice. **Nihon Yakurigaku Zasshi** 158(1): 35–38, 2023.
- 3: Ago Y, Asano S, Sakamoto K. Development of the vasoactive intestinal peptide receptor 2 (VIPR2) antagonist peptide for the treatment of schizophrenia. **Nihon Yakurigaku Zasshi** 158(3): 242–245, 2023.

C) Publications

None

D) Other Publications

None

E) Presentations at Scientific Meetings

International conference

- 1: Kana Oue, Yusuke Morioka, Eiji Imado, Tetsuya Tamura, Yosuke Yamawaki, Kazuhisa Ouhara, Mitsuhiro Yoshida, Takashi Kanematsu, Yukio Ago. Periodontal infection in diet-induced obesity causes cognitive impairment associated with microglial activation. IAGG Asia-Oceania Regional Congress 2023, Yokohama, June 12–15, 2023.
- 2: Yukio Ago, Allan J. MacKenzie-Graham, Hitoshi Hashimoto, James A. Waschek. Overexpression of VPAC2 receptors in the embryonic mouse central nervous system causes brain atrophy, increased white matter, and impaired sensorimotor gating. The 8th Congress of the Asian College of Neuropsychopharmacology (AsCNP), Xi'an, China, September 22–24, 2023.
- 3: Tomoya Takemoto, Kohei Kitagawa, Kazuki Nagayasu, Kaoru Seiriki, Atsuko Hayata-Takano, Atsushi Kasai, Yukio Ago, Kazuhiro Takuma, Daisuke Mori, Norio Ozaki, Ryota Hashimoto, Hitoshi Hashimoto, Takanobu Nakazawa. Oxytocin restores abnormal social behavior in a mouse model of 3q29 microdeletion. The 53rd Annual Meeting of the Society for Neuroscience (Neuroscience 2023), Washington, D.C., USA, November 11–15, 2023.
- 4: Rei Yokoyama, Yukio Ago, Masato Tanuma, Yuto Shimazaki, Kaoru Seiriki, Takanobu Nakazawa, Kenji Hashimoto, Atsushi Kasai, Hitoshi Hashimoto. (R)-ketamine enhances anterior insular cortex activity associated with social cognition. The 53rd Annual Meeting of the Society for Neuroscience (Neuroscience 2023), Washington, D.C., USA, November 11–15, 2023.
- 5: Hiroki Ueno, Yusuke Iyanaga, Yuta Hara, Jin Ohkubo, Yuka Nakai, Kaoru Seiriki, Shun Yamaguchi, Yukio Ago, Kazuhiro Takuma, Hitoshi Hashimoto, Atsushi Kasai. Network centralities of prefrontal and somatosensory cortices are decreased in a mouse model of developmental disorders. The 53rd Annual Meeting of the Society for Neuroscience (Neuroscience 2023), Washington, D.C., USA, November 11–15, 2023.

Domestic conference

- 1: Yukio Ago, Mei Yamada, Tatsunori Miyaoka, Lu Chen, Kenji Ishimoto, Nobumasa Hino, Shinsaku Nakagawa, Kotaro Sakamoto, Satoshi Asano. Development of mid-size molecule inhibitors of VIPR2 for the treatment of psychiatric disorders. The 143rd Annual Meeting of the Pharmaceutical Society for Japan, Sapporo, March 25–28, 2023.
- 2: Tomoya Takemoto, Masayuki Baba, Kohei Kitagawa, Kazuki Nagayasu, Kaoru Seiriki, Atsuko Hayata, Atsushi Kasai, Yukio Ago, Kazuhiro Takuma, Ryota Hashimoto, Hitoshi Hashimoto, Takanobu Nakazawa. Oxytocin ameliorates impaired social behavior in a mouse model of 3q29 deletion syndrome. The 143rd Annual Meeting of the Pharmaceutical Society for Japan, Sapporo, March 25–28, 2023.
- 3: Ami Ono, Daichi Koan, Tatsunori Miyaoka, Satoshi Asano, Shinsaku Nakagawa, James A. Waschek, Kotaro Tanimoto, Yukio Ago. Role of the VPAC2 receptor overactivation implicated in schizophrenia susceptibility. The 56th Annual Meeting of the Hiroshima University Dental Society, Hiroshima, Jun 3, 2023.
- 4: Yukio Ago, Allan J. MacKenzie-Graham, Hitoshi Hashimoto, James A. Waschek. Overexpression of

- VPAC2 receptors in the embryonic central nervous system of mice causes brain atrophy, increased white matter and impaired sensory information processing. The 143rd Kinki Branch Meeting of the Japanese Pharmacological Society, Nagoya, Jun 24, 2023.
- 5: Satoshi Asano, Ami Ono, Kotaro Sakamoto, Atsuko Hayata, Takanobu Nakazawa, Kotaro Tanimoto, Hitoshi Hashimoto, Yukio Ago. Vasoactive intestinal peptide receptor 2 signaling is involved in breast cancer cell growth via the ERK pathway. The 143rd Kinki Branch Meeting of the Japanese Pharmacological Society, Nagoya, Jun 24, 2023.
 - 6: Hiroki Ueno, Yusuke Iyanaga, Yuta Hara, Jin Ohkubo, Yuka Nakai, Kaoru Seiriki, Shun Yamaguchi, Yukio Ago, Kazuhiro Takuma, Hitoshi Hashimoto, Atsushi Kasai. Brain-wide IEG map and deep learning-based behavioral analysis reveal altered neural networks related to social deficits. Joint conference of the 64th Annual Meeting of the Japanese Society of Neuropathology and the 66th Annual Meeting of the Japanese Society for Neurochemistry, Kobe, July 6–8, 2023.
 - 7: Yukio Ago, Kotaro Sakamoto, Satoshi Asano. A new mid-size molecule drug for the treatment of schizophrenia targeting at the VPAC2 receptor. The 46th Annual Meeting of the Japan Neuroscience Society, Sendai, Aug 1–4, 2023.
 - 8: Takeru Tahara, Eiji Imado, Daisuke Uta, Satoshi Asano, Kazuhiro Takuma, Toshiaki Kume, Yaichiro Kotake, Yukio Ago. In utero exposure to the antiepileptic drug valproic acid induces a long-lasting hyperalgesia and allodynia associated with central sensitization. Forum 2023 Pharmaceutical Health Sciences-Environmental Toxicology, Hiroshima, September 12–13, 2023.
 - 9: Satoshi Asano, Ami Ono, Yukio Ago. Functional significance of dimerization of the neuropeptide receptor VIPR2. The 65th Annual Meeting of Japanese Association for Oral Biology, Tokyo, September 16–18, 2023.
 - 10: Ami Ono, Satoshi Asano, Yukio Ago. Development of a mouse model of neuron-specific VIPR2 overexpression to uncover the schizophrenia susceptibility. The 65th Annual Meeting of Japanese Association for Oral Biology, Tokyo, September 16–18, 2023.
 - 11: Eiji Imado, Tatsuhito Nakatsuka, Yukio Ago, Mitsuhiro Yoshida. Role of HDAC inhibition in allodynia induced by prenatal valproic acid exposure. The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology, Nagasaki, October 6–8, 2023.
 - 12: Ami Ono, Daichi Koan, Tatsunori Miyaoka, Satoshi Asano, Hitoshi Hashimoto, Shinsaku Nakagawa, Kotaro Tanimoto, Yukio Ago. Development of a mouse model of neuron-specific VIPR2 overexpression to elucidate vulnerability in the development of schizophrenia. The 2nd Hiroshima University Neuroscience Seminar, Hiroshima, October 10, 2023.
 - 13: Ami Ono, Eiji Imado, Yukio Ago. Role of the VPAC2 receptor overactivation implicated in schizophrenia susceptibility: development of neuron-specific human VPAC2 receptor overexpressing mice. The 40th Annual Meeting of the Japanese Society for Disability and Oral Health, Sapporo, December 10–12, 2023.
 - 14: Eiji Imado, Ami Ono, Yukio Ago, Mitsuhiro Yoshida. Prenatal exposure to histone deacetylase inhibitors causes mechanical allodynia associated with spinal microglial activation. The 40th Annual Meeting of the Japanese Society for Disability and Oral Health, Sapporo, December 10–12, 2023.
 - 15: Kotaro Sakamoto, Satoshi Asano, Yukio Ago, Takatsugu Hirokawa. Elucidation of the binding mechanism of the bicyclic peptide KS-133 to the class B GPCR: VIPR2 and discovery of functional S-S binding. The 51st Symposium of Structure-Activity Relationships, Tokyo, November 20–21, 2023.
 - 16: Satoshi Asano, Ami Ono, Teru Uehara, Kotaro Tanimoto, Souichi Yanamoto, Yukio Ago. Functional significance of neuropeptide receptor VIPR2 dimerisation in breast cancer growth and metastasis. The 40th Forum for Drug Discovery and Pharmacology in Okayama (virtual presentation), December 2, 2023.
 - 17: Zihao Jin, Tatsunori Miyaoka, Ryosuke Yamauchi, Shuto Takeuchi, Takuya Kawanai, Lu Chen, Kaiga Katahira, Kenji Ishimoto, Nobumasa Hino, Atsuko Hayata, Takanobu Nakazawa, Kazuhiro Takuma, Shinsaku Nakagawa, Hitoshi Hashimoto, Yukio Ago. Involvement of connective tissue growth factor in the ameliorative effect of clozapine, an atypical antipsychotic, on cognitive dysfunction. The 97th Annual Meeting of the Japanese Pharmacological Society, Kobe, December 14–16, 2023.
 - 18: Kaiga Katahira, Lu Chen, Tatsunori Miyaoka, Kohei Kitagawa, Shuto Takeuchi, Mei Yamada, Zihao Jin, Kenji Ishimoto, Tomohito Tsukamoto, Nobumasa Hino, Takanobu Nakazawa, Hitoshi Hashimoto, Shinsaku Nakagawa, Yukio Ago. Altered ultrasonic vocalizations and impaired social behaviors in a mouse model of copy number variation in the neuropeptide receptor VIPR2 gene. The 97th Annual Meeting of the Japanese Pharmacological Society, Kobe, December 14–16, 2023.
 - 19: Yukio Ago, Takeru Tahara, Eiji Imado, Daisuke Uta, Kazuhiro Takuma, Toshiaki Kume, Yaichiro Kotake, Satoshi Asano. In utero exposure to valproic acid causes central sensitization and increased

pain sensitivity. The 44th Annual Scientific Meeting of the Japanese Society of Clinical Pharmacology and Therapeutics, Kobe, December 14–16, 2023.

F) Symposium and Special lectures in academic meetings

- 1: Yukio Ago. Regulation of cancer migration by VIP–VPAC2 receptor signaling. Okinawa Institute of Science and Technology (OIST) lecture, Okinawa, February 15, 2023.
- 2: Yukio Ago. VIPR2 copy number variants as a risk factor for schizophrenia. Okinawa Institute of Science and Technology (OIST) seminar, Okinawa, February 15, 2023.
- 3: Yukio Ago. Challenges and new directions for drug discovery in the pharmacological treatment of schizophrenia. Special lecture: School of Pharmaceutical Sciences, Wakayama Medical University, Wakayama, May 15, 2023.
- 4: Yukio Ago. Role of the brain opioid system in regulation of social behavior. Joint conference of the 64th Annual Meeting of the Japanese Society of Neuropathology and the 66th Annual Meeting of the Japanese Society for Neurochemistry, Kobe, July 6–8, 2023.
- 5: Yukio Ago. How Drugs Affect the Brain and Mind. Special lecture: Graduate School of Pharmaceutical Sciences, Osaka University, Osaka, July 24, 2023.
- 6: Yukio Ago. New possibilities for low-dose opioids – the role of μ -receptors in regulating social behavior. The 42nd Annual Meeting of Japanese Narcotics Research Conference, Tokyo, September 2–3, 2023.
- 7: Yukio Ago. Novel drug target molecules for schizophrenia: development of VPAC2 receptor antagonist peptides. The 53rd Annual Meeting of the Japanese Society of Neuropsychopharmacology (JSNP), Tokyo, September 7–9, 2023.
- 8: Yukio Ago. Modeling VIPR2 linkage to schizophrenia and developing antipsychotic medication. Taiwan Society of Biological Psychiatry and Neuropsychopharmacology (TSBPN) 2023 Annual Meeting, Taipei, Taiwan, September 16, 2023.
- 9: Yukio Ago. Modulation of social behavior by pain regulatory molecules. Emotion Research Meeting 2023 / National Institute for Physiological Sciences (NIPS) Research Meeting, Okazaki, September 25–26, 2023.
- 10: Yukio Ago. Frontline of drug development for the treatment of psychiatric and developmental disorders. The 3rd Postgraduate Workshop of the School of Pharmaceutical Sciences, Osaka University, in 2023, Osaka, October 14, 2023.
- 11: Yukio Ago. Elucidation of pathological mechanism and drug development for schizophrenia by focusing on rare variants. Special lecture: Faculty of Engineering, University of Toyama, November 24, 2023.
- 12: Yukio Ago. Toward elucidation of the pathological basis of autism spectrum disorder and drug discovery. Hiroshima University Dental School Alumni Association, Hiroshima Branch, Academic Lecture Meeting, Hiroshima, December 9, 2023.
- 13: Satoshi Asano, Kotaro Sakamoto, Yukio Ago. A novel regulatory mechanism of breast cancer cell migration and proliferation via the neuropeptide receptor VIPR2. The 97th Annual Meeting of the Japanese Pharmacological Society, Kobe, December 14–16, 2023.
- 14: Yukio Ago. Potential role of connective tissue growth factor in overcoming treatment-resistant schizophrenia. The 97th Annual Meeting of the Japanese Pharmacological Society, Kobe, December 14–16, 2023.

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

- 1: Translational Research Grant Seeds A (TR Core Center at Osaka University) from Japan Agency for Medical Research and Development (AMED): Yukio Ago (Principal Investigator, Continuation), Grant Number: A-194
- 2: Grant-in-Aid for Scientific Research (B) from Japan Society for the Promotion of Science (JSPS): Yukio Ago (Principal Investigator, Continuation), Grant Number: 20H03392
- 3: Grant-in-Aid for Scientific Research (A) from Japan Society for the Promotion of Science (JSPS): Yukio Ago (Co-Investigator, New), Grant Number: 23H00450
- 4: Grant-in-Aid for Scientific Research (C) from Japan Society for the Promotion of Science (JSPS): Yukio Ago (Co-Investigator, New), Grant Number: 23K09183
- 5: Grant-in-Aid for Scientific Research (C) from Japan Society for the Promotion of Science (JSPS): Yukio Ago (Co-Investigator, Continuation), Grant Number: 21K10139

- 6: Grant-in-Aid for Scientific Research (C) from Japan Society for the Promotion of Science (JSPS): Satoshi Asano (Principal Investigator, New), Grant Number: 23K09138
- 7: Collaborative Research Grant from Mitsui Norin Co., Ltd. (Japan): Yukio Ago (Principal Investigator, New)
- 8: Collaborative Research Grant from ICHIMARU PHARCOS Co., Ltd. (Japan): Yukio Ago (Principal Investigator, Continuance)
- 9: Research Grant from the Hiroshima University Fund “Nozomi H Foundation” subsidy for the promotion of cancer treatment research (Japan): Satoshi Asano (Principal Investigator, New)

(5) Academic Awards

- 1: Ami Ono: Young Investigator Award of the Hiroshima University Dental Society. The 56th Annual Meeting of the Hiroshima University Dental Society, Hiroshima, Jun 3, 2023.
- 2: Yukio Ago: TSBPN-JSNP Academic Exchange Award. Taiwanase Society of Biological Psychiatry and Neuropsychopharmacology (TSBPN) 2023 Annual Meeting, September 16, 2023.
- 3: Yukio Ago: Best Poster Award. The 8th Congress of the Asian College of Neuropsychopharmacology (AsCNP), September 23, 2023.

(6) Patents

- 1: Yukio Ago, Satoshi Asano, Kotaro Sakamoto: VIPR2 antagonist peptide for suppressing cancer metastasis (Patent Number: P7339471, Registration date: August 28, 2023) (Names of Applicants: Hiroshima University, Ichimaru Pharcos Co. Ltd.)
- 2: Kotaro Sakamoto, Eijiro Miyako, Yukio Ago, Shinsaku Nakagawa: Compositions (Japanese Patent Application Number: #2023-223187, Application date: December 28, 2023) (Names of Applicants: Ichimaru Pharcos Co. Ltd., Japan Advanced Institute of Science and Technology, Hiroshima University, Osaka University)

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Department of Biomaterials

(1) Staff and Students

Professor:	Koichi Kato
Assistant Professor:	Isao Hirata, Archana Mootha
Research Collaborator:	Ayana Nakano
Graduate Student:	Fumika Abe, Karina Erda, Yenny Yustisia, Hengky Ardhiyanto
Undergraduate student:	Shiina Pasanen, Tamamo Matsuyama, Shiina Pasanen Kanta Asano, Hinami Miyashita, Fumino Futami, Airi Kato, Indira Widyantoro

(2) Main Research Activities

- 1: Biomaterials and biodevices for regenerative medicine
- 2: Study on the interactions between biological systems and biomaterial surfaces
- 3: Developing novel approaches for disease treatment with biomaterials

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: F. Abe, A. Nakano, I. Hirata, K. Tanimoto, K. Kato: Structure and function of engineered stromal cell-derived factor-1 α . Dent. Mater. J., in press

B) Review

- 1: A. Mootha: Is there a similarity in serum cytokine profile between patients with periodontitis or 2019-novel coronavirus infection? - A scoping review. Biology, 12:550 (2023)
- 2: K. Kato, K. Tanimoto: Internationalization of dental education at Hiroshima University. The Journal of Japanese Dental Education Association, in press

C) Publications

- 1: K. Kato: Standard Dental Science and Engineering, Chapter 4: Safety and Compatibility of Biomaterials (7th ed., 3rd pr.), Y. Nakajima, T. Miyazaki, T. Yoneyama, Gakken Shoin, in press.
- 2: B. Joseph, A. Mootha, V. K. Sweet, S. Anil: Oral health and zoonotic diseases. Current Topics in Zoonoses, A. J. Rodriguez-Morales ed., 2023, IntechOpen, London, UK
- 3: K. Kato: Bioengineering challenges in regenerative medicine: Biofunctional materials design. In Biomedical Engineering: Imaging Systems, Electric Devices, and Medical Materials, A. Miyauchi, H. Kagechika, eds., Jenny Stanford Publishing, Singapore, in press
- 4: A. Nakano, K. Kato: Regenerative nanotechnology: Engineered surfaces for stem cell production. Nanomedicine, N.Gu ed., 2023, Springer, Singapore. pp. 605–622

D) Presentations at Scientific Meetings

- 1: F. Abe A. Nakano, I. Hirata, K. Tanimoto K. Kato: Structure and function of engineered stromal cell-derived factor-1 α . The 56th Annual Meeting of Hiroshima University Dental Society(June 3, 2023, Hiroshima)

F) Invited Lectures

- 1: K. Kato: Interdisciplinary approaches for regenerative dentistry. 7th JSMiD and 1st COMiD

(December 2–4, 2024, Surabaya)

- 2: K. Kato, F. Abe, A. Nakano, I. Hirata, K. Tanimoto: Structure and function of chimeric proteins. 16th International Symposium on Nanomedicine (ISNM2023) (November 20–22, 2023, Osaka).
- 3: K. Kato: Bioinspired surfaces designed for stem cell expansion. European Materials Research Society (E-MRS) 2023 Spring Meeting (29 May to 2 June 2023, Strasbourg)
- 4: K. Kato: Selective and rapid proliferation of stem cells on growth factor-tethered surfaces. 2023 ISOMRM & BCRS (August 31–September 3, 2023, Taipei)

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

- 1: Grant-in-Aid for Scientific Research (C), Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Koichi Kato): Koichi Kato, Designing biomaterials for in situ tongue regeneration. 23K09231. 1,500,000 JPY
- 2: Grant-in-Aid for Scientific Research (C), Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Koichi Kato): Isao Hirata, Designing biomaterials for in situ tongue regeneration. 23K09231. 200,000 JPY
- 3: Grant-in-Aid for Scientific Research (C), Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Isao Hirata): Isao Hirata, Three-dimensional molding and functional control of carbonate-apatite composite scaffolds. 23K09232. 750,000 JPY
- 4: Grant-in-Aid for Scientific Research (C), Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Isao Hirata): Koichi Kato, Three-dimensional molding and functional control of carbonate-apatite composite scaffolds. 23K09232. 50,000 JPY
- 5: Grant-in-Aid for Early-Career Scientists, Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Mootha Archana): Mootha Archana, Bio-mimicry of paracellular surface on implant neck surface by immobilizing functional claudin peptide to establish an epithelial seal. 22K17077. 2,080,000 JPY
- 6: Grant-in-Aid for Research Activity Start-up, Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Ayana Nakano) Ayana Nakano, Controlled release of protein factors for tissue engineering of cleft palate, 21K21014. 2,000,000 JPY
- 7: Grant-in-Aid for Scientific Research (B), Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Mikihiro Kajiya) Koichi Kato, Development of periodontal tissue regenerative allograft cell therapy by using clumps of MSCs and chondrogenic induction. 22H03275. 200,000 JPY
- 8: Grant-in-Aid for Scientific Research (C), Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Kotaro Tanimoto): Koichi Kato, Functional analysis of deciduous dental pulp stem cell-derived exosomes and application to induction of cleft palate bone regeneration. 21K10186. 169,000 JPY
- 9: Grant-in-Aid for Scientific Research (C), Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Masami Kanawa): Isao Hirata, Development of a Marker System to Predict the Differentiation Potential of Adipose-derived Mesenchymal Stem Cells. 21K09792. 100,000 JPY
- 10: Grant-in-Aid for Scientific Research (C), Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Koji Morita): Isao Hirata, Elucidation of the effects of masticatory ability on intestinal microflora and short-chain fatty acid production in persons requiring nursing care. 20K10034. 150,000 JPY
- 11: Grant-in-Aid for Scientific Research (C), Ministry of Education, Culture, Sports, Science and Technology, JSPS (PI: Saiji Shimoe): Isao Hirata, Development of bio-friendly polyetheretherketone (PEEK) composite restorations. 21K10002. 100,000JPY

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- **Department of Periodontal Medicine**
- **Division of Preventive and Restorative Dentistry Department of Periodontics**

(1) Staffs and Students

Professor: Noriyoshi Mizuno

Assistant Professor (clinical associate professor): Kazuhisa Ouhara,
Tomoyuki Iwata (August-), Shinji Matsuda (August-)

Assistant Professor: Shinya Sasaki, Yuta Hamamoto

Assistant Professor (Special Appointment): Yuri Taniguchi

Resident: Mizuho Kittaka (studying abroad), Misako Tari, Tetsuya Tamura, Ai Okanobu (-July),

Tasuku Takemura (-August), Takumi Memida (-July), Hisakatsu Sone (January)

Graduate Student: Shin Morimoto, Hiroki Yoshii, Mai Yoshino, Tomoya Ueda, Shoko Kohno, Fuminori Nakashima, Yurika Ninomiya, Ryouyuke Fujimori, Keisuke Yasuda

Research Student: Masahiko Suzukawa

Clinical Trainee: Mari Kiyota, Yoshiaki Shimasaki, Manabu Takewaki, Takuma Yanagihara, Keita Takahashi, Naoya Kubo, Saki Hatano, Tomoya Ogawa, Kazuma Suzuki, Tomose Ogawa, Takuma Tagashira

(2) Main Research Activities

- 1: Immunological and genetic 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 neurotrophins
- 4: Study on the relationship between periodontal disease and **rheumatoid arthritis**
- 5: Study on the relationship between periodontal disease and **diabetes mellitus**
- 6: Study on physiological function and differentiation of the cells derived from periodontal ligament
- 7: Study on prevention for periodontal disease
- 8: Study on **gingival hyperplasia**
- 9: Study on the relationship between periodontal disease and **scleroderma**
- 10: Study on the establishment of treatment methods for peri-implantitis

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Relationship Between Periodontitis and Atrial Fibrosis in Atrial Fibrillation: Histological Evaluation of Left Atrial Appendages
Miyauchi S, Nishi H, Ouhara K, Tokuyama T, Okubo Y, Okamura S, Miyamoto S, Oguri N, Uotani Y, Takasakio T, Katayama K, Furusho H, Miyauchi M, Takahashi S, Hiyama T, Nakano Y
JACC Clin Electrophysiol. 2023; January; 9 (1); 43-53
- 2: Regulation of osteogenesis in bone marrow-derived mesenchymal stem cells via histone deacetylase 1 and 2 co-cultured with human gingival fibroblasts and periodontal ligament cells.
Iwata T, Kaneda-Ikeda E, Takahashi K, Takeda K, Nagahara T, Kajiya M, Sasaki S, Ishida S, Yoshioka M, Matsuda S, Ouhara K, Fujita T, Kurihara H, Mizuno N
J Periodontal Res. 2023; February; 58 (1); 83-96
- 3: Extracellular Release of Citrullinated Vimentin Directly Acts on Osteoclasts to Promote Bone Resorption in a Mouse Model of Periodontitis.
Shindo S, Pierrelus R, Ikeda A, Nakamura S, Heidari A, Pastore MR, Leon E, Ruiz S, Chheda H, Khatriwala R, Kumagai T, Tolson G, Elderbashy I, Ouhara K, Han X, Hernandez M, Vardar-Sengul S, Shiba H, Kawai T
Cells. 2023; April; 8;12(8); 1109
- 4: In Situ Raman Analysis of Biofilm Exopolysaccharides Formed in Streptococcus mutans and Streptococcus sanguinis Commensal Cultures

- Pezzotti G, Ofuji S, Imamura H, Adachi T, Yamamoto T, Kanamura N, Ohgitani E, Marin E, Zhu W, Mazda O, Togo A, Kimura S, Iwata T, Shiba H, Ouhara K, Aoki T, Kawai T
Int J Mol Sci. 2023; April; 3;24(7); 6694
- 5: A Cartilaginous Construct with Bone Collar Exerts Bone-Regenerative Property Via Rapid Endochondral Ossification.
Morimoto S, Kajiya M, Yoshii H, Yoshino M, Horikoshi S, Motoike S, Iwata T, Ouhara K, Ando T, Yoshimoto T, Shintani T, Mizuno N
Stem Cell Reviews and Reports. 2023; May; 19 (6); 1812-1827
 - 6: Distinctive Biological Properties Between Mesenchymal Stem Cells Spheroids and Clumps of Mesenchymal Stem Cells/Extracellular Matrix Complexes in 3D Culture Systems
Yoshino M, Kajiya M, Yoshii H, Morimoto S, Horikoshi S, Tari M, Iwata T, Ouhara K, Ando T, Yoshimoto T, Shintani T, Mizuno N
Applied Sciences. 2023; November; 13 (23); 12790
 - 7: Relationship between CD4+ T-cell counts at baseline and initial periodontal treatment efficacy in patients undergoing treatment for HIV infection: A retrospective observational study.
Shintani T, Okada M, Iwata T, Kawagoe M, Yamasaki N, Inoue T, Nakanishi J, Furutama D, Takeda K, Ando T, Nakaoka M, Mizuno N, Fujii T, Kajiya M, Shiba H.
J Clin Periodontol. 2023; November; 50 (11); 1520-1529.
 - 8: Effect of Periodontal Treatment on Reducing Chronic Inflammation in Systemically Healthy Patients with Periodontal Disease
Matsuda S, Shintani T, Miyagawa T, Yumoto H, Komatsu Y, Dewake N, Iwata T, Nagano T, Morozumi T, Goto R, Kato S, Kitamura M, Shin K, Sekino S, Yamashita A, Yamashita K, Yoshimura A, Sugaya T, Takashiba S, Taguchi Y, Nemoto E, Nishi H, Mizuno N, Numabe Y, Kawaguchi H
The American Journal of Medicine. 2023; November; 19: S0002-9343(23)00706-4.; in press
 - 9: Periostin regulates integrin expression in gingival epithelial cells.
Hirata R, Iwata T, Fujita T, Nagahara T, Matsuda S, Sasaki S, Taniguchi Y, Hamamoto Y, Ouhara K, Kudo Y, Kurihara H, Mizuno N
J Oral Biosci. 2023; December; 2:S1349-0079(23)00190-1; Online ahead of print.
 - 10: N-glycan in the variable region of monoclonal ACPA (CCP-Ab1) promotes the exacerbation of experimental arthritis.
Kawataka M, Ouhara K, Kobayashi E, Shinoda K, Tobe K, Fujimori R, Mizuno N, Sugiyama E, Ozawa T, Kishi H
Rheumatology (Oxford). 2023; December; 1;62(12); 3968-3977.
 - 11: Mechanosignaling YAP/TAZ-TEAD axis regulates the immunomodulatory properties of mesenchymal stem cells.
Yoshii H, Kajiya K, Yoshino M, Morimoto S, Horikoshi S, Tari M, Motoike S, Iwata T, Ouhara K, Ando T, Yoshimoto T, Shintani T, Mizuno N
Stem Cell Reviews and Reports. 2023; November; Online ahead of print.
 - 12: Increasing the Apical Sizes of Root Enlarged for Root Canal Obturation Influences the Outcome of Single-Root-Canal Teeth Affected by Apical Periodontitis
Hirata-Tsuchiya S, Furutama D, Saito-Nakayama N, Naruse T, Kawayanagi T, Nishihama S, Miyata A, Shirawachi S, Sadaoka N, Wang C, Yoshida K, Nakanishi J, Matsuda S, Takeda K, Shiba H
European Endodontic Journal. 2023; ahead of print

B) Review

C) Publications

1. Risk Factors for Periodontal Disease; 4. Specifics of risk factors
Noriyoshi Mizuno, Kazuhisa Ouhara, Tomoyuki Iwata
The Periodontology 4th edition (Nagasue Shoten Inc.) 2023; February; p.40-41/48-50

D) Other Publications

1. Relationship between oral health care and blood pressure

Shinji Matsuda, Noriyoshi Mizuno
COCORO vol.3 2023 Spring (Japanese Circulation Association) 2023; March; p.12

E) Presentation at Scientific Meeting

1. YAP/TAZ mechanosignaling regulates cytoprotective factors production in mesenchymal stem cells
Hiroki Yoshii, Mai Yoshino, Mikihiro Kajiya
The 22nd Annual Meeting of the Japanese Society for Regenerative Medicine (2023 March, Kyoto)
2. The development of a bone marrow adipose tissue-like in vitro model using clumps of MSCs/ECM complexes.
Mai Yoshino, Yoshii Hiroki, Mikihiro Kajiya
The 22nd Annual Meeting of the Japanese Society for Regenerative Medicine (2023 March, Kyoto)
3. Identification of new periodontal examination to evaluate the association between periodontitis and systemic diseases~multi centered clinical study~ 2nd report.
Shinji Matsuda, Tsutomu Sugaya, Satsuki Kato, Eiji Nemoto, Yasuo Takeuchi, Keiko Yamashita, Yukihiro Numabe, Tetsuya Nishida, Yorimasa Ogata, Kitetsu Shin, Takatoshi Nagano, Toshiya Morozumi, Yasutaka Komatsu, Nanae Dewake, Ryoma Goto, Masahiro Kitamura, Yoichiro Taguchi, Shogo Takashiba, Hiromichi Yumoto, Akiko Yamashita, Yasunori Yoshinaga, Atsutoshi Yoshimura, Hiroyuki Kawaguchi
The 66th Spring Meeting of Japanese Society of Periodontology (2023 May, Takamatsu)
4. Anti-Inflammatory effects of Geniposidic acid on Porphyromonas gingivalis-induced periodontitis in mice
Tetsuya Tamura, Kazuhisa Ouhara, Tasuku Takemura, Yuri Taniguchi, Yuta Hamamoto, Ryousuke Fujimori, Mikihiro Kajiya, Shinji Matsuda, Noriyoshi Mizuno
The 66th Spring Meeting of Japanese Society of Periodontology (2023 May, Takamatsu)
5. Transplantation of clumps of MSCs / ECM complexes treated with chondrogenic / osteogenic induction promotes bone regeneration via endochondral ossification manner
Shin Morimoto, Mikihiro Kajiya, Susumu Horikoshi, Hiroki Yoshii, Mai Yoshino, Noriyoshi Mizuno
The 56th Annual Meeting of Hiroshima University Dental Society (2023 June, Hiroshima)
6. YAP/TAZ mechanosignaling regulates cytoprotective factors production in mesenchymal stem cells
Hiroki Yoshii, Mikihiro Kajiya, Shin Morimoto, Mai Yoshino, Noriyoshi Mizuno
The 56th Annual Meeting of Hiroshima University Dental Society (2023 June, Hiroshima)
7. The development of a bone marrow adipose tissue-like in vitro model using clumps of MSCs/ECM complexes.
Mai Yoshino, Mikihiro Kajiya, Shin Morimoto, Hiroki Yoshii, Noriyoshi Mizuno
The 56th Annual Meeting of Hiroshima University Dental Society (2023 June, Hiroshima)
8. The development of a bone marrow adipose tissue-like in vitro model using clumps of MSCs/ECM complexes.
Mai Yoshino, Mikihiro Kajiya, Tetsuya Yoshimoto, Shin Morimoto, Tomoyuki Iwata, Noriyoshi Mizuno
The 41st Annual Meeting of the Japanese Society for Bone and Mineral Research (2023 July, Tokyo)
9. Evaluation of the Effect of Sclerostin Deficiency on the Development of Osteonecrosis of the Jaw
Fuminori Nakashima, Shinji Matsuda, Chisa Shukunami, Noriyoshi Mizuno
The 41st Annual Meeting of the Japanese Society for Bone and Mineral Research (2023 July, Tokyo)
10. The study to identify factors associated with periodontal regeneration using rhFGF-2
Shinji Matsuda, Noriyoshi Mizuno
FY2023 Japanese Society of Periodontology Chugoku-Shikoku 3-Universities and Japanese Society of Clinical Periodontology Chugoku-Shikoku Branch Joint Training Session (2023 September, Hiroshima)
11. A cartilaginous construct with bone collar exerts bone-regenerative property via rapid endochondral ossification
Shin Morimoto, Mikihiro Kajiya, Susumu Horikoshi, Hiroki Yoshii, Mai Yoshino, Kazuhisa Ouhara, Shinji Matsuda, Tomoyuki Iwata, Shinya Sasaki, Yuta Hamamoto, Misako Tari, Yuri Taniguchi, Tetsuya Yoshimoto, Noriyoshi Mizuno
The 61th Autumn Annual Meeting of the Japanese Society of Periodontology (2023 October, Nagasaki)
12. YAP/TAZ mechanosignaling regulates cytoprotective factors production in mesenchymal stem cells

- Hiroki Yoshii, Mikihiro Kajiya, Shin Morimoto, Mai Yoshino, Susumu Horikoshi, Misako Tari, Yuri Taniguchi, Shinya Sasaki, Yuta Hamamoto, Shinji Matsuda, Tomoyuki Iwata, Kazuhisa Ouhara, Tetsuya Yoshimoto, Noriyoshi Mizuno
The 61th Autumn Annual Meeting of the Japanese Society of Periodontology (2023 October, Nagasaki)
13. The development of a bone marrow adipose tissue-like in vitro model using clumps of MSCs/ECM complexes.
Mai Yoshino, Mikihiro Kajiya, Shin Morimoto, Hiroki Yoshii, Tetsuya Yoshimoto, Susumu Horikoshi, Misako Tari, Tomoyuki Iwata, Kazuhisa Ouhara, Shinji Matsuda, Shinya Sasaki, Yuta Hamamoto, Yuri Taniguchi, Noriyoshi Mizuno
The 61th Autumn Annual Meeting of the Japanese Society of Periodontology (2023 October, Nagasaki)
 14. Promotion of reosseointegration by brain-derived neurotrophic factor (BDNF) in canine peri-implantitis model
Shoko Kono, Shinya Sasaki, Katsuhiro Takeda, Shinji Matsuda, Tomoyuki Iwata, Kazuhisa Ouhara, Noriyoshi Mizuno
The 61th Autumn Annual Meeting of the Japanese Society of Periodontology (2023 October, Nagasaki)
 15. Ligature-induced periodontitis exacerbates non-alcoholic fatty liver irrelevant to glucose intolerance or obesity
Misako Tari, Mikihiro Kajiya, Tomoyuki Iwata, Kazuhisa Ouhara, Shinji Matsuda, Shinya Sasaki, Noriyoshi Mizuno
The 61th Autumn Annual Meeting of the Japanese Society of Periodontology (2023 October, Nagasaki)
 16. Masticatory dysfunction in patients with diabetic neuropathy
Yuta Hamamoto, Kazuhisa Ouhara, Tsuyoshi Miyagawa, Mikihiro Kajiya, Shinji Matsuda, Shinya Sasaki, Tomoyuki Iwata, Noriyoshi Mizuno
The 61th Autumn Annual Meeting of the Japanese Society of Periodontology (2023 October, Nagasaki)
 17. Efficacy of Periodontal Disease Screening Assessment using the Oral Bacteria Detection Device Orcoa
Sora Tanaka, Shinya Sasaki, Honoka Maeda, Reiko Aimi, Noriyoshi Mizuno, Hiroki Nikawa
The 61th Autumn Annual Meeting of the Japanese Society of Periodontology (2023 October, Nagasaki)
 18. Elucidation of the mechanism of periodontal disease suppression by anti-IL-6 receptor antibodies in a mouse model of *P. gingivalis* infection
Ryosuke Fujimori, Kazuhisa Ouhara, Noriyoshi Mizuno
7th JSMID and 1st COMID 2023 (2023 November, Surabaya, Indonesia)
 19. Evaluation of oral function and oral environment in hemophilia patients taking anti-HIV drugs
M. Okada, T. Shintani, M. Kawagoe, T. Iwata, N. Yamazaki, T. Fujii, H. Shiba
The 37th Annual Meeting of the Japanese Society for AIDS Research (2023 December, Kyoto)

F) Special lectures in academic meetings

1. keynote speech
Reconsidering aggressive periodontitis - What we know and what we don't know -
Noriyoshi Mizuno
FY2023 Japanese Society of Periodontology Chugoku-Shikoku 3-Universities and Japanese Society of Clinical Periodontology Chugoku-Shikoku Branch Joint Training Session (2023 September, Hiroshima)
2. Symposium
Oral infection (periodontal disease, peri-implantitis) and Systemic Disease
Kazuhisa Ouhara
7th JSMID and 1st COMID 2023 (2023 November, Surabaya, Indonesia)

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

1. Grants-in aid for scientific research C: Noriyoshi Mizuno: 22K10000
2. Grants-in aid for scientific research C: Kazuhisa Ouhara: 22K09983
3. Grants-in aid for scientific research C: Ai Okanobu: 22K10001
4. Grant-in-Aid for Early-Career Scientists: Yuta Hamamoto: 23K16227
5. Grant-in-Aid for Early-Career Scientists: Saki Hatano: 23K15973

6. Grant-in-Aid for Early-Career Scientists: Takumi Memida: 23K16001
7. Grant-in-Aid for Early-Career Scientists: Shinya Sasaki: 22K17092
8. Grant-in-Aid for Early-Career Scientists: Misako Tari: 22K17039
9. Grants-in aid for Research Activity Start-up: Yuri Taniguchi: 23K19692
10. Grants-in aid for Research Activity Start-up: Tetsuya Tamura: 23K19718
11. Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University: Mai Yoshino
12. Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University: Tomoya Ueda
13. Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University: Yurika Ninomiya
14. Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University: Fuminori Nakashima
15. Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University: Shoko Kohno
16. Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University: Ryouzuke Fujimori
17. Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University: Keisuke Yasuda

(5) Award.

1. Ryouzuke Fujimori
2nd Runner-Up prize of E-Poster Presentation in 7th JSMID and 1st COMID 2023
Elucidation of the mechanism of periodontal disease suppression by anti-IL-6 receptor antibodies in a mouse model of *P. gingivalis* infection
2. Mai Yoshino
The 56th Annual Academic Meeting Encouragement Award of the Hiroshima University School of Dentistry
The development of a bone marrow adipose tissue-like in vitro model using clumps of MSCs/ECM complexes.
3. Takayoshi Nagahara
The Japanese Society of Conservative Dentistry. 2022 Certified Dentist Excellent Case Presentation Award
Comprehensive dental treatment for a patient with cryptogenic arthritis.

(6) Patents

1. Mikihiro Kajiya, Hiroki Yoshii, Mai Yoshino / Toshihiko Maekawa, Yoko Torii, Harumi Takai
Periodontal tissue regeneration material
(Patent Number: 2023-45232)
(Patent applicant: Hiroshima University/CYFUSE BIOMEDICAL K.K.)
2. Shinji Matsuda, Noriyoshi Mizuno
Treatment drug for Drug-induced gingival hyperplasia
(Patent Number: 2023-077438)
(Patent applicant: Hiroshima University)
3. Shinya Sasaki, Shoko Kohno, Katsuhiro Takeda, Hidemi Kurihara, Noriyoshi Mizuno
Pharmaceutical composition and implant body for treating or preventing the area around implants
(Patent Number: 2023-102953)
(Patent applicant: Hiroshima University)

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Department of Oral Oncology

Division of Oral and Maxillofacial Surgery and Oral Medicine

Department of Oral and Maxillofacial Surgery

(1) Staff and Students

Professor: Souichi Yanamoto (*) Chief: Souichi Yanamoto (by-work)

Associate Professor:

Associate Professor/Lecturer: Yasutaka Hayashido (~May)

Assistant Professor: Ryouji Tani, Yukio Yoshioka, Koichi Koizumi, Kensaku Sumi, Tomoaki Hamana (~August), Sachiko Yamasaki, Atsuko Hamada, Fumitaka Obayashi (September~), Mirai Higaki

Resident: Naohiro Kimura (~March), Nanako Ito, Yuki Taguchi (~March), Fumitaka Obayashi (~August), Taeko Fukutani (~November), Takefumi Mishima (~March), Yasutaka Ishida (April~), Tadayoshi Nobumoto (April~), Seiya Hayashi (September~)

Clinical Trainee: Yoshinari Myoken, Yoshinori Fujita, Yasutaka Ishida(~Mar), Yoku Ito(~Mar), Erika Yamasaki (~May), Takefumi Mishima(March~)

Graduate Student: Hideaki Takahashi(~May), Kento Okamoto, Natsuki Eboshida, Tamamo Matsuyama, Asada (April~), Yume Ueda (April~), Teru Uehara (April~), Airi Odawara (April~), Erika Yamasaki (April~)

Researcher: Taku Kanda, Shigeru Sakurai, Tadayoshi Nobumoto (~Mar), Yuki Taguchi (April~), Tomoaki Hamana (September~), Taeko Fukutani (December~)

(2) Main Research Activities

- 1: Multi-institutional clinical research to establish EBM for oral cancer treatment
- 2: Analysis of circulating tumor cells and cfDNA in oral cancer
- 3: Study on development of the remote-controllable dental chair
- 4: The intestinal and oral microflora of patients with oral cancer

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: A case of multiple myeloma diagnosed by extramedullary disease in the submandibular region: Koizumi K, Sakaue T, Nakase Y, Obayashi F, Ando T, Shintani T, Yanamoto S.: J Oral Maxillofac Surg Med Pathol, 35(3), 247-250, 2023.
- 2: A case of primary neuroendocrine carcinoma of the mandibular gingiva treated using multimodal therapy: Hamana T, Sakurai S, Hamada A, Sakamoto S, Furusho H, Toratani S.: J Oral Maxillofac Surg Med Pathol, 35(1), 60-66, 2023.
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 - 51: A study of local recurrence in the patients of posteriorly advanced oral squamous cell carcinoma: Ito

- N, Koizumi K, Shintani T, Asada Y, Fukutani T, Obayashi F, Hamada A, Yamasaki S, Hamana T, Yoshioka Y, Yanamoto S.: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association, joint of the 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.11.26.
- 52: Clinical and statistical study of the Department of Oral and Maxillofacial Surgery, Hiroshima University Hospital: Yamasaki E, Koizumi K, Nishida N, Asada Y, Ueda Y, Uehara T, Odawara A, Eboshida N, Matsuyama T, Okamoto K, Nobumoto T, Fukutani T, Obayashi F, Ito N, Ishida Y, Higaki M, Hamada A, Yamasaki S, Yoshioka Y, Tani R, Yanamoto S.: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association, joint of the 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.11.26.
- 53: Evaluation of quality of life (QoL) in patients with medication-related osteonecrosis of the jaw: Odawara A, Yamasaki S, Yoshioka Y, Ishida Y, Ito N, Fukutani T, Koizumi K, Shintani T, Yanamoto S.: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association, joint of the 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.11.26.
- 54: The selective neck dissection for N1 oral cancer patients: Ishida Y, Koizumi K, Yamasaki S, Hamada A, Higaki M, Ito N, Obayashi F, Nobumoto T, Fukutani T, Hayashi S, Okamoto K, Eboshida N, Matsuyama T, Asada Y, Ueda Y, Uehara T, Odawara A, Yamasaki E, Yoshioka Y, Tani R, Yanamoto S.: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association, joint of the 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.11.26.
- 55: A retrospective study on pathological poor prognostic factors for lymph node metastasis and distant metastasis in patients with resected T1-2N0 tongue cancer: Obayashi F, Koizumi K, Hamada A, Ito N, Yamasaki S, Yoshioka Y, Tani R, Yanamoto S.: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association, joint of the 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.11.26.
- 56: Prognostic impact of extranodal extension of cervical lymph node metastasis in squamous cell carcinoma of the oral cavity: Higaki M, Koizumi K, Kuniyama S, Ando T, Hamada A, Ito N, Obayashi T, Asada Y, Ueda Y, Uehara T, Odawara A, Yamasaki E, Eboshida N, Matsuyama T, Okamoto K, Fukutani T, Taguchi Y, Yamasaki S, Hamana T, Yoshioka Y, Tani R, Yanamoto S.: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association, joint of the 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.11.26.
- 57: Perineural invasion of upper lip cancer: Okada T, Suei Y, Yamasaki S, Shimabukuro K, Nagasaki T, Otsuka M, Konishi M, Nakamoto T, Yanamoto S, Kakimoto N.: The 42nd Kansai-Kyushu Joint Regional Meeting of Japanese Society of Dental Radiology (Fukuoka), 2023.12.2.

F) Special lectures in academic meetings (適宜追加)

- 1: Medical Cooperation for Oral Cancer Treatment: Yanamoto S.: Hiroshima Branch Meeting of Kyushu Dental College (Hiroshima), 2023.2.4.
- 2: Periodontal Disease-A familiar disease : Ueda Y.: Hatsukaichi Civic Center Health Lecture (Hiroshima), 2023.2.8.
- 3: On assuming the position of professor: Yanamoto S.: Association Meeting of Department of Oral and Maxillofacial Surgery, 2023.2.18.
- 4: Practical treatment of recurrent and metastatic oral cancer in our department: Koizumi K.: Oral Oncology Conference (Nagasaki), 2023.3.28.
- 5: Role of Erbitux in the pharmacological treatment of recurrent or metastatic oral cancer: Yanamoto S.: Erbitux H&N Expert Webinar (WEB), 2023.5.25.
- 6: Treatment strategies for recurrent and metastatic oral cancer: Yanamoto S.: KANSAI Oral Cancer Seminar (WEB), 2023.6.24.
- 7: Rethinking perioperative oral care: Kanda T, Matsui K.: The 1st Collaborative Seminar of Department of Oral Oncology, Hiroshima University (Hiroshima), 2023.7.7.
- 8: Virtual surgical planning in jawbone reconstruction for oral cancer: Yanamoto S.: Oncology Meeting (Hiroshima), 2023.7.26.
- 9: Surgical therapy for elderly patients with oral cancer: Yanamoto S.: Society for Oral Cancer Treatment of the Elderly (Tokyo), 2023.7.28.
- 10: Guidelines for oral surgery, especially for oral cancer (luncheon seminar): Yanamoto S.: The 37th Chugoku-Shikoku Dental Anesthesia Research Meeting (Regional Meeting of the Japanese Society of Dental Anesthesiologists) (Hiroshima), 2023.8.6.
- 11: To avoid missing oral cancer! -About Remote Consultation Service for Oral Mucosa Diseases:-

- Yanamoto S.: Saeki Dental Association Lecture Meeting (Hiroshima), 2023.9.30.
- 12: Role of treatment with oral appliance in sleep-disordered breathing: Yanamoto S.: Hiroshima City Dental Association Lecture Meeting (Hiroshima), 2023.10.13.
 - 13: Our ideal oral cancer treatment: Yanamoto S. Hiroshima University School of Dentistry, First Department of Oral and Maxillofacial Surgery, Association Lecture Meeting (Hiroshima), 2023.10.14.
 - 14: Toward recovery of morphological function and social reintegration in a super-aging society "Current status and approaches in Hiroshima Prefecture": Yanamoto S.: Shimane University Cancer Care Workers Workshop "Toward the establishment of a Chugoku regional consortium in oral cancer treatment" (Izumo), 2023.10.24.
 - 15: Public Lecture "What kind of surgery in implant treatment? Soichi Yanagimoto : The 43rd Annual Meeting of the Japanese Society of Oral Implantology, Chugoku-Shikoku Branch (Kochi), 2023.10.28.
 - 16: MRONJ - Necessity of Medical-Dental-Drug Cooperation : Kanda T.: Minami-ku Community Medical and Dental Cooperation Workshop (Hiroshima), 2023.11.7.
 - 17: To avoid missing oral cancer! -About Remote Consultation Service for Oral Mucosa Diseases-: Yanamoto S.: Asa Dental Association Lecture Meeting (Hiroshima), 2023.11.24.
 - 18: Oral cancer treatment and medical collaboration in the AYA generation and super-aging society: Yanamoto S.: Hiroshima University School of Dentistry, Department of Orthodontics Academic Seminar (Hiroshima), 2023.12.10.
 - 19: The latest treatment strategy for recurrent or metastatic oral cancer: Yanamoto S.: Hokkaido Oral Tumor Forum (Sapporo), 2023.12.21.

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

- 1: Grants-in aid for scientific research (B): Yanamoto S. (Principal Investigator), Multicenter study of circulating tumor cells and circulating tumor DNA involved in distant metastasis of oral cancer. 22H03292. 3,600,000 yen
- 2: Grants-in aid for scientific research (C): Hayashido Y. (Principal Investigator), Inhibition of Oral Cancer Metastasis by Autophagy Induction of Tight Junction Component Proteins. 23K09312. 1,560,000 yen
- 3: Grants-in aid for scientific research (C): Tani R. (Principal Investigator), Microbiome-regulated expression kinetics of PD-L1 in the oral cancer stem cell niche. 22K10120. 800,000 yen
- 4: Grants-in aid for scientific research (C): Koizumi K. (Principal Investigator), Development of detection system for oral cancer patient's blood circulating tumor cells and prediction of clinical pathology and prognosis using it. 22K10146. 1,100,000 yen
- 5: Grants-in aid for scientific research (C): Hamana T. (Principal Investigator), Elucidation of the mechanism of E-cadherin processing-mediated oral cancer cell proliferation for therapeutic application. 21K10114. 1,200,000 yen
- 6: Grant-in-aid for scientific research (C): Yamasaki S. (Principal Investigator): Immunotherapy using lymphocyte-derived iPSC from oral cancer patients and molecular mechanism analysis to develop new treatment. 23K09398. 1,200,000 yen
- 7: Grant-in-aid for scientific research (C): Hamada A. (Principal Investigator), Mechanisms of supernumerous tooth development using cranioclavicle dysplasia disease-specific iPS cells. 22K10148. 800,000 yen
- 8: Grant-in-aid for early-career scientists: Higaki M. (Principal Investigator), Functional analysis of FGF-Binding Protein in squamous cell carcinoma cells using the CRISPR/Cas9 system. 21K17141. 1,200,000 yen
- 9: Grant-in-aid for early-career scientists: Taguchi Y. (Principal Investigator), Identification of growth factors involved in maintaining undifferentiated nature of dental pulp-derived iPSCs in serum-free systems. 19K19233. 800,000 yen
- 10: Grants-in aid for scientific research (C): Kanda T. (Principal Investigator), Development of a gene therapy for PTEN mutation Cowden syndrome using serum-free cultured iPS cells. 20K10117. 1,000,000 yen
- 11: Grant-in-aid for early-career scientists: Sakurai S. (Principal Investigator), Research and development of nucleic acid medicine targeting integrin $\beta 8$, which is involved in invasive metastasis of oral squamous cell carcinoma. 20K18726. 1,000,000 yen
- 12: Grant-in-aid for early-career scientists: Nobumoto T. (Principal Investigator), Elucidation of the processing mechanism of tight junction component proteins involved in oral cancer metastasis.

- 21K17139. 1,200,000 yen
- 13: Grant-in-aid for scientific research (C): Yanamoto S. (Co-Investigator), Prevention of postoperative pneumonia by antimicrobial pharmacy administration in intubated patients after oral surgery. 23K09482. 50,000 yen
 - 14: Grant-in-Aid for Scientific Research (C): Yanamoto S. (Co-Investigator), A multi-institutional phase III randomized controlled trial on prevention of oral mucositis by steroid-containing agents. 23K09315. 30,000 yen
 - 15: Grant-in-Aid for Scientific Research (C): Yanamoto S. (Co-Investigator), Design of biomaterials for in situ tissue regeneration of the tongue. 23K09231. 20,000 yen
 - 16: Grant-in-Aid for Scientific Research (C): Yanamoto S. (Co-Investigator), Elucidation of the relationship between sleep apnea and sarcopenia in the elderly. 23K09147. 23K09147. 50,000yen
 - 17: Grants-in aid for scientific research (C): Yanamoto S. (Co-Investigator), Biomarkers for invasion and metastasis of oral cancer via partial-EMT. 22K10161. 100,000 yen
 - 18: Grants-in aid for scientific research (C): Yanamoto S. (Co-Investigator), Molecular biology of extranodal extension mechanism of cervical lymph node metastasis in oral squamous cell carcinoma. 21K10040. 10,000 yen
 - 19: Grants-in aid for scientific research (C): Yanamoto S. (Co-Investigator), Multi-institutional study to determine indications for preventive dissection of tongue cancer, biomarker search and establishment of tissue bank. 21K10098. 10,000 yen
 - 20: Grants-in aid for scientific research (C): Yanamoto S. (Co-Investigator), Elucidation of drug sensitivity mechanisms for predicting therapeutic efficacy of pembrolizumab. 21K10117. 50,000 yen
 - 21: Grants-in aid for scientific research (C): Yanamoto S. (Co-Investigator), Phase III study on prevention of radiation-induced oral mucositis with steroid ointment and changes in oral microflora. 20K10097. 30,000 yen
 - 22: Grants-in aid for scientific research (C): Yanamoto S. (Co-Investigator), Establishment of a highly accurate method for diagnosing oral cancer lymph node metastasis using US. 20K10122. 0 yen
 - 23: Grant-in-aid for early-career scientists; Fukutani T. (Principal Investigator), Establishment of "synovial chondromatosis-specific iPSC" and study of the disease through genomic surgery of pathogenic mutant genes. 23K16117. 1,700,000 yen
 - 24: Research Center for Biomedical Engineering 2023, Collaborative Research Projects: Yoshioka Y. (Co-Investigator), Research on the development of a remote-controllable dental chair. 150,000 yen
 - 25: Grant-in-aid for fund for the promotion of joint international research (Fostering Joint International Research(B)): Hamada A. (Co-Investigator), Mechanobiological mechanisms of tendons and ligaments controlling the musculoskeletal system. 21KK0161. 400,000 yen
 - 26: The order and the 4th year's fee for the director of the Prefectural Hiroshima Hospital: Kanda T, Quality Improvement of Rehabilitation Guidance for Eating and Swallowing Dysphagia. 500,000 yen

(5) Academic Awards, etc.

- 1: Ito N.: Oral presentation award: The 32nd Annual Meeting of Japanese Society of Dentistry for Medically Compromised Patient
- 2: Obayashi F.: Oral presentation award: The 32nd Annual Meeting of Japanese Society of Dentistry for Medically Compromised Patient
- 3: Okamoto K: Best Oral presentation Award: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons

(6) Patents

- 1: Patent: Method for determining cancer risk: (Patent No. 7399398) (Okamoto T, Tani R, Matsui K)
- 2: Patent: Method for determining whether a patient belongs to the good prognosis group after cancer treatment and method for determining whether a patient belongs to the risk group for developing juvenile cancer: (Patent No. 7399399) (Okamoto T, Tani R)

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Department of Oral and Maxillofacial Surgery

Division of Oral and Maxillofacial Surgery and Oral Medicine (Department of Oral and Maxillofacial Reconstructive)

(1) Staff and Students

Professor: Tomonao Aikawa

Research Associate: Yoshiaki Ninomiya (Diagnosis and treatment lecturer), Shigehiro Ono (Diagnosis and treatment lecturer), Kuniko Mizuta, Takayuki Nakagawa, Misato Tada, Akiko Fukui (~Mar), Takako Naruse, Ryo Uetsuki, Miyuki Sakuma

Resident: Yasuki Ishioka, Yoko Ishida, Kazuki Sasaki(~Mar), Shohei Fukada(~Mar)

Graduate Student: Nao Yamakado(~Mar), Misaki Akagi, Chieko Niwata, Ayumi Fujii, Daitoku Murakami, Keijyuuro odan, Jun Ashida (Apr~), Yoshiteru Yamashita (Apr~)

Teaching the study assistant: Yuko Shintaku(Dec~)

Registered Intern: Masaki Kiyomihara, Yoshihisa Inoue, Hiroshi Shimasue

(2) Main Research Activities

- 1: Functional evaluation and development of oral and maxillofacial reconstructive surgeries
- 2: Genomic analysis of stomatognathic diseases
- 3: Biochemical characterization and development of therapeutics of oral tumors
- 4: Molecular-biological studies on control of invasion and migration of oral cancers
- 5: Studies on responsible gene of osseous dysplasia of jaws
- 6: Molecular-biological studies on dental and periodontal tissue regeneration
- 7: Development of biomaterials of oral and maxillofacial reconstruction
- 8: Development of biomaterial for dental implant treatment

(3) Research Achievements

A) Original Papers (including Case Reports)

Original work (including case reports)

- 1) ACE2 expression and spike S1 protein-mediated immune responses in oral mucosal cells. Akagi M, Ohta K, Fukada S, Sakuma M, Naruse T, Nakagawa T, Ono S, Nishi H, Shigeishi H, Aikawa T. Oral diseases. 2023. (Online ahead of print)
- 2) Pth1r Signal in Gli1+ Cells Maintains Postnatal Cranial Base Synchondrosis. Amano K, Kitaoka Y, Kato S, Fujiwara M, Okuzaki D, Aikawa T, Kogo M, Iida S. J Dent Res. 102: 1241-1251, 2023.
- 3) Physical Properties and Antimicrobial Release Ability of Gentamicin-Loaded Apatite Cement/ α -TCP Composites: An In Vitro Study. Sasaki K, Ninomiya Y, Takechi M, Tsuru K, Ishikawa K, Shigeishi H, Ohta K, Aikawa T. Materials (Basel). 16: 995, 2023.
- 4) Sunitinib promotes apoptosis via p38 MAPK activation and STAT3 downregulation in oral keratinocytes. Fukada S, Ohta K, Sakuma M, Akagi M, Kato H, Naruse T, Nakagawa T, Shigeishi H, Nishi H, Takechi M, Aikawa T. Oral Dis. In press.
- 5) Ghost cell odontogenic carcinoma arising in dentinogenic ghost cell tumor, peripheral: A case report. Sakamoto S, Ando T, Mizuta K, Ono S, Konishi M, Miyauchi M, Ogawa I. Pathol Int. 73: 367-372, 2023.
- 6) Chemical inhibition of LSD1 leads to epithelial to mesenchymal transition in vitro of an oral squamous cell carcinoma OM-1 cell line via release from LSD1-dependent suppression of ZEB1. Yamakado N, Okuda S, Tobiume K, Uetsuki R, Ono S, Mizuta K, Nakagawa T, Aikawa T. Biochem Biophys Res Commun. 647: 23-29, 2023.
- 7) Camouflage Correction of Skeletal Class III Severe Open Bite with Tooth Ankylosis Treated by Temporary Anchorage Devices: A Case Report. Dent J. Yashima Y, Kaku M, Yamamoto T, Medina CC, Ono S, Takeda Y, Tanimoto K. 11: 107, 2023.
- 8) Efficacy and safety of remimazolam besilate for sedation in outpatients undergoing impacted third molar extraction: a prospective exploratory study. Oue K, Oda A, Shimizu Y, Takahashi T, Kamio H,

- Sasaki U, Imamura S, Imado E, Mukai A, Doi M, Sakuma M, Ono S, Aikawa T, Yoshida M. BMC Oral Health. 23: 774, 2023.
- 9) Head and neck cancer patients show poor oral health as compared to those with other types of cancer. Nishi H, Obayashi T, Ueda T, Ohta K, Shigeishi H, Munenaga S, Kono T, Yoshioka Y, Konishi M, Taga R, Toigawa Y, Naruse T, Ishida E, Tsuboi E, Oda K, Dainobu K, Tokikazu T, Tanimoto K, Kakimoto N, Ohge H, Kurihara H, Kawaguchi H. BMC Oral Health. 23: 647, 2023.
 - 10) Correction of Severe Skeletal Class II High Angle with Mandibular Retrusion and Gummy Smile by Double-Jaw Surgery. Bull Tokyo Dent Col. Yamamoto T, Kaku M, Ono S, Takechi M, Tanimoto K. 63: 177-187, 2023.
 - 11) LL-37-dsRNA Complexes Modulate Immune Response via RIG-I in Oral Keratinocytes. Kato H, Ohta K, Akagi M, Fukada S, Sakuma M, Naruse T, Nishi H, Shigeishi H, Takechi M, Aikawa T. Inflammation. 46: 808-823, 2023.
 - 12) HPV16 E6 and E7 is involved in inhibition of autophagy and maintenance of cancer stem cell properties in HPV16-positive oral squamous cell carcinoma cells. Shigeishi H, Sugiyama M, Akagi M, Kaneyasu Y, Maehara T, Ohta K. Oral Science International. 2023. (Online ahead of print)
 - 13) A case of bilateral huge dentigerous cysts in the part of the mandibular wisdom tooth. Fujii A, Ono S, Nakagawa T, Nishi H, Aikawa T. The Journal of Hiroshima University Dental Society. 55: 148-153, 2023.
 - 14) A Case of Accidental Insertion of a Broken Injection Needle in soft tissues while Conducting Anesthesia of the Mandibular Foramen. Fukada S, Ono S, Mizuta K, Nakagawa T, Ninomiya Y, Uetsuki R, Sakuma M, Naruse T, Aikawa T. The Journal of Hiroshima University Dental Society. 55: 143-147, 2023.

B) Review

C) Publications

D) Other Publications

- 1) Oral Surgery Hand Manual '23: Aikawa T, et al. Editorial committee: Japanese Society of Oral and Maxillofacial Surgeons. Quintessence Publishing Co., Tokyo, 2023: 97-98.
- 2) Dental Diamond May 2023, Diagnostic Power Test. Upper lip mass: Uetsuki R, Mizuta K, Ando T, Aikawa T. Dental Diamond Co., Tokyo, 2023: 48:21-22.

E) Presentations at Scientific Meetings

- 1: Distribution and characteristics of antimicrobial susceptibility and vancomycin resistance genes among *Enterococci* derived from hospitalized patients.: Fujii A, Matsuo M, Masuda K, Tadera K, Hisatsune J, Sugawara Y, Kashiya S, Yokozaki M, Aikawa T, Ohge H, Sugai M, Komatsuzawa H.: The 34th Annual meeting of Japanese Society for Clinical Microbiology (2023.2.3~2.5 Kanagawa)
- 2: Analysis of antimicrobial susceptibility and drug resistance genes of *Enterococci* isolated from inpatients.: Fujii A, Matsuo M, Masuda K, Hisatsune J, Tadera K, Kashiya S, Yokozaki M, Aikawa T, Ohge H, Komatsuzawa H.: The 96th Annual meeting of Japanese Society for Bacteriology (2023.3.16~3.18 Hyogo)
- 3: Chemical inhibition of LSD1 in the oral squamous cell carcinoma OM-1 cell line releases LSD1-dependent ZEB1 gene repression and causes EMT.: Yamakado N, Tobiume K, Okuda T, Akagi M, Niwata C, Uetsuki R, Nakagawa T, Mizuta K, Ono S, Aikawa T.: The 77th Annual Meeting of Japanese Stomatological society (2023.5.12~5.13 Okayama)
- 4: Induction of ACE2 expression in oral mucosal cells by introducing inflammatory cytokines and nucleic acids.: Akagi M, Ohta K, Fukada S, Sakuma M, Kato H, Naruse T, Nakagawa T, Tobiume K, Shigeishi H, Aikawa T.: The 77th Annual Meeting of Japanese Stomatological society (2023.5.12~5.13 Okayama)
- 5: Involvement of cellular immunity in bone lesions of oral squamous cell carcinoma.: Ashihara M, Miyagawa K, Yamashita S, Takahata S, Aikawa T, Tanaka S.: The 77th Annual Meeting of Japanese Stomatological society (2023.5.12~5.13 Okayama)
- 6: Anti-tumoral effect of leflunomide, an anti-rheumatic agent, on oral squamous cell carcinoma via suppressing angiogenesis.: Niwata C, Nakagawa T, Ohta K, Ono S, Yamakado N, Akagi M, Ohdan K,

- Tobiume K, Takechi M, Aikawa T.: The 77th Annual Meeting of Japanese Stomatological society (2023.5.12~5.13 Okayama)
- 7: Challenges in highly challenging surgical orthodontic treatment of highly deformed mandibular head by ICR/PCR.: Ono S, Aikawa T.: The 77th Annual Meeting of Japanese Stomatological society Symposium 5 “Challenges in the treatment of jaw deformities” (2023.5.12~5.13 Okayama)
 - 8: Treatment strategies for surgical orthodontic treatment of cleft lip and palate.: Aikawa T.: The 47th Annual Meeting of the Japanese Cleft Palate Association (2023.5.25~5.26 Tokyo) Symposium
 - 9: A case of skeletal malocclusion associated with Williams syndrome treated with mandibular midline temporary bone lengthening and maxillary osteotomy.: Murotani T, Kurosaka H, Yamamoto A, Aikawa T, Yokota Y, Tanaka S, Yamashiro T.: The 47th Annual Meeting of the Japanese Cleft Palate Association (2023.5.25~5.26 Tokyo)
 - 10: Consideration of occlusal stability from long-term management cases Treatment strategies for surgical orthodontic treatment of cleft lip and palate.: Aikawa T.: The 47th Annual Meeting of the Japanese Cleft Palate Association (2023.5.25~5.26 Tokyo)
 - 11: Chemical inhibition of LSD1 leads to epithelial to mesenchymal transition *in vitro* of an oral squamous cell carcinoma OM-1 cell line *via* release from LSD-1 dependent suppression of ZEB1.: Yamakado N, Tobiume K, Uetsuki R, Ono S, Mizuta K, Nakagawa T, Aikawa T.: The 56th Annual Meeting of Hiroshima University Dental Society (2023.6.3 Hiroshima)
 - 12: Surgical Strategies for TMJ Reconstruction.: Ohdan K, Ono S, Nakagawa T, Mizuta K, Ishida Y, Uetsuki R, Sasaki K, Sakuma M, Aikawa T.: The 56th Annual Meeting of Hiroshima University Dental Society (2023.6.3 Hiroshima)
 - 13: Restoration of temporomandibular joint function in the treatment of jaw deformities Fusion and current treatment of jaw deformities and temporomandibular joint therapy.: Aikawa T.: The 33rd Annual Meeting of the Japanese Society for Jaw Deformities (2023.6.8~6.9 Tokyo) Symposium
 - 14: A case of skeletal Class II open bite with discordance of maxillary and maxillary arch widths and CO-CR discrepancy, treated with a median bisection Le Fort type I osteotomy and sagittal division of the mandibular branch.: Yoshida Y, Ito S, Inubushi T, Yokoyama M, Miyagawa K, Seki S, Tanaka S, Aikawa T, Yamashiro T.: The 33rd Annual Meeting of the Japanese Society for Jaw Deformities (2023.6.8~6.9 Tokyo)
 - 15: A case of Class II open bite with hypoplasia of the mandibular articular process treated with bipartite Le Fort Type I osteotomy combined with upper and lower jaw movement.: Oka A, Kaji R, Inubushi T, Shiraishi M, Aikawa T, Tanaka S, Yamashiro T.: The 33rd Annual Meeting of the Japanese Society for Jaw Deformities (2023.6.8~6.9 Tokyo)
 - 16: A case of asymmetrical anterior maxillary bone lengthening in a patient with mandibular prognathism with unilateral cleft lip and palate.: Nakatsugawa K, Tanikawa C, Kani R, Aikawa T, Tanaka S, Yamashiro T.: The 33rd Annual Meeting of the Japanese Society for Jaw Deformities (2023.6.8~6.9 Tokyo)
 - 17: Examination of the accuracy of 3D digital simulation.: Yoshikawa H, Tanikawa C, Ikeda N, Itoh S, Shintaku Y, Aikawa T, Tanaka S, Yamashiro T.: The 33rd Annual Meeting of the Japanese Society for Jaw Deformities (2023.6.8~6.9 Tokyo)
 - 18: A case of anterior maxillary bone lengthening for skeletal mandibular prognathism associated with cleft palate.: Yokoyama M, Itoh S, Yoshida Y, Oka A, Aikawa T, Tanaka S, Yamashiro T.: The 33rd Annual Meeting of the Japanese Society for Jaw Deformities (2023.6.8~6.9 Tokyo)
 - 19: A case of jaw deformity with bone resorption in the molars due to hyaluronic acid injections.: Nakagawa T, Ono S, Ishida Y, Sakuma M, Ohdan K, Higuchi M, Matsushita Y, Shintaku Y, Kojima S, Uetsuki R, Mizuta K, Hirata I, Kato K, Aikawa T.: The 33rd Annual Meeting of the Japanese Society for Jaw Deformities (2023.6.8~6.9 Tokyo)
 - 20: A case of Class II with mandibular head growth disturbance and idiopathic mandibular head resorption dysplasia.: Sakuma M, Nakagawa T, Takagi T, Ishida Y, Higuchi M, Matsushita Y, Shintaku Y, Uetsuki R, Mizuta K, Ono S, Aikawa T.: The 33rd Annual Meeting of the Japanese Society for Jaw Deformities (2023.6.8~6.9 Tokyo)
 - 21: A Case of Orthognathic Surgery using the Submental Orotracheal Intubation for Patient with Sturge-Weber Syndrome.: Ono S, Koizumi K, Kado I, Ogashira S, Nakagawa T, Uetsuki R, Mizuta K, Tanimoto K, Aikawa T.: The 33rd Annual Meeting of the Japanese Society for Jaw Deformities (2023.6.8~6.9 Tokyo)
 - 22: Clinical examination of patients using pembrolizumab in recurrent and metastatic oral cancer.: Yoshioka Y, Higaki M, Obayashi F, Ito N, Nakagawa T, Yamasaki S, Hamana T, Ono S, Koizumi K, Aikawa T, Yanamoto S.: The 47th Annual Meeting of Japan Society for Head and Neck Cancer

- (2023.6.15~6.16 Osaka)
- 23: Orthognathic surgery for patients with cleft lip and palate; maxillary anterior segmental distraction osteogenesis (MASDO) and LFI osteotomy.: Aikawa T.: CLEFT SEOUL 2023, Symposium Session 6 (DO/ Orthognathic Surgery / Craniofacial Surgery) . (2023.6.16~6.18 North Korea)
 - 24: Effects of Lactoferrin on Hypoxic Cancer Cells.: Murakami D, Tanimoto K.: The 27th Annual Meeting of the Japanese Association for Molecular Target Therapy of Cancer (2023.6.21~6.23 Saga)
 - 25: Surgical strategies for TMJ reconstruction.: Ohdan K, Ono S, Nakagawa T, Mizuta K, Ishida Y, Uetsuki R, Sasaki K, Sakuma M, Aikawa T.: The 52nd Annual Meeting of the Chugoku-Shikoku Branch of the Japanese Society of Oral and Maxillofacial Surgeons (2023.7.2 Shimane)
 - 26: Course of treatment of cervical necrotizing fasciitis caused by dental infection successfully treated with metronidazole.: Ashida J, Mizuta K, Yamakado N, Sakuma M, Uetsuki R, Nakagawa T, Ono S, Ninomiya Y, Aikawa T.: The 52nd Annual Meeting of the Chugoku-Shikoku Branch of the Japanese Society of Oral and Maxillofacial Surgeons (2023.7.2 Shimane)
 - 27: A case of Phantom cell odontogenic carcinoma derived from a peripheral dentin-forming phantom cell tumor in the mandible.: Oi H, Shimasue H, Ishida Y, Ando T, Ono S, Aikawa T.: The 1st Exchange meeting for young oral surgeons (2023.7.29~30 Osaka Web)
 - 28: Analysis of antimicrobial susceptibility and vancomycin resistance genes of enterococci from hospitalized patients at Hiroshima University Hospital.: Fujii A, Matsuo M, Le Nguyen Tra Mi, Komatsuzawa H.: The 65th Annual Meeting of the Japanese Association for Oral Biology (2023.9.16~9.18 Tokyo)
 - 29: Expression of ACE2 and spike protein-mediated immune responses in oral mucosal cells.: Akagi M, Ohta K, Sakuma M, Yamakado N, Niwata C, Naruse T, Nakagawa T, Ono S, Tobiume K, Shigeishi H, Aikawa T.: The 43rd Annual Meeting of the Japanese Society of Oral Therapeutics and Pharmacology, The 36th Annual Meeting of The Japanese Society of Oral Diagnosis / Oral Medicine, The 33rd Annual Meeting of The Japanese Society of Oral Medicine, The 32nd Annual Meeting of The Japanese Association for Oral Infectious Diseases (2023.9.22~9.24 Tochigi)
 - 30: A case of verrucous xanthoma on the tongue of a child.: Fujii A, Ono S, Nakagawa T, Naruse T, Ishida Y, Uetsuki R, Sakuma M, Aikawa T.: The 70th Annual Meeting of the Japanese Stomatological Society Chugoku Shikoku Branch (2023.10.7 Okayama)
 - 31: A case of orthognathic surgery using the submaxillary pull-out technique in a patient with Sturge-Weber syndrome.: Yamashita Y, Ono S, Uetsuki R, Koizumi K, Nakagawa T, Mizuta K, Sakuma M, Yanamoto S, Aikawa T.: The 70th Annual Meeting of the Japanese Stomatological Society Chugoku Shikoku Branch (2023.10.7 Okayama)
 - 32: A case of costochondral graft reconstruction applied to a patient with micrognathia with open bite due to bilateral mandibular condyle defects. Mizuta K, Uetsuki R, Ono S, Shintaku Y, Matsushima Y, Higuchi M, Nakagawa T, Morita C, Kurosaka H, Yamashiro T, Aikawa T.: The 62nd Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons (2023.10.26~27 Gangneung, Republic of Korea)
 - 33: Total temporomandibular joint replacement in ICR / PCR: two case reports. Ono S, Uetsuki R, Nakagawa T, Sakuma M, Mizuta K, Ishida Y, Ishioka Y, Aikawa T.: The 62nd Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons (2023.10.26~27 Gangneung, Republic of Korea)
 - 34: A case of bone resorption in mentum caused by hyaluronic acid filler in patient with skeletal Class II jaw deformity.: Nakagawa T, Ono S, Sakuma M, Ishida Y, Mizuta K, Uetsuki R, Ohdan K, Shintaku Y, Higuchi M, Matsushima Y, Kojima S, Hirata I, Kato K, Aikawa T.: The 62nd Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons (2023.10.26~27 Gangneung, Republic of Korea)
 - 35: Occlusion Surgery for cleft lip and palate, Jaw deformities, and temporomandibular joint disorders.: Aikawa T.: The 7th JSMID & 1st COMID (2023.11.3 Surabaya Indonesia), Symposium
 - 36: Involvement of cellular immunity in bone lesions of oral squamous cell carcinoma.: Minohara M, Miyagawa K, Yamashita S, Tanaka S, Kogo M, Aikawa T.: The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (2023.11.10~11.12 Osaka)
 - 37: Treatment experience of total temporomandibular joint arthroplasty for mandibular head resorption.: Ono S, Nakagawa T, Ishida Y, Sakuma M, Mizuta K, Uetsuki R, Ishioka Y, Matsushita Y, Higuchi M, Aikawa T.: The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (2023.11.10~11.12 Osaka)
 - 38: A case of rib cartilage reconstruction for bilateral mandibular process defects.: Uetsuki R, Ono S, Mizuta K, Sasaki K, Murodumi H, Ishioka Y, Ninomiya Y, Matsushita Y, Higuchi M, Aikawa T.: The

- 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (2023.11.10~11.12 Osaka)
- 39: LSD1 inhibition in oral squamous cell carcinoma OM-1 releases LSD1-dependent ZEB1 gene repression and causes EMT.: Yamakado N, Tobiume K, Okuda T, Akagi M, Niwata T, Uetsuki R, Nakagawa T, Mizuta K, Ono S, Aikawa T.: The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (2023.11.10~11.12 Osaka)
 - 40: ACE2 expression in oral mucosal cells and immune response mediated by Spike protein.: Akagi M, Ohta K, Sakuma M, Yamakado N, Niwata T, Naruse T, Nakagawa T, Tobiume K, Shigeishi H, Aikawa T.: The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (2023.11.10~11.12 Osaka)
 - 41: Anti-rheumatic drug leflunomide's antitumor effect on oral squamous cell carcinoma.: Niwata T, Nakagawa T, Ohta K, Ono S, Yamakado N, Akagi M, Ohdan K, Tobiume K, Aikawa T.: The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (2023.11.10~11.12 Osaka)
 - 42: Significance of lactoferrin in radiotherapy of oral cancer cells under hypoxic conditions.: Murakami D, Tanimoto K, Ono S, Aikawa T.: The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (2023.11.10~11.12 Osaka)
 - 43: A case of a solitary fibrous tumor of the mouth floor.: Oi H, Shimasue H, Ishida Y, Ando T, Ono S, Aikawa T.: The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (2023.11.10~11.12 Osaka)
 - 44: A case of extensive skin defect caused by necrotizing fasciitis of the cervical region due to dental infection.: Ashida J, Mizuta K, Yamakado N, Sakuma M, Uetsuki R, Nakagawa T, Ono S, Ninomiya Y, Aikawa T.: The 62nd Annual Meeting of the Hiroshima Dental Society and the 107th Annual Meeting of the Hiroshima University Dental Society (2023.11.25~11.26 Hiroshima)
 - 45: Investigation of risk factors that resulted in the removal of a patient with peri-implantitis.: Ninomiya Y, Ishioka Y, Ono S, Mizuta K, Nakagawa T, Sasaki K, Fukada S, Sakuma M, Uetsuki R, Ishida Y, Fukui A, Ohdan K, Aikawa T.: The 62nd Annual Meeting of the Hiroshima Dental Society and the 107th Annual Meeting of the Hiroshima University Dental Society (2023.11.25~11.26 Hiroshima)
 - 46: A case of extensive skin defect caused by necrotizing fasciitis of the cervical region due to dental infection.: Ashida J, Mizuta K, Yamakado N, Sakuma M, Uetsuki R, Nakagawa T, Ono S, Ninomiya Y, Aikawa T.: The 62nd Annual Meeting of the Hiroshima Dental Society and the 107th Annual Meeting of the Hiroshima University Dental Society (2023.11.25~11.26 Hiroshima)
 - 47: A Clinical and Statistical Study of Jaw Deformity Surgery in the Department of Oral and Maxillofacial Reconstruction Surgery, Hiroshima University Hospital over a 10-year period.: Ishida Y, Ono S, Mizuta K, Nakagawa T, Ninomiya Y, Ishioka Y, Naruse T, Uetsuki R, Sakuma M, Yamakado N, Akagi M, Niwata T, Fuji A, Murakami D, Ohdan K, Ashida J, Yamashita Y, Aikawa T.: The 62nd Annual Meeting of the Hiroshima Dental Society and the 107th Annual Meeting of the Hiroshima University Dental Society (2023.11.25~11.26 Hiroshima)
 - 48: Clinical study of poorly progressing implant cases that came to our department.: Ninomiya Y, Ono S, Nakagawa T, Ishioka Y, Takechi M, Aikawa T.: The 27th Annual Meeting and Academic conference of Japanese Academy of Maxillofacial Implants (2023.12.2 Tokyo)
 - 49: Investigation of lactoferrin action on cancer cells under hypoxic conditions.: Murakami D, Fukazawa K, Hirohashi N, Ono S, Aikawa T, Tanimoto K.: The 46th Annual Meeting of the Molecular Biology Society of Japan (2023.12.6~12.8 Hyogo)

F) Special lectures in academic meetings

- 1) The 38th Second Department of Oral Surgery, Faculty of Dentistry, Hiroshima University friendship meeting Special Lecture: A Year in Review and the Future of Oral and Maxillofacial Reconstructive Surgery. (2023.4.1 Hiroshima), Aikawa T.
- 2) Stryker seminar 3rd SONS "Mastering genioplasty" (2023.4.13 Web), Aikawa T.
- 3) The 2nd Kyushu Jaw Deformity Surgery Review Meeting and Networking Session From basic techniques to surgery for difficult cases~ "A patient with progressive condylar resorption treated with total temporomandibular joint arthroplasty" (2023.6.3 Fukuoka), Ono S.
- 4) Lecture meeting of the 2023 Ehime Branch of the Hiroshima University School of Dentistry Alumni Association. (2023.6.10 Ehime), Aikawa T.
- 5) Special Lecture at the University of Tokushima School of Dentistry: "Occlusal surgery for intractable diseases: Occlusal treatment for cleft lip and palate and temporomandibular joint diseases." (2023.7.6)

- Tokushima), Aikawa T.
- 6) Academic lecture at the 1st Hiroshima Jaw Deformity Study Group: “Orthognathic surgery and surgical preparation at Hiroshima University. Focusing on upper and lower jaw movement surgery” (2023.9.21 Hiroshima), Aikawa T.
 - 7) Academic lecture at Owl Society: “Skilled oral surgical procedures. Appropriate use of antibacterial drugs, TMJ surgery, and jaw deformity treatment up to date” (2023.10.14), Aikawa T.
 - 8) Stryker seminar 4th SONS “Mastering SONS” Seminar Instructor, Hands-on Instructor (2023.11.25 ~11.26 Fukuoka), Aikawa T.
 - 9) Academic Seminar, Hiroshima University School of Dentistry, Department of Orthodontics. “Oral surgical treatment aimed at occlusal surgery and occlusal reconstructive surgery” (2023.11.27 Hiroshima), Aikawa T.
 - 10) IBRA (international bone research association) seminar, orthognathic surgery, Congress president, Seminar Instructor, Hands-on Instructor (2023.12.16~12.17 Yokohama), Aikawa T.

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

- 1) Grant-in-Aid for Scientific Research (Scientific research (C)) continuation: Aikawa T.: Research on the mechanism of tumor-induced bone resorption: Comprehensive analysis focusing on RANKL expression regulation and osteoclastogenesis. Issue number 19K10266
- 2) Grant-in-Aid for Scientific Research (Scientific Research (C)) continuation: Takechi M, Ohta K, Nakagawa T.: Basic research for developing dental implant treatment guidelines for patients receiving bisphosphonates. Issue number 21K09952
- 3) Grants-in-Aid for Scientific Research (Scientific Research (C)) continuation: Nakagawa T, Takechi M, Ohta K.: Development of transplantation material for treatment of jaw bone necrosis with angiogenic effect. Issue Number 21K10094
- 4) Grants-in-Aid for Scientific Research (Challenging Research (C)) continuation: Naruse T.: Elucidation of the immune response mechanism of SARS-Cov-2 binding receptors in the oral mucosa. Issue Number 21K17116
- 5) Grants-in-Aid for Scientific Research (Scientific Research (C)) continuation: Mizuta K, Tobiume K.: Does noncoding RNA involved in the development of mandibular diaphyseal dysplasia (GDD)? Issue Number 22K10119
- 6) Grants-in-Aid for Scientific Research (Scientific Research (C)) continuation: Aikawa T, Miyagawa K.: Bone resorption mechanisms in the tumor microenvironment: Analysis centered on IL-7 and RANKL expression mechanisms. Issue Number 22K10145
- 7) Grants-in-Aid for Scientific Research (Challenging Research (C)) continuation: Uetsuki R.: Analysis of relationship between Snail-induced EMT and cancer stem cell characteristics in oral cancer cells. Issue Number 22K17158
- 8) Grants-in-Aid for Scientific Research (Challenging Research (C)) continuation: Ishida Y.: Expression of HO-1 and inflammatory genes induced by C.a from oral mucosa. Issue Number 22K17185
- 9) Grant-in-Aid for Scientific Research (Basic Research (C)) new: Shigeishi H, Ono S, Elucidation of the regulatory mechanism of cancer stem cell traits mediated by Beclin-1 in oral squamous cell carcinoma cells highly expressing CD44. Issue Number 23K09370
- 10) Grant-in-Aid for Scientific Research (Basic Research (C)) new: Ohta K, Aikawa T, Sakaguchi T, Komatsuzawa H, Shigeishi H, Elucidation of the novel functions of the new coronavirus target protein in the oral mucosa and its expression regulatory factors (share). Issue Number 23K09371
- 11) Grant-in-Aid for Scientific Research (Young Research) new: Sakuma M, Recognition mechanism of Candida albicans cell wall components by CEACAM1 in oral mucosa. Issue Number 23K159740A

(5) Academic Awards, etc.

- 1) The 77th Annual Meeting of the Japanese Society of Oral Medicine. Rising Scientist Awards. (2023.5.11~5.13 Okayama), Yamakado N.
- 2) The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons. Oral Presentation Award (2023.11.10~11.12 Osaka), Yamakado N.
- 3) The 33rd Annual Meeting of the Japanese Society for Jaw Deformities. excellent poster award “Class II case with mandibular condylar growth disorder and idiopathic mandibular condylar resorptive

dysplasia” (2023.6.8~6.9 Tokyo), Sakuma M, Nakagawa T, Takagi T, Ishida Y, Higuchi M, Matsushita Y, Shintaku Y, Uetsuki R, Mizuta K, Ono S, Aikawa T.

(6) Patents

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Department of Advanced Prosthodontics

Division of Preventive and Restorative Dentistry

(Department of Oral Implant)

(1) Staff and Students

Professor : Kazuhiro Tsuga
 Associate Professor : Yasuhiko Abe, Mineka Yoshikawa, Takayasu Kubo
 Assistant Professor : Hiroshi Oue, Shinsuke Okada, Yoshifumi Oki, Maho Takeuchi, Hanako Umehara, Kiichi Nakamori
 Resident : Mariko Maruyama, Eri Ishida, Azusa Haruta,
 Graduate Student : Yutaro Takahashi, Rie Hatakeyama, Yoko Hama, Hengky Bowo Ardhianto, Takashi Ogino, Yusuke Morimoto
 Research Fellow : Aya Hiraoka
 Clinical Trainee : Michihiko Kawamura, Hideki Yamamoto, Toru Akutsu, Naoyuki Kouyama, Mie Tatsumura
 Administrative staff : Rinko Kurumi

(2) Main Research Activities

- 1: Basic research on PEEK materials for dental applications and clinical research on PEEK crowns for molars
- 2: Colonization survey of drug-resistant bacteria in long-term care facilities
- 3: Implementation of tongue resistance training for the elderly and verification of its effect
- 4: Relationship between eating behavior and oral function in healthy young people
- 5: Relationship between cognitive decline due to tooth loss and intestinal bacteria
- 6: The mechanism by which tooth loss causes cognitive decline
- 7: Development of novel biomaterial with "bio-metal"
- 8: Establishment of a new oral hygiene assessment method using an IOS
- 9: Development of a predict diagnostic device for implant treatment
- 10: Performance and safety evaluation of dental materials containing new inorganic antibacterial agents
- 11: Establishment of a new dysphagia evaluation method using a portable ultrasound diagnostic device
- 12: Study on evaluation method of Preferred chewing side

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Comparative implant stability of a novel implant-porous titanium complex and an implant-porous hydroxyapatite complex for bone reconstruction material: Kobatake R, Doi K, Wakamatsu K, Oki Y, Morita K, Tsuga K.: Original: Journal of Hard Tissue Biology, 32(3):177-182, 2023.
- 2: A case report of oral hygiene evaluation using intraoral scanner: Yoshiga C, Doi K, Kawagoe M, Oue H, Kobatake R, Umehara H, Tsuga K: The journal of Hiroshima University Society, 55(2):138-142, 2023.
- 3: Investigation of the utility of dental plaque detection using intraoral scanner images: Yoshiga C, Doi K, Oue H, Kobatake R, Kawagoe M, Umehara H, Tsuga K: Imaging Science in Dentistry, in press.
- 4: Radiopaque properties of PEEK crown : Fumiko Nishio, Koji Morita, Kazuya Doi, Masamichi Kato, Hitoshi Abekura, Hidehisa Yamaoka, Naoya Kakimoto, Kazuhiro Tsuga : J Oral Biosci. S1349-0079(23)00073-7 Online ahead of print.2023.
- 5: Current Opinions and Perspectives on Insurance CAD/CAM Crowns): Hitoshi Abekura, Miyuki Yokoi, Kazuko Kagawa, Fumiko Nishio, Shogo Iwaguro, Ryoji Kaou, Kazuhiro Tsuga: The Journal of Hiroshima University Dental Society.55,17-30.2023.
- 6: LRP1 in vascular mural cells modulates cerebrovascular integrity and function in the presence of APOE4: Hiroshi Oue, Yu Yamazaki, Wenhui Qiao, Chen Yuanxin, Yingxue Ren, Aishe Kurti, Francis Shue, Tammee M. Parsons, Ralph B. Perkerson, Keiji Kawatani, Ni Wang, Skylar C. Starling, Bhaskar

- Roy, Ioana-Emilia Mosneag, Tomonori Aikawa, Marie-Louise Holm, Chia-Chen Liu, Yasuteru Inoue, Patrick M. Sullivan, Yan W. Asmann, Betty Y.S. Kim, Guojun Bu, Takahisa Kanekiyo: JCI Insight. 8(7), e163822. 2023.
- 7: Mouse maternal odontogenic infection with *Porphyromonas gingivalis* induces cognitive decline in offspring: Eri Ishida, Hisako Furusho, Ting-Yi Renn, Fumie Shiba, Hung-Ming Chang, Hiroshi Oue, Ryuji Terayama, Yukio Ago, Kazuhiro Tsuga, Mutsumi Miyauchi: Front Pediatr. 11:1203894. 2023.
 - 8: Prosthodontic treatment can improve the ingestible food profile in Japanese adult outpatients: Kimura-Ono A, Maekawa K, Kuboki T, Nawachi K, Fujisawa M, Sato H, Aita H, Koyama S, Hideshima M, Sato Y, Wake H, Nagao K, Kodaira-Ueda Y, Tamaki K, Sadamori S, Tsuga K, Nishi Y, Sawase T, Koshino H, Masumi SI, Sakurai K, Ishibashi K, Ohyama T, Akagawa Y, Hirai T, Sasaki K, Koyano K, Yatani H, Matsumura H, Ichikawa T, Ohkawa S, Baba K: J Prosthodont Res. 2023 Apr 12;67(2):189-195.
 - 9: Antimicrobial adhesive polyurethane gel sheet with cetylpyridinium chloride-montmorillonite for facial and somato prosthesis fastening: Nakamori K, Abe Y, Takeuchi M, Kagawa K, Yoshihara K, Yoshida Y, Tsuga K: J Prosthodont Res. 2023 Apr 12;67(2):180-188.
 - 10: Association between motor symptoms of Parkinson's disease and swallowing disorders: Nakamori M, Toko M, Yamada H, Hayashi Y, Ushio K, Yoshikawa K, Haruta A, Hiraoka A, Yoshikawa M, Nagasaki T, Mikami Y, Maruyama H.: Neurological Sciences, 2023. Online ahead of print.
 - 11: Detailed findings of videofluoroscopic examination among patients with Parkinson's disease on the effect of cervical percutaneous interferential current stimulation: Nakamori M, Toko M, Yamada H, Hayashi Y, Haruta A, Hiraoka A, Yoshikawa M, Nagasaki T, Ushio K, Yoshikawa K, Shimizu Y, Mikami Y, Maruyama H.: Frontiers in Neurology, 14:1279161, 2023.
 - 12: Swallowing sound index analysis using electronic stethoscope and artificial intelligence for patients with Parkinson's disease. Nakamori M, Shimizu Y, Takahashi T, Toko M, Yamada H, Hayashi Y, Ushio K, Yoshikawa K, Hiraoka A, Yoshikawa M, Nagasaki T, Mikami Y, Maruyama H. J Neurol Sci, Nov 15;454:120831, 2023.
 - 13: Impact of neck percutaneous interferential current sensory stimulation on swallowing function in patients with Parkinson's disease: A single-arm, open-label study protocol. Nakamori M, Toko M, Yamada H, Hayashi Y, Yoshikawa K, Yoshikawa M, Nagasaki T, Hiraoka A, Shimizu Y, Mikami Y, Maruyama H. Contemp Clin Trials Commun, 33:101158, 2023.
 - 14: Disinfectant susceptibility of third-generation-cephalosporin/carbapenem-resistant gram-negative bacteria isolated from the oral cavity of residents of long-term-care facilities Haruta A, Kawada-Matsuo M, Le MN, Yoshikawa M, Kajihara T, Yahara K, Kitamura N, Kutsuno S, Arai C, Takeuchi M, Sugawara Y, Hisatsune J, Tsuga K, Ohge H, Sugai M, Komatsuzawa H. Appl Environ Microbiol, 89(1): e0171222, 2023.
 - 15: Developmental impairments of craniofacial bone and cartilage in transgenic mice expressing FGF10. Yoshioka H, Kagawa K, Minamizaki T, Nakano M, Aubine JE, Kozai K, Tsuga K, Yoshiko Y. Bone Rep, 26:18:101692, 2023.

B) Review

C) Publications

D) Other Publications

- 1: New tongue training device “Pekojina”: Yoshikawa Mineka, JSDNNM homepage Column January issue, 2023.
- 2: “Denture”: Yoshikawa Mineka: Handbook of Eating, Swallowing and Nutritional Care for Neurological Diseases - Guide and Q&A for patients, families and care staff -Chapter 2-7, Ishiyaku Pub, Inc, P60-63, 2023.
- 3: Chair side Q&A, Question about gerodontology, #17 Are there any oral characteristics that appear with menopause? : Yoshikawa Mineka, The journal of dental hygienist (July issue), Quintessence publishing, Vol. 47, P27, 2023.
- 4: Oral function and rehabilitation: Yoshikawa Mineka: Monthly Book ENTONI “Desphagia treatment”, Zen Nihonbyoin Shuppankai, No.280, P32-40, 2023.

E) Presentations at Scientific Meetings

- 1: Assessment of bone density of cancellous bone at the implant site by measuring cutting torque: Wakamatsu K, Doi K, Kobatake R, Oki Y, Oue H, Kubo T, Tsuga K: The 53rd Annual Scientific Meeting of the Japanese Society of Oral Implantology, Sapporo, 2023.
- 2: Use of intraoral scanner in the evaluation of oral health : Kawagoe M, Doi K, Munenaga C, Oue H, Umehara H, Kubo T, Tsuga K: The 53rd Annual Scientific Meeting of the Japanese Society of Oral Implantology, Sapporo, 2023.
- 3: Development of a photosensitive collagen sealing method that enables reliable retention of the bone substitutes: Yasuda K, Okada S, Hashimoto Y, Tsuga K: The 53rd Annual Scientific Meeting of the Japanese Society of Oral Implantology, Sapporo, 2023.
- 4: Establishment of bone density evaluation method using a novel bone cutting drill: Doi K, Wakamatsu K, Oki Y, Oue H, Kubo T, Kobatake R, Tsuga K: The 43rd Annual Scientific Meeting of the Chugoku/Shikoku Branch of the Japanese Society of Oral Implantology, Kochi, 2023.
- 5: Establishment of bone density evaluation method by measuring torque value of newly designed drill: Wakamatsu K, Doi K, Kobatake R, Oki Y, Oue H, Kubo T, Konishi M, Tsuga K: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association and the 107th Hiroshima University Dental Society Regular Meeting, Hiroshima, 2023.
- 6: Relationship between Intraoperative bone density assessment and implant primary stability using a novel drill: Morimoto Y, Doi K, Wakamatsu K, Kobatake R, Oki Y, Kubo T, Tsuga K: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association and the 107th Hiroshima University Dental Society Regular Meeting, Hiroshima, 2023.
- 7: A novel implant placement technique using a three-dimensionally-printed duplicate denture for implant-stabilized overdentures: Izumikawa T, Doi K, Shimoi M, Itotagawa A, Iwaguro S, Kubo T, Tsuga K: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association and the 107th Hiroshima University Dental Society Regular Meeting, Hiroshima, 2023.
- 8: Application of intraoral scanner in the evaluation of oral health : Comparative study in O'Leary's plaque control record: Yoshiga C, Doi K, Oue H, Kawagoe M, Kobatake R, Umehara H, Wakamatsu K, Tsuga K: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association and the 107th Hiroshima University Dental Society Regular Meeting, Hiroshima, 2023.
- 9: Clinical report of two-years follow-up after cementing PEEK crown on molars: Yokoi M, Abekura H, Kagawa K, Nishio F, Umehara H, Kato M, Oki Y, Doi K, Morita K, Tsuga K.:Annual Scientific Meeting of Japan Prosthodontic Society, Chugoku & Shikoku Branch, September 2-3, 2023
- 10: Investigation of antimicrobial properties of PEEK with silver ion-containing zeolite: Masamichi Katou, Fumiko Nishio, Kouji Morita, Hitoshi Abekura, Kazuhiro Tsuga.The 62nd Hiroshima Prefectural Dental Association The 107th Annual Meeting of Hiroshima University Dental Society, 2023
- 11: Evaluation of polished surfaces of crown-colored PEEK materials: Momoyo Higo, Shogo Iwaguro, Ryoji Kato, Yukihiro Takayama, Haruya Kawabata, Masamichi Katou, Fumiko Nishio, Kouji Morita, Hitoshi Abekura, Kazuhiro Tsuga. The 62nd Hiroshima Prefectural Dental Association The 107th Annual Meeting of Hiroshima University Dental Society, 2023
- 12: Effect of tongue training using medical tongue training equipment on tongue pressure in early older adults: Maho Takeuchi, Mineka Yoshikawa, Miyuki Yokoi, Kazuko Kagawa, Chiho Takeda, Yutaro Takahashi, Azusa Haruta, Aya Hiraoka, Hiroshi Oue, Kazuhiro Tsuga: IAGG Asia/Oceania Regional Congress 2023, Yokohama (Japan), 2023.
- 13: The effect of experimental tooth loss on gut microbiota and cognitive function in mice: Takashi Ogino, Miyuki Yokoi, Hiroshi Oue, Rie Hatakeyama, Yuhei Hashimoto, Eri Ishida, Kazuhiro Tsuga: The 62nd Hiroshima Prefectural Dental Association The 107th Annual Meeting of Hiroshima University Dental Society, 2023.
- 14: The history and challenges of forming an eating and swallowing support team at Hiroshima University Hospital: Hirayama J, Yoshikawa K, Amano K, Mashida E, Kawagoe M, Fudeho K, Yoshikawa M, Nakamori M: The 29th Annual meeting of the Japanese society of dysphagia rehabilitation, Yokohama (Japan), 2023.
- 15: Efforts to improve tongue pressure using the tongue pressure training device "Pekojina" for convalescent stroke patients: Yoshikawa M, Sakihama H, Takemoto R, Tsuga K: The 29th Annual meeting of the Japanese society of dysphagia rehabilitation, Yokohama (Japan), 2023.
- 16: Relationship between oral function and “fast eating”: Yokoi M, Hiraoka A, Takeuchi M, Maruyama

- M, Takeda C, Haruta A, Takahashi Y, Yoshikawa M, Yoshida M, Tsuga K: The 34th Annual meeting of the Japanese society of Japanese Society of Gerodontology, Yokohama (Japan), 2023.
- 17: Effects of tongue training using medical tongue training equipment on tongue pressure in early older adults: Takeuchi M, Yoshikawa M, Yokoi M, Kagawa K, Takeda C, Takahashi Y, Haruta A, Hiraoka A, Oue H, Tsuga K: IAGG Asia/Oceania regional congress, Yokohama (Japan), 2023.
 - 18: Oral and rectal colonization by antimicrobial-resistant Gram-Negative bacteria in older adults requiring severe intensive nursing care admitted to a long-term care facility: Yoshikawa M, Haruta A, Kajihara T, Takeuchi M, Kawada-Matsuo M, Nguyen-Tra Le M, Tsuga K, Komatsuzawa H, Ohge H, Sugai M: IAGG Asia/Oceania regional congress, Yokohama (Japan), 2023.

F) Special lectures in academic meetings

1. Prosthetic treatment and nutrition considering changes in life stages: Yoshikawa Mineka, Japan Prosthodontic society Tohoku/Hokkaido Branch, Lifelong learning seminar Prosthodontic dentistry protecting “Nutrition intake” and “Tasty”
2. learning about the importance of nurturing chewing skills with our instructor!: Yoshikawa Mineka, Symposium, the 29th mastication and health family forum, Japanese society for mastication science and health promotion, 2023.
3. Oral frailty and oral hypofunction~: Yoshikawa Mineka, Aki-Ota Cho oral care workshop, 2023.
4. Assessment and management of oral function and oral rehabilitation in cancer patients: Yoshikawa Mineka, 2023 International conference of multidisciplinary oral function management and oral rehabilitation of cancer patients in Taipei Medical University, 2023.
5. Oral function in the older adults~ Oral frailty and oral hypofunction~: Yoshikawa Mineka, Shikoku Welfare Branch 2023 Oral frailty seminar keynote speech, 2023.
6. Oral function in Home care patients ~Occlusion and Mastication~: Yoshikawa Mineka, 2023 Hiroshima Prefecture Comprehensive regional medical and nursing care project, Hiroshima University School of Dentistry, Department of Oral Health Sciences, Project to improve the quality of dental hygienists to promote oral health and home dental care, 2023.
7. Basic knowledge and dental response for the elderly who need nursing care: Kazuhiro Tsuga, Hiroshima Prefectural Project for Ensuring Comprehensive Regional Medical Care Hiroshima Prefectural Training Workshop for Consultants for People with Difficulties in Providing Dental Health Care Services, 2022
8. Early detection of oral frail and its preventive measures: Kazuhiro Tsuga, Fukuyama-Fuchu Regional Health Policy Council, Reiwa5 Health Hiroshima 21 Area Plan Promotion Workshop, 2022.
9. SDGs and DX both start from prevention of oral hypofunction!: Kazuhiro Tsuga, Reiwa5 Shimane Dental Society, 2022.

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

- 1: Grant-in-Aid for Early-Career Scientists: Umehara H: Development of novel mesh membrane for patients of susceptibility to infection. (Grant No. 23K16090). ¥1,950,000
- 2: MEXT Grant-in-Aid for Scientific Research (C): Oki Y: Novel development of bone remodeling regulating porous titanium. (Grant No. 22K10034). ¥1,170,000
- 3: MEXT Grant-in-Aid for Scientific Research (C): Kubo T: Exploring the effects of osteoporosis therapy on masticatory and cognitive functions. (Grant No. 20K10072). ¥1,690,000
- 4: MEXT Grant-in-Aid for Scientific Research(B): Tsuga K: Can Diagnosis of Low Tongue Pressure and Early Intervention in the Elderly Prevent Oral Hypofunction. (Grant No.21H03132) ¥3,380,000
- 5: Grant-in-Aid for Challenging Research (Pioneering) : Establishment of an infrastructure for research on eating behavior based on multidimensional sensor information. (Grant No.21K183050B) ¥300,000
- 6: Program for Developing the Next-Generation of Innovative Researchers at Hiroshima University: Tsuga K. ¥1,400,000
- 7: SHOFU PEEK Crown Clinical Application: Tsuga K. ¥780,000
- 8: MIRAI 2.0 Project PhD Short Course: Tsuga K. ¥343,000
- 9: MEXT Grant-in-Aid for Scientific Research (C): Takeuchi M: Development of Antibacterial Urethane Gel Adhesive Sheet for Artificial Breast Application. (Grant No. 21K09978). ¥1,690,000.
- 10: Grants-in-Aid for Scientific Research (Fundamental Research (C)) Continuation: Understanding the

distribution of oral resistant bacteria and the impact of oral hygiene management by dentists on medical/nursing-related pneumonia, Assignment number 20K10248. ￥3,700,000

- 11: Grants-in-Aid for Scientific Research (Grant-in-Aid for Research Activity Start-up): Does the use of disinfectants and antimicrobials in the oral cavity cause disinfectant resistance, Assignment number 23K19745. ￥1,100,000
- 12: MEXT Grant-in-Aid for Early-Career Scientists : Hiraoka A : New development of posture-maintaining orthosis useful for preventing low back pain during dental treatment for long-term care recipients. (Grant No. 20K18806). ￥1,800,000
- 13: Hiroshima Prefecture “Bio Design Program Operating Expenses Subsidy” - Seed and Needs Exploration Research Grant: Mariko Maruyama: Development of a Resident Simulation System (RSS) for Dentistry. ￥500,000

(5) Academic Awards, etc.

(6) Patents

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Department of Advanced Prosthodontics

Division of Preventive and Restorative Dentistry

(Department of Prosthetic Dentistry)

(1) Staff and Students

Professor : Kazuhiro Tsuga
 Associate Professor : Kazuya Doi
 Assistant Professor : Koji Morita, Yusuke Makihara, Keisuke Yasuda, Miyuki Yokoi
 Resident : Kazuko Kagawa, Hitomi Kimura, Chiho Takeda
 Graduate Student : Yuhei Hashimoto, Kaiken Wakamatsu, Chihiro Yoshiga, Masayasu Kato, Shio Maruyama
 Research Fellow : Reiko Kobatake
 Researcher : Hitoshi Abekura
 Administrative staff : Rinko Kurumi

(2) Main Research Activities

- 1: Basic research on PEEK materials for dental applications and clinical research on PEEK crowns for molars
- 2: Colonization survey of drug-resistant bacteria in long-term care facilities
- 3: Implementation of tongue resistance training for the elderly and verification of its effect
- 4: Relationship between eating behavior and oral function in healthy young people
- 5: Relationship between cognitive decline due to tooth loss and intestinal bacteria
- 6: The mechanism by which tooth loss causes cognitive decline
- 7: Development of novel biomaterial with "bio-metal"
- 8: Establishment of a new oral hygiene assessment method using an IOS
- 9: Development of a predict diagnostic device for implant treatment
- 10: Performance and safety evaluation of dental materials containing new inorganic antibacterial agents
- 11: Establishment of a new dysphagia evaluation method using a portable ultrasound diagnostic device
- 12: Study on evaluation method of Preferred chewing side

(3) Research Achievements

D) Original Papers (including Case Reports)

- 1: Comparative implant stability of a novel implant-porous titanium complex and an implant-porous hydroxyapatite complex for bone reconstruction material: Kobatake R, Doi K, Wakamatsu K, Oki Y, Morita K, Tsuga K.: Original: Journal of Hard Tissue Biology, 32(3):177-182, 2023.
- 2: A case report of oral hygiene evaluation using intraoral scanner: Yoshiga C, Doi K, Kawagoe M, Oue H, Kobatake R, Umehara H, Tsuga K: The journal of Hiroshima University Society, 55(2):138-142, 2023.
- 3: Investigation of the utility of dental plaque detection using intraoral scanner images: Yoshiga C, Doi K, Oue H, Kobatake R, Kawagoe M, Umehara H, Tsuga K: Imaging Science in Dentistry, in press.
- 4: A case report of oral function restoration by dental implant treatment for missing unilateral mandibular distal-extensions : Doi K : Ann Jpn Prosthodont Soc 15 : 575-578, 2023
- 5: Radiopaque properties of PEEK crown : Fumiko Nishio, Koji Morita, Kazuya Doi, Masamichi Kato, Hitoshi Abekura, Hidehisa Yamaoka, Naoya Kakimoto, Kazuhiro Tsuga : J Oral Biosci. S1349-0079(23)00073-7 Online ahead of print.2023.
- 6: Current Opinions and Perspectives on Insurance CAD/CAM Crowns): Hitoshi Abekura, Miyuki Yokoi, Kazuko Kagawa, Fumiko Nishio, Shogo Iwaguro, Ryoji Kaou, Kazuhiro Tsuga: The Journal of Hiroshima University Dental Society.55,17-30.2023.
- 7: Antimicrobial adhesive polyurethane gel sheet with cetylpyridinium chloride-montmorillonite for facial and somato prosthesis fastening: Nakamori K, Abe Y, Takeuchi M, Kagawa K, Yoshihara K, Yoshida Y, Tsuga K: J Prosthodont Res. 2023 Apr 12;67(2):180-188.

- 8: Developmental impairments of craniofacial bone and cartilage in transgenic mice expressing FGF10. Yoshioka H, Kagawa K, Minamizaki T, Nakano M, Aubine JE, Kozai K, Tsuga K, Yoshiko Y. Bone Rep, 26:18:101692, 2023.

B) Review

E) Publications

D) Other Publications

- 5: Application of PEEK material to full molar crowns: Hitoshi Abekura, Dental Digital Handbook 2, No. 7, Yamakin, p 60-66, 2023

E) Presentations at Scientific Meetings

- 1: Assessment of bone density of cancellous bone at the implant site by measuring cutting torque: Wakamatsu K, Doi K, Kobatake R, Oki Y, Oue H, Kubo T, Tsuga K: The 53rd Annual Scientific Meeting of the Japanese Society of Oral Implantology, Sapporo, 2023.
- 2: Use of intraoral scanner in the evaluation of oral health : Kawagoe M, Doi K, Munenaga C, Oue H, Umehara H, Kubo T, Tsuga K: The 53rd Annual Scientific Meeting of the Japanese Society of Oral Implantology, Sapporo, 2023.
- 3: Development of a photosensitive collagen sealing method that enables reliable retention of the bone substitutes: Yasuda K, Okada S, Hashimoto Y, Tsuga K: The 53rd Annual Scientific Meeting of the Japanese Society of Oral Implantology, Sapporo, 2023.
- 4: Establishment of bone density evaluation method using a novel bone cutting drill: Doi K, Wakamatsu K, Oki Y, Oue H, Kubo T, Kobatake R, Tsuga K: The 43rd Annual Scientific Meeting of the Chugoku/Shikoku Branch of the Japanese Society of Oral Implantology, Kochi, 2023.
- 5: Establishment of bone density evaluation method by measuring torque value of newly designed drill: Wakamatsu K, Doi K, Kobatake R, Oki Y, Oue H, Kubo T, Konishi M, Tsuga K: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association and the 107th Hiroshima University Dental Society Regular Meeting, Hiroshima, 2023.
- 6: Relationship between Intraoperative bone density assessment and implant primary stability using a novel drill: Morimoto Y, Doi K, Wakamatsu K, Kobatake R, Oki Y, Kubo T, Tsuga K: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association and the 107th Hiroshima University Dental Society Regular Meeting, Hiroshima, 2023.
- 7: A novel implant placement technique using a three-dimensionally-printed duplicate denture for implant-stabilized overdentures: Izumikawa T, Doi K, Shimoi M, Itotagawa A, Iwaguro S, Kubo T, Tsuga K: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association and the 107th Hiroshima University Dental Society Regular Meeting, Hiroshima, 2023.
- 8: Application of intraoral scanner in the evaluation of oral health : Comparative study in O'Leary's plaque control record: Yoshiga C, Doi K, Oue H, Kawagoe M, Kobatake R, Umehara H, Wakamatsu K, Tsuga K: The 62nd Scientific Meeting of Hiroshima Prefectural Dental Association and the 107th Hiroshima University Dental Society Regular Meeting, Hiroshima, 2023.
- 9: Clinical report of two-years follow-up after cementing PEEK crown on molars: Yokoi M, Abekura H, Kagawa K, Nishio F, Umehara H, Kato M, Oki Y, Doi K, Morita K, Tsuga K.:Annual Scientific Meeting of Japan Prosthodontic Society, Chugoku & Shikoku Branch, September 2-3, 2023
- 10: Investigation of antimicrobial properties of PEEK with silver ion-containing zeolite: Masamichi Katou, Fumiko Nishio, Kouji Morita, Hitoshi Abekura, Kazuhiro Tsuga.The 62nd Hiroshima Prefectural Dental Association The 107th Annual Meeting of Hiroshima University Dental Society, 2023
- 11: Evaluation of polished surfaces of crown-colored PEEK materials: Momoyo Higo, Shogo Iwaguro, Ryoji Kato, Yukihiro Takayama, Haruya Kawabata, Masamichi Katou, Fumiko Nishio, Kouji Morita, Hitoshi Abekura, Kazuhiro Tsuga. The 62nd Hiroshima Prefectural Dental Association The 107th Annual Meeting of Hiroshima University Dental Society, 2023
- 12: Effect of tongue training using medical tongue training equipment on tongue pressure in early older adults: Maho Takeuchi, Mineka Yoshikawa, Miyuki Yokoi, Kazuko Kagawa, Chiho Takeda, Yutaro Takahashi, Azusa Haruta, Aya Hiraoka, Hiroshi Oue, Kazuhiro Tsuga: IAGG Asia/Oceania Regional

- Congress 2023, Yokohama (Japan), 2023.
- 13: The effect of experimental tooth loss on gut microbiota and cognitive function in mice: Takashi Ogino, Miyuki Yokoi, Hiroshi Oue, Rie Hatakeyama, Yuhei Hashimoto, Eri Ishida, Kazuhiro Tsuga: The 62nd Hiroshima Prefectural Dental Association The 107th Annual Meeting of Hiroshima University Dental Society, 2023.
 - 14: Relationship between oral function and “fast eating”: Yokoi M, Hiraoka A, Takeuchi M, Maruyama M, Takeda C, Haruta A, Takahashi Y, Yoshikawa M, Yoshida M, Tsuga K: The 34th Annual meeting of the Japanese society of Japanese Society of Gerodontology, Yokohama (Japan), 2023.
 - 15: Effects of tongue training using medical tongue training equipment on tongue pressure in early older adults: Takeuchi M, Yoshikawa M, Yokoi M, Kagawa K, Takeda C, Takahashi Y, Haruta A, Hiraoka A, Oue H, Tsuga K: IAGG Asia/Oceania regional congress, Yokohama (Japan), 2023.

F) Special lectures in academic meetings

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

- 1: Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University: Wakamatsu K: Development of a novel bone density evaluation method by high precision cutting torque value measurement. ¥400,000
- 2: Program for Developing and Supporting the Next-Generation of Innovative Researchers at Hiroshima University: Yoshiga C: Establishment of an AI digital oral health assessment method for preemptive prevention. ¥400,000
- 3: MEXT Grant-in- Aid for Young Scientists: Kobatake R: Novel development of bone reconstruction material / dental implant complex. (Grant No. 21K17043). ¥2,730,000.
- 4: MEXT Grant-in-Aid for Scientific Research (C): Doi K: Establish of bone regeneration therapy using bio metal. (Grant No. 21K09934). ¥1,950,000.
- 5: 2023-2024: Collaborative Research Grant from NSK Nakanishi Corporation: Doi K. ¥2,040,000.
- 6: Research Support Grant for Seeds of Specified Clinical Trials, Hiroshima University Hospital: Doi K: Evaluation of the usefulness of an oral hygiene assessment method using an intraoral scanner (IOS) for patients with periodontal disease and peri-implantitis. ¥1,000,000.
- 7: MEXT Grant-in-Aid for Scientific Research (C): Abekura H: Research on clinical application of last molar crowns and molar bridges made of PEEK (Grant No. 21K10021). ¥520,000.
- 8: ITI Research Grant Yasuda K: Development of a photosensitive collagen sealing method that maintains the morphology of the bone formation site and enables reliable retention of the bone substitutes (Application no. 2021-1616) ¥1,137,680
- 9: MEXT Grant-in-Aid for Scientific Research (C): Kagawa K: Development of an antibacterial active rechargeable denture system. (Grant No. 22K100770A). ¥1,170,000

(5) Academic Awards, etc.

- 1: Wakamatsu K: Excellent student scholarship of Hiroshima university, 2023
- 2: Doi K: selected projects of Research Support Grant for Seeds of Specified Clinical Trials, Hiroshima University Hospital, 2023

(6) Patents

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Department of Orthodontics and Craniofacial Development Biology

Division of Oral Health and Development

Department of Orthodontics

(1) Staff and Students

Professor: Kotaro Tanimoto

Associate Professor: Ryo Kunitatsu, Naoto Hirose

Assistant Professor: Yuki Asakawa, Yuki Yoshimi, Takaharu Abe, Makoto Yanoshita, Isamu Kado, Shota Ito

Intern: Koji Iwai, Sakura Yamada, Kazuyo Ando, Shuzo Sakata, Ayaka Nakatani, Sayuri, Nishiyama, Yuma Koizumi, Kazutaka Ikeda, Tomohiro Ogasawara, Eri Tsuboi, Kodai Rikitake, Naoki Kubo

Graduate Student: Kanae Oda, Fumika Abe, Shintaro Ogashira, Ayaka Odo, Risako Oshiro, Saki Ogawa, Daiki Kita, Katsuhito Sugai, Izumi Tanabe, Shun Ogata, Naonobu Okimura, Ami Ono, Rio Shibata, Saki Takesue, Minoru Nakazato, Ryosuke Nakajima, Shina Pasanen, Reina Hatano, Akira Hirabae, Kanako Okazaki, Erika Otake, Marino Yoshida

Visiting Professor: Kazuo Tanne (~2023.3), Eiji Tanaka, Ichiro Takahashi, Shoichi Miyawaki

Registered Intern: Kuniaki Tanaka, Kazunori Itatani, Shoutoku Kojima, Aya Kimura, Azusa Onishi, Jin Izumino, Hiroki So, Tomoka Hiraki, Ayana Nakano

Dental Hygienist: Miho Okada, Mariko Nakamura (~2023.7)

(2) Main Research Activities

- 1: Elucidation of pathogenic mechanism in malocclusion and management of oral maxillofacial skeletal growth
- 2: Optimization of tooth movement by orthodontic force
- 3: Establishment of a new orthodontic treatment based on the image and biochemical diagnosis of temporomandibular disorders (TMD)
- 4: Application of regeneration medicine to orthodontic treatment
- 5: Suppression of caries risk in orthodontic treatment
- 6: Evaluation of the contribution of various oral functions to general fitness
- 7: Development of new instruments and materials for orthodontic treatment

(3) Research Achievements

A) Original Papers (2023.1-2023.12 including Case Reports)

- 1 : Stem cell-derived from human exfoliated deciduous teeth-based media in a rat root resorption model : Odo A., Kunitatsu R., Abe T., Sakata S., Nakatani A., Rikitake K., Koizumi Y., Tanabe I., Yoshimi Y., Okimura N., Tanimoto K. : Arch Oral Biol., 158:105854, 2023. doi:0.1016/j.archoralbio.2023.105854
- 2 : Isolation of Streptococcus mutans temperate bacteriophage with broad killing activity to S. mutans clinical isolates : Sugai K, Kawada-Matsuo M, Mi Nguyen-Tra Le, Sugawara Y, Hisatsune J., Fujiki J., Iwano H., Tanimoto K., Sugai M., Komatsuzawa H.: iScience., 14;26(12):108465, 2023. doi: 10.1016/j.isci.2023.108465
- 3 : Diversity and Standard Nomenclature of Staphylococcus aureus Hyaluronate Lyases HysA and HysB : Hisatsune J., Koizumi Y., Tanimoto K., Sugai M : Microbiol Spectr., 17;11(4):e0052423, 2023. doi: 10.1128/spectrum.00524-23
- 4 : Vasoactive intestinal peptide receptor 2 signaling promotes breast cancer cell proliferation by enhancing the ERK pathway : Asano S., Ono A., Sakamoto K., Hayata-Takano A., Nakazawa T., Tanimoto K., Hashimoto H., Ago Y.: Peptides, 161, 2023
- 5 : Effect of Er: YAG laser irradiation on bone metabolism-related factors using cultured human

- osteoblasts : Tsuka Y., Kunimatsu R., Sakata S., Nakatani A., Kado I., Ito S., Putranti NAR., Ohshima S., Tanimoto K.: J Laser Med Sci., 14:e9, 2023. doi: 10.1177/09727531231156505
- 6 : Effects of peripheral nerve injury on the induction of c-Fos and phosphorylated ERK in the brainstem trigeminal sensory nuclear complex : Terayama R., Tsuji K., Furugen H., Duong M., Nakatani A., Uchibe K.: Ann. Neurosci., 30(3):177–187, 2023. doi:10.1177/09727531231156505
 - 7 : Image preprocessing with contrast-limited adaptive histogram equalization improves the segmentation performance of deep learning for the articular disk of the temporomandibular joint on magnetic resonance images : Yoshimi Y., Mine Y., Ito S., Takeda S., Okazaki S., Nakamoto T., Nagasaki T., Kakimoto N., Murayama T., Tanimoto K.: Oral Radiol., 14:S2212-4403(23)00117-7, 2023. doi:10.1016/j.oooo.2023.01.0
 - 8 : Bone Differentiation Ability of CD146-Positive Stem Cells from Human Exfoliated Deciduous Teeth : Kunimatsu R., Rikitake K., Yoshimi Y., Putranti NAR., Hayashi Y., Tanimoto K.: Int J Mol Sci., 17;24(4):4048, 2023. doi:10.3390/ijms24044048
 - 9 : Camouflage Correction of Skeletal Class III Severe Open Bite with Tooth Ankylosis Treated by Temporary Anchorage Devices : A Case Report : Yashima Y., Kaku M., Yamamoto T., Cynthia CM., Ono S., Takeda Y., Tanimoto K.: Dent J., 21;11(4):107, 2023. doi:10.3390/dj11040107
 - 10 : The physiological function of deglutition and swallowing in patients with maxillary protrusion after mandibular advancement : Kaku M., Kagawa H., Yamamoto T., Kojima S., Kamiya T., Shimoe S., Mine Y., Murayama T., Yamamoto I., Tanimoto K.: J. Craniofac. Surg., 1;34(7):1966-1970, 2023. doi:10.1097/SCS.00000000000009479
 - 11 : Comparison of Orthodontic Tooth Movement of Regenerated Bone Induced by Carbonated Hydroxyapatite or Deproteinized Bovine Bone Mineral in Beagle Dogs : Abe T., Kunimatsu R., Tanimoto K.: Materials, 17(1),112, 2023. doi: 10.3390/ma17010112.
 - 12 : High-frequency near-infrared semiconductor laser irradiation suppressed experimental tooth movement-induced inflammatory pain markers in the periodontal ligament tissues of rats : Nakatani A., Kunimatsu R., Tsuka Y., Sakata S., Ito S., Kado I., Putranti NAR., Terayama R., Tanimoto K.: Lasers Med Sci., 38(1), 109,2023. doi: 10.1007/s10103-023-03761-x.
 - 13 : A case of malocclusion with severe trismus and deformities of condyles treated with a comprehensive approach: Hirose N., Yanoshita M., Onishi A., Nishiyama S., Kubo N., Kita D., Tsuboi E., Asakawa Y., Tanimoto K.: J. Jpn Soc T.M.J., 35(1) : 1-20, 2023.
 - 14 : Relationship between postoperative changes in long term of maxillary protrusion and temporomandibular joint disorder after mandibular advancement surgery : Asakawa Y.: Chu-shi. Orthod. Soc., 35(1), 7-14, 2023.
 - 15 : A survey of surgical orthodontics for maxillary protrusion in the department of orthodontics, Hiroshima university hospital for the past 30 years. : Sakata S., Asakawa Y., Yoshimi Y., Kunimatsu R., Ikeda K., Rikitake K., Tanimoto K. : J. Chu-shi. Orthod. Soc., 35(1), 97-104, 2023.
 - 16 : MIR125B-5p Derived from the Mir125b-1 Gene Negatively Regulates Osteoblast Differentiation : Shintaro O.: J. Hiroshima Univ. Dent. Soc : 55(2), 85-93, 2023.
 - 17 : Transcriptomic profiling of mouse vascular smooth muscle cells: Insights into calciprotein particle-induced calcification : Risako O.: J. Hiroshima Univ. Dent. Soc., 55(2), 102-115, 2023.
 - 18 : A Case of Skeletal Maxillary Protrusion Treated with Bilateral Maxillary First Molar Extraction in Orthodontics : Nakajima K., Kunimatsu R., Tanimoto K : J. Hiroshima Univ. Dent. Soc., 55(2), 130-137, 2023.

B) Review (2023.1-2023.12)

1 :

C) Publications (2023.1-2023.12)

1 :

D) Other Publications (2023.1-2023.12)

1 :

E) Presentations at Scientific Meetings (2023.1-2023.12)

- 1 : RadImageNet as a dataset of transfer learning in dental image assessment : Okazaki S., Mine Y., Ito S., Yoshimi Y., Takeda S., Tanimoto K., Murayama T. : The 14th Scientific Meeting of the Japan Dental Academy of Digital Dentistry (Kanagawa), 2023.
- 2 : Comparison of pre-trained convolutional neural networks for skeletal pattern prediction from facial photographs : Yoshimi Y., Mine Y., Ito S., Okazaki S., Hase S., Takeda S., Murayama T., Tanimoto K. : The 14th Scientific Meeting of the Japan Dental Academy of Digital Dentistry (Kanagawa), 2023.
- 3 : Detecting the articular disc of temporomandibular joint on MRI images using object detection AI model : Sano M., Mine Y., Yoshimi Y., Okazaki S., Ito S., Takeda S., Tanimoto K., Murayama T. : The 14th Scientific Meeting of the Japan Dental Academy of Digital Dentistry (Kanagawa), 2023.
- 4 : Gender determination and feature visualization on lateral cephalograms using deep learning approach : Hase H., Mine Y., Okazaki S., Ito S., Yoshimi Y., Takeda S., Tanimoto K., Murayama T. : The 14th Scientific Meeting of the Japan Dental Academy of Digital Dentistry (Kanagawa), 2023.
- 5 : Role of the VPAC2 receptor overactivation implicated in schizophrenia susceptibility : Ono A., Koan D., Asano S., Nakagawa S., Waschek J.A., Tanimoto K., Ago Y.: 56th Annual Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 6 : Structure and function of engineered stromal cell-derived factor-1 α : Abe F., Nakano A., Hirata I., Tanimoto K., Kato K. : 56th Annual Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 7 : The surgical strategy of reconstruction for temporomandibular joint : Odan K., Ono S., Nakagawa T., Mizuta K., Ishida Y., Uetsuki R., Sasaki K., Sakuma M., Fukada S., Hirose N., Asakawa Y., Yanoshita M., Nishiyama S., Tsuboi E., Kubo N., Kaku M., Tanimoto K., Aikawa T. : 56th Annual Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 8 : Basic study for alveolar cleft closure using SHED and carbonate apatite : Kunimatsu R., Rikitake K., Yoshimi Y., Abe T., Tanimoto K.: The 47th Annual Meeting of Japanese Cleft Palate Association (Tokyo), 2023.
- 9 : Examination of osteogenic differentiation potential of CD146-positive deciduous dental pulp-derived mesenchymal stem cells : Rikitake K., Kunimatsu R., Yoshimi Y., Abe T., Tanimoto K.: The 47th Annual Meeting of Japanese Cleft Palate Association (Tokyo), 2023.
- 10 : A relationship between idiopathic condylar resorption of the temporomandibular joint and jaw deformities : Tanimoto K., Kunimatsu R., Asakawa Y., Yoshimi Y., Hirose N.: The 33th Annual Meeting of The Japanese Society for Jaw Deformities (Tokyo), 2023.
- 11 : Investigation of the effect of mandibular advancement orthognathic surgery on the morphology of the upper-airway : Kunimatsu R., Sakata S., Asakawa Y., Yoshimi Y., Abe T., Iwai K., Ikeda K., Rikitake K., Tanimoto K.: The 33th Annual Meeting of The Japanese Society for Jaw Deformities (Tokyo), 2023.
- 12 : Long-term postoperative stability of maxillary protrusion following mandibular advancement surgery : Asakawa Y., Sakata S., Yoshimi Y., Ikeda K., Rikitake K., Hirose N., Kunimatsu R., Tanimoto K.: The 33th Annual Meeting of The Japanese Society for Jaw Deformities (Tokyo), 2023.
- 13 : Clinical statistical survey of orthognathic patients for 30 years in Hiroshima University Hospital Orthodontics : Yoshimi Y., Asakawa Y., Sakata S., Rikitake K., Ikeda K., Hirose N., Kunimatsu R., Kotaro Tanimoto K.: The 33rd Annual Meeting of The Japanese Society for Jaw Deformities (Tokyo), 2023.
- 14 : Comparison of masticatory muscle composition before and after orthognathic surgery for skeletal class 2 patients : Sakata S., Asakawa Y., Yoshimi Y., Kunimatsu R., Ikeda K., Rikitake K., Tanimoto K.: The 33rd Annual Meeting of The Japanese Society for Jaw Deformities (Tokyo), 2023.
- 15 : Clinical Invastigation of patient trends at Hiroshima University Hospital Cleft and Craniofacial Center during the first six years after the center's establishment : Ogasawara T., Yoshimi Y., Kado I., Ito S., Asakawa Y., Hirose N., Tanimoto K.: The 66th Annual Meeting of the Chu-Shikoku Orthodontic Society (Tokushima), 2023.
- 16 : Clinical statistical research on development of temporomandibular disorders in children at orthodontic

- clinic, Hiroshima University Hospital : Tsuboi E., Hirose N., Asakawa Y., Yanoshita M., Nishiyama S., Kubo N., Kita D., Takesue S., Nakazato M., Nakazima R., Tanimoto K.: The 66th Annual Meeting of the Chu-Shikoku Orthodontic Society (Tokushima), 2023.
- 17 : Bone structure analysis of the mandibular condyle in patients with jaw deformity and lateral mandibular deviation : Ikeda K., Asakawa Y., Yoshimi Y., Sakata S., Rikitake K., Kunimatsu R., Tanimoto K.: The 66th Annual Meeting of the Chu-Shikoku Orthodontic Society (Tokushima), 2023.
 - 18 : A case of surgical orthodontics for a patient with severe maxillary protrusion after treatment of TMD : Yanoshita M., Hirose N., Nishiyama S., Tsuboi E., Kubo N., Kita D., Takesue S., Nakazima R., Nakazato M., Tanimoto K.: The 36th Annual Meeting of the Japanese Society for the Temporomandibular Joint (Tokyo), 2023.
 - 19 : A case an orthodontic approach was investigated for OSA associated with language development delay in an infant : Abe T., Sakata S., Iwai K., Kunimatsu R., Kiyohara Y., Kumagai H., Tanimoto K., Shiomi T.: Joint Congress: the 45th Annual Meeting of Japanese Society of Sleep Research/The 30th Annual Meeting of Japanese Society for Chronobiology (Kanagawa), 2023.
 - 20 : Outcome of oral myofunctional therapy concurrent with orthodontic treatment for children with Noonan's syndrome: Ando K., Asakawa Y., Okada M., Yamada S., Yamoto S., Nakatani A., Tanimoto K. : The 21th Annual Meeting of the Japan Society for Oral Myofunctional Therapy (Tokyo), 2023.
 - 21 : Effect of human deciduous dental-pulp-derived MSCs-derived conditioned medium on the metabolism of osteoblast and BMSCs : Kunimatsu R., Hiraki T., Rikitake K., Sakata S., Abe T., Ando K., Nakatani A., Tanimoto K.: The 82th Annual Meeting of the Japanese Orthodontic Society (Niigata), 2023.
 - 22 : Management of maxillary protrusion with concurrent root resorption during orthodontic treatment (case1) : Hirose N., Yanoshita M., Nishiyama S., Kubo N., Kita D., Nakazima R., Nakazato M., Takesue S., Iwai K., Tanimoto K.: The 82th Annual Meeting of the Japanese Orthodontic Society (Niigata), 2023.
 - 23 : Management of maxillary protrusion with concurrent root resorption during orthodontic treatment (case2) : Yanoshita M., Hirose N., Kubo N., Nishiyama S., Kita D., Takesue S., Nakazima R., Nakazato M., Iwai K., Tanimoto K.: The 82th Annual Meeting of the Japanese Orthodontic Society (Niigata), 2023.
 - 24 : The analysis of oral microbiome and classification of caries risk by CAMBRA in Hiroshima university hospital : Kado I., Kunimatsu R., Yoshimi Y., Yamada S., Koizumi Y., Ogasawara T., Tanimoto K. The 82th Annual Meeting of the Japanese Orthodontic Society (Niigata), 2023.
 - 25 : Evaluation about correlation between classification of malocclusion and caries risk by saliva test : Koizumi Y., Kunimatsu R., Yoshimi Y., Kado I., Yamada S., Ogasawara T., Tanimoto K.: The 82th Annual Meeting of the Japanese Orthodontic Society (Niigata), 2023.
 - 26 : High-frequency semiconductor laser irradiation enhances osteogenic differentiation of human cementoblast lineage cells : Nakatani A., Kunimatsu R., Sakata S., Tsuka Y., Miyauchi M., Takata T., Tanimoto K.: The 82th Annual Meeting of the Japanese Orthodontic Society (Niigata), 2023.
 - 27 : A case of displaced maxillary canine tooth germs treated with rapid maxillary expansion in sages : Suzuki Y., Kuroe K., Naito M., Nakano M., Tanimoto K. : The 82th Annual Meeting of the Japanese Orthodontic Society (Niigata), 2023.
 - 28 : A case of impacted mandibular right second molar caused by odontoma : Ito S., Abe T., Cynthia CM., Koizumi Y., Hamada M., Yanamoto S., Tanimoto K.: The 62th Scientific Meeting of Hiroshima Prefectural Dental Association and 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.
 - 29 : Automated prediction of a cephalometric parameter and feature visualization on lateral profile photographs using deep learning approach : Aoe H., Mine Y., Ito s., Yoshimi Y., Okazaki S., Takeda S., Kakimoto N., Tanimoto K., Murayama I.: The 62th Scientific Meeting of Hiroshima Prefectural Dental Association and 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.
 - 30 : Sex estimation and feature visualization from lateral cephalograms using deep learning approach : Hase S., Mine Y., Ito S., Yoshimi Y., Okazaki S., Takeda S., Kakimoto N., Tanimoto K., Murayama I. : Tanimoto K.: The 62th Scientific Meeting of Hiroshima Prefectural Dental Association and 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.
 - 31 : A case of displaced maxillary canine tooth germs treated with rapid maxillary expansion in sages :

- Suzuki Y., Kawamoto M., Takeda N., Waki Y., Osugi S., Sugai T., Suzuki Y., Nakajima K., Yoshida M., Nakano M., Tanimoto K., Nishimura R., Naito M. : The 62th Scientific Meeting of Hiroshima Prefectural Dental Association and 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.
- 32 : First isolation of a novel temperate bacteriophage specifically killing activity against *Streptococcus mutans* clinical isolates : Katsuhito S., Miki K., Mi N., Yo S., Junzo H., Jumpei F., Hidetomo I., Kotaro T., Motoyuki S., Hitoshi K. : the 65th academic conference of Oral Biosciences (Tokyo), 2023. Association for Oral Biology (Tokyo), 2023.
- 33 : Development of a mouse model of neuron-specific VIPR2 overexpression to uncover the schizophrenia susceptibility : Ono A., Asano S., Ago Y.: The 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 34 : Development of a mouse model of neuron-specific VIPR2 overexpression to uncover the schizophrenia susceptibility : Ono A., Imado E., Ago Y.: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health (Hokkaido), 2023.
- 35 : First isolation of a novel temperate bacteriophage specifically killing activity against *Streptococcus mutans* clinical isolates : Katsuhito S., Miki K., Mi N., Yo S., Junzo H., Jumpei F., Hidetomo I., Kotaro T., Motoyuki S., Hitoshi K. : the 65th academic conference of Oral Biosciences (Tokyo), 2023.

F) Special lectures in academic meetings (2023.1-2023.12)

- 1 : Screening and Treatment of Idiopathic Condylar Resorption (ICR) at the Orthodontic Department in Hiroshima University Hospital. : Hirose N.: The 66th Annual Meeting of the Chu-Shikoku Orthodontic Society (Tokushima), 2023.
- 2 : Tanimoto K : 関節円板転位とその関連因子, 36th Annual Meeting of The Japanese Society for the Temporomandibular Joint (Tokyo), 2023.
- 3 : Hirose N: Orthodontic interventions addressing temporomandibular joint disorders (TMDs) and occlusions., The 57 th Academic conference of The Japanese Society for Temporimandibular Joint (online), 2023.
- 4 : Tanimoto K : 臨床研修施設の新規申請、研修機関からの実態報告、および実地調査, The 82th Annual Meeting of the Japanese Orthodontic Society (Nigata), 2023.
- 5 : Tanimoto K : Overview of the preparation of clinical practice guidelines by the Japanese Orthodontic Society (Nigata), 2023.
- 6 : Kunitatsu R : Current status of basic and clinical training in the department of orthodontics at Hiroshima University and future prospect, The 82th Annual Meeting of the Japanese Orthodontic Society (Nigata), 2023.
- 7 : Tanimoto K : 広島大学病院歯科における連携医療の実践 : The 62th Scientific Meeting of Hiroshima Prefectural Dental Association and 107th Hiroshima University Dental Society Regular Meeting (Hiroshima), 2023.
- 8 : Hirose N: Diagnosis methods for temporomandibular joint disorders (TMDs) and Risks during orthodontic treatment., KDR (Kochi), 2023.

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

- 1: Grant-in-aid for Scientific Research (C) : Tanimoto K., Functional analysis of exosome in human exfoliated deciduous teeth (SHED) and application to bone regeneration for cleft palate. 21K10186. 1,300,000 yen
- 2: Grant-in-aid for Scientific Research (C) : Tsuka Y., To elucidate the ability of plant-derived extracts to induce periodontal tissue metabolism during tooth movement and the mechanism of their anti-inflammatory effects. 23K09414. 2,080,000 yen
- 3: Grant-in-aid for Scientific Research (C) : Yoshimi Y., Application to root resorption prevention using functional amelogenin peptide and stem cell paracrine action. 22K10247. 1,170,000 yen
- 4: Grant-in-aid for Scientific Research (C) : Hirose N., Elucidation of mechanics of ideopathic condylar resorption and establishment of new therapeutic methods with estrogen-NFAT pathway. 22K10272. 1,430,000 yen

- 5: Grant-in-aid for Scientific Research (C) : Asakawa Y., Elucidation of mechanisms of promoting mandibular cartilage differentiation by Sema3A and its application to new treatment with mandibular retrusion. 22K10273. 1,040,000 yen
- 6: Grant-in-aid for Scientific Research (C) : Abe T., Elucidating the metabolic activity of periodontal tissue and constructing a treatment to prevent root resorption utilizing stem cells from the culture media of human exfoliated deciduous teeth. 23K09415. 1,950,000 yen
- 7: Grant-in-aid for Scientific Research (C) : Kado I., Building personalized medicine and prevent system of iatrogenic disorders during orthodontic treatment by bacterial gene sequencing. 23K16204. 2,730,000 yen
- 8: Grant-in-Aid for Early-Career Scientists : Yamamoto T., Comparison of the root resorption restraint effect and elucidation of the mechanism of NSAIDs and acetaminophen. 21K17184. 1,170,000 yen
- 9: Grant-in-aid for Scientific Research : Yanoshita M., New establishment of temporomandibular joint osteoarthritis model by anterior disc displacement and elucidation of OA mechanism. 22K17230. 2,210,000 yen
- 10: 1Grant-in-aid for Scientific Research : Iwai K., To elucidate the effects of sleep-disordered breathing related disorders on higher brain function and cerebral hemodynamics and to establish new treatment strategies. 23K16185. 2,080,000 yen
- 11: 1Grant-in-aid for Scientific Research : Onishi A., Effect of mechanical stress via Integrin on hyaluronic acid receptor CD44. 22K17231. 1,820,000 yen
- 12: 1Grant-in-aid for Early-Career Scientists : Ito S., Examination of novel bone regeneration targeting bone metabolism regulated by miR-125b. 22K17252. 1,560,000 yen
- 13: 1Grant-in-Aid for Early-Career Scientists : Nishiyama S., Elucidation of cartilage substrate destruction mechanism of ANGPTL2 and establishment of new therapeutic agent for therapies for temporomandibular joint osteoarthritis. 22K17253. 2,080,000 yen
- 14: 1Grant-in-Aid for Early-Career Scientists : Hiraki T., Analysis of bone regeneration mechanism in stem cells from human exfoliated deciduous teeth (SHED) conditioned media and exosomes and application to alveolar cleft bone regeneration treatment. 22K17229. 2,210,000 yen
- 15: 1Grant-in-Aid for Early-Career Scientists : Sakata S., Establishment of techniques to control pathological conditions of temporomandibular joint osteoarthritis by near infrared ultrashort pulse laser and elucidation of its mechanism. 23K16203. 2,600,000 yen
- 16: Grant-in-Aid for Early-Career Scientists : Nakano A., Controlling heterostructure of regenerated bone tissue using bio-3D printing technology. 23K16039. 2,600,000 yen
- 17: Grant-in-Aid for Early-Career Scientists : Tsuboi E., Effect of Semaphorin3A on endochondral ossification. 23K16206. 2,080,000 yen
- 18: Grant-in-aid for Scientific Research (Research Activity Start-up) : Rikitake K., Identification of deciduous dental pulp-derived mesenchymal stem cell population and elucidation of bone regeneration mechanism for new jaw cleft closure treatment. 22K21062. 1,430,000 yen
- 19: Grant-in-aid for Scientific Research (Research Activity Start-up) : Ogasawara T., Analysis of bone metabolic function of miR-125b and its application to orthodontic treatment. 22K21040. 1,430,000 yen
- 20: Collaborative research with Maruzen Pharmaceuticals Co., Ltd.: Kunimatsu R., Evaluation of anti-inflammatory materials. 1,000,000 yen
- 21: Grant-in-aid Shin-sangyousouritsu-kennkyuukai: Kunimatsu R., Exploration of Naturally Derived Extracts that can new functions in oral applications and Development of Oral Care Products. 1,000,000 yen

(5) Academic Awards, etc.

1. Hase H., Mine Y., Okazaki S., Ito S., Yoshimi Y., Takeda S., Tanimoto K., Murayama T. : Gender determination and feature visualization on lateral cephalograms using deep learning approach : The 14th Scientific Meeting of the Japan Dental Academy of Digital Dentistry Poster Award
2. Ami Ono: The 56th General Meeting of the Hiroshima University Dental Society: Research Incentive Award
3. Kubo N., Awada T., Hirose N., Yanoshita M., Takano M., Nishiyama S., Tsuboi E., Kita D., Ito S., Nakatani A., Onishi A., Asakawa Y., Tanimoto K. : Longitudinal effects of estrogen on mandibular

growth and changes in cartilage during the growth period in rats : The 26th Japanese Orthodontic Society Academic Encouragement Award.

4. Tsuboi E., Hirose N., Asakawa Y., Yanoshita M., Nishiyama S., Kubo N., Kita D., Takesue S., Nakazato M., Nakazima R., Tanimoto K.: Clinical statistical research on development of temporomandibular disorders in children at orthodontic clinic, Hiroshima University Hospital. : The 66th Annual Meeting of the Chu-Shikoku Orthodontic Society Poster Award
5. Suzuki Y., Kuroe K., Naito M., Nakano M., Tanimoto K. : A case of displaced maxillary canine tooth germs treated with rapid maxillary expansion in sages : The 82th Annual Meeting of the Japanese Orthodontic Society Excellent Presentation Award

(6) Patents

1. Bacteriophage and its use, Patent (21091) : Hitoshi K., Miki K., Mi N., Katsuhito S., Yo S., Junzo H., Jumpei F., Hidetomo I., Kotaro T., Motoyuki S.

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

(1) Staff and Students

Professor : Naoya Kakimoto
Associate Professor : Takashi Nakamoto
Associate Professor/Lecturer : Yoshikazu Suei, Masaru Konishi
Assistant Professor : Toshikazu Nagasaki, Masahiko Ohtsuka, Kiichi Shimabukuro

(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: Improvement of treatment results in the radiotherapy for oral cancers
- 6: Radiographic study to screen osteoporosis using panoramic radiographs of the jaw
- 7: Study on taste disorder with oral cancer patients after radiotherapy
- 8: Quantitative analysis of temporomandibular joint on MRI

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Cone-beam computed tomography-based investigation of pre-eruptive intracoronary resorption prevalence: Shimabukuro K, Konishi M, Wongratwanich P, Nagasaki T, Ohtsuka M, Suei Y, Nakamoto T, Kakimoto N. *Odontology*. 112(1):256-263. 2023. doi: 10.1007/s10266-023-00824-x.
- 2: Investigation of changes in oral conditions and body weight of older residents in an aged care nursing home: Konishi M, Kakimoto N. *Int J Gerontology*. 17(1): 19-24. 2023.
- 3: Effectiveness of spacers in brachytherapy with ¹⁹⁸Au grains for patients with buccal mucosa cancer. Konishi M, Hirokawa J, Miyoshi S, Katsuta T, Imano N, Nishibuchi I, Murakami Y, Shimabukuro K, Nakashima T, Takeuchi Y, Kakimoto N, Nagata Y. *Anticancer Res*. 43(5):2265-2271. 2023.
- 4: Subjective and objective assessments of sweet, umami, and bitter tastes after brachytherapy for patients with tongue cancer. Konishi M, Shimabukuro K, Kakimoto N. *Oral Science International*. First published: 23 April 2023. <https://doi.org/10.1002/osi2.1187>.
- 5: Radiomics analysis of intraoral ultrasound images for prediction of late cervical lymph node metastasis in patients with tongue cancer. Konishi M, Kakimoto N. *Head Neck*. 45(10):2619-2626. 2023.
- 6: Ultrasonographic features of mass lesions in the oral submucosal epithelium using intraoral ultrasonography. Konishi M, Ando T, Miyauchi M, Kakimoto N. *Head Neck*. 45(11):2829-2838. 2023.
- 7: Videofluoroscopic analysis of the laryngeal movement of older adults in swallowing. Konishi M, Nagasaki T, Kakimoto N. *Odontology*. 2023. doi: 10.1007/s10266-023-00852-7.
- 8: Can oral diadochokinesis be used as an assessment tool of oral function in older adults requiring care in nursing home? Konishi M. *J Oral Rehabil*. 2023. doi: 10.1111/joor.13594.
- 9: Retrospective analysis of tooth extraction and osteoradionecrosis after low-dose rate brachytherapy for patients with tongue cancer. *Oral Radiol*. 2023. doi: 10.1007/s11282-023-00716-4.
- 10: Radiation doses of medical radiation workers performing low-dose-rate brachytherapy with ¹⁹⁸Au grains and ¹⁹²Ir pins for patients with oral cancers. Konishi M, Shimabukuro K, Hirokawa J, Sadatoki T, Katsuta T, Imano N, Nishibuchi I, Murakami Y, Kakimoto N. *Oral Radiol*. 2023. doi: 10.1007/s11282-023-00728-0.
- 11: Head and neck cancer patients show poor oral health as compared to those with other types of cancer. Nishi H, Obayashi T, Ueda T, Ohta K, Shigeishi H, Munenaga S, Kono T, Yoshioka Y, Konishi M,

- Taga R, Toigawa Y, Naruse T, Ishida E, Tsuboi E, Oda K, Dainobu K, Tokikazu T, Tanimoto K, Kakimoto N, Ohge H, Kurihara H, Kawaguchi H. *BMC Oral Health*. 6;23(1):647. 2023.
- 12: Efficacy of Low-Level Laser Therapy for Oral Mucositis in Hematologic Patients Undergoing Transplantation: A Single-Arm Prospective Study. Nishi H, Horikoshi S, Ohta K, Yoshida T, Fukushima N, Oshita K, Munenaga S, Eda Hiro T, Ureshino H, Shigeishi H, Yoshioka Y, Konishi M, Ide N, Ogawa Y, Marukawa R, Shintani T, Ino N, Kajiya M, Kakimoto N, Ohge H, Ichinohe T, Kawaguchi H. *J Pers Med*. 13(11):1603.2023.
 - 13: Ghost cell odontogenic carcinoma arising in dentinogenic ghost cell tumor, peripheral: A case report. Sakamoto S, Ando T, Mizuta K, Ono S, Konishi M, Miyauchi M, Ogawa I. *Pathol Int.*;73(8):367-372.2023.
 - 14: Dental radiographic information of term newborn babies within the first month: Analyzing five radiographic cases along with physical attributes in Japan: Oka H, Asao Y, Nakao N, Mitsuhashi C, Matsumoto Y, Nomura R, Kakimoto N, Nagao M, Kozai K.: *Leg Med (Tokyo)*, 60:102171, 2023. doi: 10.1016/j.legalmed.2022.102171.
 - 15: Image preprocessing with contrast-limited adaptive histogram equalization improves the segmentation performance of deep learning for the articular disk of the temporomandibular joint on magnetic resonance images.: Yoshimi Y, Mine Y, Ito S, Takeda S, Okazaki S, Nakamoto T, Nagasaki T, Kakimoto N, Murayama T, Tanimoto K.: *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology*, 14:S2212-4403(23)00117-7. 2023. doi: 10.1016/j.oooo.2023.01.016.
 - 16: Age estimation using post-mortem computed tomography and fetal dental radiographic findings in an early to mid-pregnancy fetus: a case report.: Oka H, Asao Y, Ohbayashi N, Nakao N, Ishiuchi N, Fukumoto W, Matsumoto Y, Kakimoto N, Nagao M, Kozai K.: *Leg Med (Tokyo)*, 62:102232. 2023. i: 10.1016/j.legalmed.
 - 17: Radiopaque properties of polyetheretherketone crown at laboratory study.: Nishio F, Morita K, Doi K, Kato M, Abekura H, Yamaoka H, Kakimoto N, Tsuga K.: *J Oral Biosci.*, 65(3):253-258., 2023 doi: 10.1016/j.job.2023.05.002.
 - 18: Impact of neck percutaneous interferential current sensory stimulation on swallowing function in patients with Parkinson's disease: A single-arm, open-label study protocol.: Nakamori M, Toko M, Yamada H, Hayashi Y, Yoshikawa K, Yoshikawa M, Nagasaki T, Hiraoka A, Shimizu Y, Mikami Y, Maruyama H.; *Cotemp Clin Trials Common*, 33:101158, 2023. doi: 10.1016/j.conctc.2023.101158.
 - 19: Swallowing sound index analysis using electronic stethoscope and artificial intelligence for patients with Parkinson's disease.: Nakamori M, Shimizu Y, Takamashi T, Toko M, Yamada H, Hayashi Y, Ushio K, Yoshikawa K, Hiraoka A, Yoshikawa M, Nagasaki T, Mikami Y, Maruyama H.; *J Neurol Sci.*, 454:120831, 2023. doi: 10.1016/j.jns.2023.120831.
 - 20: Detailed findings of videofluoroscopic examination among patients with Parkinson's disease on the effect of cervical percutaneous interferential current stimulation.: Nakamori M, Toko M, Yamada H, Hayashi Y, Haruta A, Hiraoka A, Yoshikawa M, Nagasaki T, Ushio K, Yoshikawa K, Shimizu Y, Mikami Y, Maruyama H.; *Front Neurol.*, 14:1279161, 2023. doi: 10.3389/fneur.2023.1279161.
 - 21: Association between motor symptoms of Parkinson's disease and swallowing disorders.: Nakamori M, Toko M, Yamada H, Hayashi Y, Ushio K, Yoshikawa K, Hiraoka A, Yoshikawa M, Nagasaki T, Mikami Y, Maruyama H.; *Neurol Sci.*, 2023. doi: 10.1007/s10072-023-1.

E) Presentation at Scientific Meeting

- 1: Maxillary tumor (Juvenile psammomatoid ossifying fibroma and odontoma associated with Sturge-Weber syndrome): Furusho H, Satou A, Matsumura T, Nakano M, Sawaki K, Yoshioka Y, Akashi S, Mizukawa N, Iida S, Kakimoto N, Miyauchi M.: *Histopathological conference in Hiroshima (Hiroshima)*, 2023.
- 2: Quantitative evaluation of pulp chamber area in X-linked hypophosphatemia rickets patients using orthopantomographic imaging: Takagi M, Matayoshi S, Nakamoto T, Okawa R, Kakimoto N, Nakano K. *The 61st congress of Japanese Journal of Pediatric Dentistry (Nagasaki)*, 2023.
- 3: Radiomics for prediction of late cervical lymph node metastasis in patients with tongue cancer by intraoral ultrasonographic images: Konishi M, Shimabukuro K, Kakimoto N. *The 63rd congress of Japanese Society of Oral and Maxillofacial Radiology (Fukuoka)*, 2023.
- 4: Screening for osteoporosis by panoramic radiographs – agreement of mandibular inferior cortical classification between oral radiologist and dental students: Osanai H, Kuroiwa H, Yamada S, Sugino N, Nakamoto T, Ohtsuka M, Suei Y, Kakimoto N, Taguchi A. *The 63rd congress of Japanese Society*

- of Oral and Maxillofacial Radiology (Fukuoka), 2023.
- 5: An attempt to quantify the amount of residual test food (contrast agent) in video-fluoroscopic examination - a pilot study: Nagasaki T, Yamada S, Yoshikawa M, Shimabukuro K, Ohtsuka M, Suei Y, Konishi M, Nakamoto T, Kakimoto N. The 63rd congress of Japanese Society of Oral and Maxillofacial Radiology (Fukuoka), 2023.
 - 6: A case report of Cemento-ossifying fibroma and odontoma associated with Sturge-Weber syndrome in the jaw: Furusho H, Satou A, Matsumura T, Nakano M, Sawaki K, Yoshioka Y, Akashi S, Mizukawa N, Iida S, Kakimoto N, Miyauchi M.: 21st International Congress of Oral Pathology and Medicine (Taipei), 2023.
 - 7: Mandibular Cyst: Kataoka N, Ando T, Asada Y, Fukutani T, Tani R, Suei Y, Kakimoto N, Yanamoto S, Miyauchi M, Kajiya M. the 142nd meeting of The Japanese Society of Pathology, Chugoku-Shikoku branch (Web), 2023
 - 8: Gender estimation and feature visualization from lateral cephalography using deep learning models.: Nagatani S, Mine Y, Okazaki S, Yoshimi Y, Ito S, Takeda S, Kakimoto N, Tanimoto K, Murayama T. The 107th Hiroshima University Dental Associations and 62nd Hiroshima Prefectural Dental Society (Hiroshima), 2023.
 - 9: Skeletal angle prediction and feature visualization from facial photographs using deep learning. Aoe H, Mine Y, Ito S, Yoshimi Y, Okazaki S, Takeda S, Kakimoto N, Tanimoto K, Murayama T. The 107th Hiroshima University Dental Associations and 62nd Hiroshima Prefectural Dental Society (Hiroshima), 2023.
 - 10: A case of lower lip cancer patient treated with 198Au grains mold technique: Konishi M, Shimabukuro K, Kakimoto N: The 42nd annual joint meeting of Kansai and Kyushu of Japan Society of Oral and Maxillofacial Radiology (Fukuoka), 2023.
 - 11: A case of upper lip cancer with perineural invasion: Okada T, Suei Y, Yamasaki S, Shimabukuro K, Nagasaki T, Ohtsuka M, Konishi M, Nakamoto T, Yanamoto S, Kakimoto N: The 42nd annual joint meeting of Kansai and Kyushu of Japan Society of Oral and Maxillofacial Radiology (Fukuoka), 2023.
 - 12: A case of severe dysphagia after maxillary tumor surgery: Nagasaki Y, Yamada S, Yoshikawa M, Shimabukuro K, Ohtsuka M, Suei Y, Konishi M, Nakamoto T, Kakimoto N: The 4th Autumn Conference of Japanese Society for Oral and Maxillofacial Radiology (Osaka), 2023.
 - 13: Analysis of motor unit using multi-channel electromyography of the neck muscles and evaluation of the effects of electrical stimulation in patients with Parkinson's disease: Nakamori M, Yoshikawa K, Toko M, Yamada H, Yoshikawa M, Nagasaki T, Maruyama HH: The 29th annual meeting of The Japanese Society of Dysphagia Rehabilitation (Yokohama), 2023.

F) Special lectures in academic meetings

- 1: Radiation Therapy for oral cancer patients: Kakimoto N: The 41st Congress of Japanese Society of Oral Oncology (Web), 2023.
- 2: Usefulness of intraoral ultrasonography in the treatment of oral cancer: Masaru Konishi: The 41st Congress of Japanese Society of Oral Oncology (Web), 2023.

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

- 1: Grant-in-aid for Early-Career Scientists: Konishi M., Mechanism of taste dysfunction and recovery after radiotherapy. 20K18807, 700,000 JPY.
- 2: Joint research from Research Center for Radiation Disaster Medical Science: Konishi M. Study on the mechanism of taste disorder from radiation. 100,000 JPY.
- 3: Research Grant (Nakanishi Co., Ltd): Doi K (Representative), Konishi M: Fundamental study for establishment of bone quality diagnosis system by bone cutting resistance value. 200,000 JPY.
- 4: Grant-in-aid for Scientific Research (C): Kakimoto N, Saito A, Nakamoto T, Konishi M, Quantitative dosimetry and dose distribution prediction modeling for high-dose-rate adaptive interstitial brachytherapy for oral cancer. 22K10219, 650,000 JPY
- 5: Grant-in-aid for Scientific Research (C): Okawa R., Ogaya Y., Kakimoto N., Nakamoto T., Nakano M., A Comprehensive Review of Dental Conditions in Patients with Bone System Diseases and Evaluation of New Therapeutic Agents in Dentistry, 21K10183, 25,000 JPY
- 6: 2023 Collaboration with Research Center for Biomedical Engineering, Domestic B, Research Center for Biomedical Engineering: Development of a multi-analysis dental radiography system using a CdTe

photosensitive detector. Iikubo M, Ishibata H, Sasaki K, Aoki T, Koike A, Kakimoto N. 140,000 JPY

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Department of Biological Endodontics

Division of Preventive and Restorative Dentistry (Department of Endodontics and Operative Dentistry)

(1) Staff and Students

Professor: Hideki Shiba

Lecturer: Katsuhiro Takeda

Assistant Professor: Shizu Hirata-Tsuchiya, Noriko Saito, Kazuma Yoshida, Jun Nakanishi, Daisuke Furutama

Graduate Student: Tomoki Kumagai, Naoki Sadaoka, Tomoya Naruse, Tomoki Kawayanagi, Wang Chutian, Saki Nishihama, Ayaka Miyata, Takuya Arita

Research Student: Song Bingxin

(2) Main Research Activities

- 1: Biological regeneration of dentin/pulp complex and periapical tissues
- 2: Pulp regeneration by regulation of inflammation
- 3: Biological obturation of root canals at apical areas
- 4: Epidemiological studies and clinical trials on endodontics

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Public RNA-seq data-based identification and functional analyses reveal that MXRA5 retains proliferative and migratory abilities of dental pulp stem cells: Yoshida K., Suzuki S., Yuan H., Sato A., Hirata-Tsuchiya S., Saito M., Yamada S., Shiba H.: *Sci Rep.* 13: 15574, 2023.
- 2: Relationship between CD4+ T-cell counts at baseline and initial periodontal treatment efficacy in patients undergoing treatment for HIV infection: A retrospective observational study: Shintani T., Okada M., Iwata T., Kawagoe M., Yamasaki N., Inoue T., Nakanishi J., Furutama D., Takeda K., Ando T., Nakaoka M., Mizuno N., Fujii T., Kajiya M., Shiba H.: *J Clin Periodontol*, 50: 1520-1529, 2023.
- 3: Rare root canal morphology of maxillary second molars: A report of three cases: Nagahara T., Takeda K., Wada K., Naruse T., Shiba H.: *Clin Case Rep.* 11: e7547, 2023.
- 4: Extracellular Release of Citrullinated Vimentin Directly Acts on Osteoclasts to Promote Bone Resorption in a Mouse Model of Periodontitis: Shindo S., Pierrelus R., Ikeda A., Nakamura S., Heidari A., Pastore M.R., Leon E., Ruiz S., Chheda H., Khatiwala R., Kumagai T., Tolson G., Elderbashy I., Ouhara K., Han X., Hernandez M., Vardar-Sengul S., Shiba H., Kawai T.: *Cells*, 12:1109, 2023.
- 5: In Situ Raman Analysis of Biofilm Exopolysaccharides Formed in *Streptococcus mutans* and *Streptococcus sanguinis* Commensal Cultures: Pezzotti G., Ofuji S., Imamura H., Adachi T., Yamamoto T., Kanamura N., Ohgitani E., Marin E., Zhu W., Mazda O., Togo A., Kimura S., Iwata T., Shiba H., Ouhara K., Aoki T., Kawai T.: *Int J Mol Sci*, 24: 6694, 2023.
- 6: Retrospective study on the therapeutic efficacy of zinc acetate hydrate administration to patients with hypozincemia-induced dysgeusia: Shintani T., Ohta K., Ando T., Hayashido Y., Yanamoto S., Kajiya M., Shiba H.: *BMC Oral Health*, 23:159., 2023.
- 7: Regulation of osteogenesis in bone marrow-derived mesenchymal stem cells via histone deacetylase 1 and 2 co-cultured with human gingival fibroblasts and periodontal ligament cells:

Iwata T., Kaneda-Ikeda E., Takahashi K., Takeda K., Nagahara T., Kajiya M., Sasaki S., Ishida S., Yoshioka M., Matsuda S., Ouhara K., Fujita T., Kurihara H., Mizuno N.: J Periodontal Res, 58:83-96, 2023.

- 8: Bactericidal activity of slightly acidic electrolyzed water against the cariogenic bacterium *Streptococcus mutans* and other oral bacteria: Nishihama S., Miyata A., Nguyen-Tra Le M., Kawada-Matsuo M., Kaneyasu Y., Ohta K., Ohge H., Shiba H., Komatsuzawa H.: Oral Sci Int, 2023, in press.
- 9: Increasing the apical sizes of a root enlarged for root canal obturation influences the outcome of single-root-canal teeth affected by apical periodontitis: Hirata-Tsuchiya S., Furutama D., Saito-Nakayama N., Naruse T., Kawayanagi T., Nishihama S., Miyata A., Shirawachi S., Sadaoka N., Wang C., Yoshida K., Nakanishi J., Takeda K., Shiba H.: Eur Endod J, 2023, in press.
- 10: Response to Periodontal Education During the COVID-19 Pandemic in Dental Schools and Universities of Japan: Taguchi Y., Umeda M., Arita H., Ootogoto J., Shiba H., Nakamura T., Nishida T., Yoshida N., Ogata Y.: J Jpn Soc Periodontol, 65 : 17-25, 2023.
- 11: Two cases of endo-periodontal lesion: Infected root canal treatment and intentional replantation: Nagahara T., Takeda K., Wada K., Shiba H.: J Jap Endod Assoc, 44: 114-120, 2023.

B) Review

- 1: Basic knowledge required for clinical research: Miyagawa T., Shiba H.: J Jap Endod Assoc, 44: 10-16, 2023.
- 2: Countermeasures to prevent HIV, HBV, and HCV infection after accidental blood exposure: Fujii T., Yamasaki N., Shiba H.: J Jap Endod Assoc, 44: 177-186, 2023.

C) Publications

- 1: Procedural accidents and Safety Measures during endodontic treatment: Takeda K., Shiba H.: 257-264, Dental Hygiene Course: Operative Dentistry and Endodontics (Editor: Furusawa M., et al.) , Nagasue Shoten (Kyoto, Japan), 2023.

D) Other publications

- 1: Hydrophilic monomer (560), Ceramic primer (636): Hirata-Tsuchiya S., Shiba H.: Glossary of Operative Dentistry 2023 (edited by the Japanese Society of Conservative Dentistry.): Ishiyaku Publishers, Inc. (Tokyo, Japan), 2023.
- 2: Critical (206), semi-critical (512), non-critical (645): Takeda K., Shiba H.: Glossary of Endodontics 2023 (edited by the Japanese Society of Conservative Dentistry and Japan Endodontic Association): Ishiyaku Publishers, Inc. (Tokyo, Japan), 2023.
- 3: Cementum tear, from structure, pathogenesis, and cause to specific measures: Nagahara T., Shiba H.: The Nippon Dental Review, Hyoron, Vol 83. No 9: 30-68, 2023.
- 4: Oral care for hemophiliacs, Fujimoto Pharmaceutical Co., Ltd. supervised by Teruhisa Fujii and Hideki Shiba.

E) Presentations at Scientific Meetings

- 1: Relationship between CD4+ T-cell counts at the first visit and initial periodontal treatment efficacy in people living with HIV: A retrospective observational study: Okada M., Takeda K., Furutama D., Nakaoka M., Kajiya M., Shiba H.: The 66th spring meeting of the Japanese Society of Periodontology (Takamatsu), 2023.

- 2: The role of mechanosensory Piezo1 on osteoclast differentiation: Shindo S., Nakamura S., Kumagai T., Shiba H., Kawai T.: The 158th meeting of the Japanese Society of Conservative Dentistry (Matsue), 2023.
- 3: Cemental tear: Nagahara T., Wada K., Takeda k., Shiba H.: The 44th meeting of the Japan Endodontic Association (Tokyo), 2023.
- 4: Evaluation of oral function and oral environment in hemophiliacs receiving anti-HIV drugs: Okada M., Shintani T., Kawagoe M., Iwata T., Yamazaki N., Fujii T., Shiba.: The 37th annual meeting of the Japanese Society for AIDS Research (Kyoto), 2023.
- 5: The outcome of non-surgical endodontic treatment of apical periodontitis by root apical size: Shizu Hirata-Tsuchiya, Daisuke Furutama, Noriko Saito-Nakayama, Tomoya Naruse, Tomoki Kawayanagi, Saki Nishihama, Ayaka Miyata, Satomi Shirawachi, Naoki Sadaoka, Chutian Wang, Kazuma Yoshida, Jun Nakanishi, Katsuhiro Takeda, Hideki Shiba: The 44th meeting of the Japan Endodontic Association (Tokyo), 2023.
- 6: A case report of pulpotomy for maxillary central incisor with horizontal and vertical root fracture.: Furutama D., Matsuda S., Takeda K., Mizuno N., Shiba H: The 44th meeting of the Japan Endodontic Association (Tokyo), 2023.
- 7: Promotion of reosseointegration by brain-derived neurotrophic factor (BDNF) in canine periimplantitis model: Kono S, Sasaki S, Takeda K, Matsuda S, Iwata T, Ouhara K, Mizuno N: The 66th Autumn Meeting of the Japanese Society of Periodontology (Nagasaki), 2023.
- 8: Endodontic management of dens invaginatus with infected invagination and vital pulp: Two case reports.: Noriko Saito-Nakayama, Ayaka Miyata, Shizu Hirata-Tsuchiya, Katsuhiro Takeda, Hideki Shiba: The 159th meeting of the Japanese Society of Conservative Dentistry (Hamamatsu), 2023.
- 9: Identification of novel bacteriocin from *Streptococcus ursoris*: Wang Chutian, Katsuhiro Takeda, Hideki Shiba: The 159th meeting of the Japanese Society of Conservative Dentistry (Hamamatsu), 2023.
- 10: Mechanosensitive Piezo1 dysregulates macrophage's innate immune responses to *Porphyromonas gingivalis*: Kumagai T., Shindo S., Nakamura S., Takeda K., Shiba H., Kawai T.: The 158th meeting of the Japanese Society of Conservative Dentistry (Matsue), 2023.
- 11: Mechanosensitive Piezo1 dysregulates macrophage's innate immune responses to *Porphyromonas gingivalis*: Kumagai T., Shindo S., Nakamura S., Heidari A., Bontempo A., Pastore R M., Chirino A., Leon E., Shiba H., Cayabyab M., Kawai T.: 2023 AADOCR/CADR Annual Meeting, Portland, OR, 2023.
- 12: Involvement of Piezo1 mechanosensitive receptor in cellular senescence in periodontitis: Khademi A., Shindo S., Nakamura S., Kumagai T., Heidari A., Pastore R M., Leon E., Hernandez M., Sengul V S., Kawai T.: 2023 AADOCR/CADR Annual Meeting, Portland, OR, 2023.
- 13: Activation of Piezo1 in osteoclasts inhibits bone resorption in periodontitis: Shindo S., Nakamura S., Kumagai T., Heidari A., Pastore R M., Leon E., Chheda H., Khatiwala R., Hernandez M., Sengul V S., Kawai T.: 2023 AADOCR/CADR Annual Meeting, Portland, OR, 2023.
- 14: Possible Suppressive Effect of Inosine on RANKL-mediated Periodontal Bone Resorption: Pastore R M., Shindo S., Nakamura S., Heidari A., Bontempo A., Leon E., Kumagai T., Saleh I., Sengul V S., Kawai T.: 2023 AADOCR/CADR Annual Meeting, Portland, OR, 2023.
- 15: *P.gingivalis* Vesicles Polarize Monocyte-Lineage-Commitment to Macrophage vs. Osteoclast Differentiation-Stage Dependently: Leon E., Nakamura S., Shindo S., Pastore R M., Han X., Huang S., Kumagai T., Ruiz S., Heidari A., Kawai T.: 2023 AADOCR/CADR Annual Meeting, Portland, OR, 2023.

- 16: S-PRG Downregulates Osteoclastogenesis: S-PRG's Possible Indication for Subgingival Caries: Chandra J., Nakamura S., Shindo S., Leon E., Kumagai T., Pastore R M., Heidari A., Kawai T.: 2023 AADOCR/CADR Annual Meeting, Portland, OR, 2023.
- 17: Role of Mechanosensitive Piezo1 receptor expressed on Macrophage in Periodontitis: Shindo S., Kumagai T., Nakamura S., Pastore R M., Leon E., Huang S., Han X., Kawai T.: IMMUNOLOGY2023TM, Washington, WA, 2023.
- 18: OC-STAMP-reactive IgG auto-antibody may upregulate osteoclastogenesis in association with elevated anti-*P. gingivalis* antibody: Nakamura S., Shindo S., Leon E., Kumagai T., Pastore R M., Ouhara K., Kawai T.: IMMUNOLOGY2023TM, Washington, WA, 2023.
- 19: Polymorphism of two ABC transporters involved in nukacin resistance: Sadaoka N., Matsuo M., Mi Nguyen-Tra Le., Komatsuzawa H.: The 65th Journal of Oral Biosciences (Tokyo), 2023.
- 20: Polymorphism of two ABC transporters involved in nukacin resistance: Sadaoka N., Takeda K., Shiba H.: The 159th meeting of the Japanese Society of Conservative Dentistry (Hamamatsu), 2023.
- 21: Isolation and characterization of drug-resistant bacteria from nasal and oral cavities: Kawayangi T., Matsuo M., Le Nguyen-Tra M., Takeshita T., Hisatsune J., Kusaka S., Nomura R., Shiba H., Sugai M., Komatsuzawa H.: The 96th Annual Meeting of Japanese Society for Bacteriology (Himeji), 2023.
- 22: Isolation and characterization of drug-resistant bacteria from nasal and oral cavities: Kawayanagi T., Kawada-Matsuo M., Le Nguyen-Tra M., Kusaka S., Haruta A., Nomura R., Shiba H., Tsuga K., Komatsuzawa H.: 56th Annual meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 23: Isolation and characterization of drug-resistant bacteria from nasal and oral cavities: Kawayanagi T., Matsuo M., Le Nguyen-Tra M., Asakawa M., Takeshita T., Shiba H., Komatsuzawa H.: The 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 24: Isolation and characterization of gram-negative drug-resistant bacteria from nasal and oral cavities: Kawayanagi T., Matsuo M., Le Nguyen-Tra M., Shiba H., Komatsuzawa H.: The 8th Oral Microbiology Society (Tokyo), 2023.
- 25: Endoplasmic reticulum stress response of human dental pulp cells to lipopolysaccharide stimulation: Naruse T., Takeda K., Shirawachi S., Yoshida K., Hirata-Tsuchiya S., Shiba H.: The 158th meeting of the Japanese Society of Conservative Dentistry (Matsue), 2023.
- 26: Bactericidal activity of slightly acidic electrolyzed water against the cariogenic bacterium, *Streptococcus mutans* and other oral bacteria: Nishihama S., Miyata A., Shiba H.: The 159th meeting of the Japanese Society of Conservative Dentistry (Hamamatsu), 2023.
- 27: Bactericidal activity of slightly acidic electrolyzed water against the cariogenic bacterium *Streptococcus mutans* and other oral bacteria: Nishihama S., Miyata A., Le M., Kawada-Matsuo M., Kaneyasu Y., Ohta K., Ohge H., Shiba H., Komatsuzawa H.: 56th Annual Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 28: Management of infected invagination in a maxillary lateral incisor exhibiting dens invaginatus-A report of two cases: Miyata A., Saito-Nakayama N., Hirata-Tsuchiya S., Takeda K., Shiba H.: The 107th Hiroshima University Dental Society Meeting (Hiroshima), 2023.
- 29: A case report of pulpotomy for maxillary central incisor with horizontal and vertical root fracture.: Furutama D., Matsuda S., Takeda K., Mizuno N., Shiba H.: The 107th Hiroshima University Dental Society Meeting (Hiroshima), 2023.

F) Special lectures in academic meeting

- 1: Pursuing advancement of Endodontics toward the 100-year life: Takeda K.: Theme of Symposium 2: From past to present - Endodontics considered from the perspective of research, clinical practice, and education - : The 159th meeting of the Japanese Society of Conservative Dentistry (Hamamatsu), 2023.
- 2: Infection control: Shiba H.: Clinical workshop of Japan Endodontic Association (Osaka), 2023.
- 3: Key points of HIV infection you should know: H. Shiba: Hiroshima Prefectural Dental Association 3rd Annual Scientific Lecture (Hiroshima), 2023.
- 4: Implementation status of AIDS measures in the Chugoku-Shikoku block: Shiba H.: 26th Japan Society for HIV Dental Medicine, held on WEB, 2023.

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

- 1: Research grants: Grants for research received from Hiroshima Prefecture: Study on network-construction of dental practice for HIV infection. ¥3,000,000.
- 2: Grants-in aid for scientific research (B): Shiba H, Extension of healthy life expectancy through elucidating the mechanism of exacerbation of cerebral hemorrhage through PRIP by Cnm-positive cariogenic bacteria. #21H03120, ¥3,100,000.
- 3: Grants-in aid for scientific research (C): Takeda K, Development of the treatment of pulpitis, targeting the endoplasmic reticulum stress response. #23K09184, ¥1,100,000.
- 4: Japan Agency for Medical Research and Development : Project for Regenerative/Cellular Medicine and Gene Therapy (Non clinical): Takeda K (Co-investigator), Development of promising periodontal regenerative therapy using 3D grafting tissue fabricated by a bio-3D printer. ¥4,000,000.
- 5: Grants-in-Aid for Scientific Research (C): Tsuchiya S, Basic research for the development of endodontic treatment by regulating inflammation targeting Samd9l. #23K09168, ¥1,560,000.
- 6: Grant-in-Aid for Scientists Research (C): Saito N, Development of a Rapid Test for Bacteria in Root Canals Using Total Adenylate as an Indicator in Endodontics. #23K09169, ¥1,690,000.
- 7: Grant-in-Aid for Early-Career Scientists: Nakanishi J, Bone regeneration with bone supplementing material that has the multi-functionality of hybrid recombinant phosphophoryn. #22K17059, ¥1,800,000.
- 8: Grant-in-Aid for Early-Career Scientists: Yoshida K, Development of novel vital pulp therapy with MXRA5. #22K17037, ¥1,600,000.
- 9: Grant-in-Aid for Early-Career Scientists: Furutama D, Effects and mechanisms of chronic inflammation caused by periodontitis on psychiatric disorders. #23K16023, ¥1,800,000.
- 10: JSPS Research Fellowship for Young Scientists: Kumagai T, Development of new treatment for rheumatoid arthritis related to Periodontitis by using specific inhibitors for PAD from periodontopathogenic bacteria. #22J12547, ¥800,000.

(5) Academic Awards, etc.

(6) Patents

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

(1) Staff and Students

Professor: Ryota Nomura (*) Chief: Ryota Nomura (by-work)
Associate Professor: Chieko Mitsuhashi
Assistant Professor: Meiko Tachikake, Yuko Iwamoto, Masashi Nakano, Tatsuya Akitomo, Yuria Asao
Resident: Tomoko Ogasawara (~Mar.)
Graduate Student: Satoru Kusaka, Momoko Usuda, Mariko Kametani, Masashi Ogawa (Apr.~),
Ami Kaneki (Apr.~), Taku Nishimura (Apr.~)
Clinical Trainee: Fumiko Hayashi, Akira Yamane, Seiko Watanabe, Ami Okamine, Shuhei Kaneko

(2) Main Research Activities

- 1: Research on the effects of oral bacteria on systemic diseases
- 2: Bacteriological research of onset mechanism and prevention of dental caries in children
- 3: Bacteriological research in periodontal diseases in children
- 4: Clinical research in oral care in children suffering from systematic diseases
- 5: Evaluation of psychological stress in dental treatment in children
- 6: Dental approach to pediatric dysphagia
- 7: Investigation of oral status of Cambodian children
- 8: Research in oral environment and dental diseases in abused children

(3) Research Achievements

A) Original Papers (including Case Reports)

(*: corresponding author, #: equally contribution)

- 1: Dental radiographic information of term newborn babies within the first month: Analyzing five radiographic cases along with physical attributes in Japan: Oka H.[#], Asao Y.[#], Nakao N., Mitsuhashi C., Matsumoto Y., Nomura R., Kakimoto N., Nagao M., Kozai K.: Legal Medicine, 60, 102171, 2023.
- 2: Harboring *Cnm*-expressing *Streptococcus mutans* in the oral cavity relates to both deep and lobar cerebral microbleeds: Ikeda S., Saito S., Hosoki S., Tonomura S., Yamamoto Y., Ikenouchi H., Ishiyama H., Tanaka T., Hattori Y., Friedland RP., Carare RO., Kuriyama N., Yakushiji Y., Hara H., Koga M., Toyoda K., Nomura R., Takegami M., Nakano K., Ihara M.: European Journal of Neurology, 30(11), 3487-3496, 2023.
- 3: Possible association of *fimA* genotype of *Porphyromonas gulae* with the severity of periodontal disease and the number of permanent teeth in dogs: Shirahata S., Iwashita N., Sasaki R., Nomura R., Murakami M., Yasuda J., Yasuda H., Nakajima K., Inaba H., Matsumoto-Nakano M., Nakano K., Uchiyama J., Fukuyama T.: Frontiers in Veterinary Science, 10, 1022838, 2023.
- 4: *cnm*-positive *Streptococcus mutans* is associated with galactose-deficient IgA in patients with IgA nephropathy: Misaki T., Naka S., Suzuki H., Lee M., Aoki R., Nagasawa Y., Matsuoka D., Ito S., Nomura R., Matsumoto-Nakano M., Suzuki Y., Nakano K.: PLoS One, 18(3), e0282367, 2023.
- 5: Development of rat caries-induced pulpitis model for vital pulp therapy. Huang H., Okamoto M., Watanabe M., Matsumoto S., Moriyama K., Komichi S., Ali M., Matayoshi S., Nomura R., Nakano K., Takahashi Y., Hayashi M.: Journal of Dental Research, 102(5), 574-582, 2023.
- 6: Simultaneous presence of *Campylobacter rectus* and *cnm*-positive *Streptococcus mutans* in the oral cavity is associated with renal dysfunction in IgA nephropathy patients: 5-year follow-up analysis.: Misaki T., Naka S., Nagasawa Y., Matsuoka D., Ito S., Nomura R., Matsumoto-Nakano M., Nakano K.: Nephron, 147(3-4), 134-143, 2023.
- 7: Distribution of periodontopathic bacterial species between saliva and tonsils.: Nomura R.^{*}, Nagasawa Y., Misaki T., Ito S., Naka S., Okunaka M., Watabe M., Tsuzuki K., Matsumoto-Nakano M., Nakano K.: Odontology, 111(3), 719-727, 2023.

- 8: Developmental impairments of craniofacial bone and cartilage in transgenic mice expressing FGF10.: Yoshioka H., Kagawa K., Minamizaki T., Nakano M., Aubin Jane E., Kozai K., Tsuga K., Yoshiko Y.: Bone Reports, 18, 101692, 2023.
- 9: Inhibitory effect of adsorption of *Streptococcus mutans* onto scallop-derived hydroxyapatite.: Usuda M.[#], Kametani M.[#], Hamada M., Suehiro Y., Matayoshi S., Okawa R., Naka S., Matsumoto-Nakano M., Akitomo T., Mitsuhashi C., Koumoto K., Kawauchi K., Nishikata T., Yagi M., Mizoguchi T., Fujikawa K., Taniguchi T., Nakano K., Nomura R.*: International Journal of Molecular Sciences, 24(14), 11371, 2023.
- 10: Structure, stability and binding properties of collagen-binding domains from *Streptococcus mutans*.: Nishi A., Matsui H., Hirata A., Mukaiyama A., Tanaka S., Yoshizawa T., Matsumura H., Nomura R., Nakano K., Takano K.: Chemistry, 5(3), 1911-1920, 2023.
- 11: *Porphyromonas gingivalis* infection in the oral cavity is associated with elevated galactose-deficient IgA1 and increased nephritis severity in IgA nephropathy.: Ito S., Misaki T., Nagasawa Y., Nomura R., Naka S., Fukunaga A., Matsuoka D., Matayoshi S., Matsumoto-Nakano M., Nakano K.: Clinical and Experimental Nephrology, in press.
- 12: Oral and rectal colonization of methicillin-resistant *Staphylococcus aureus* in long-term care facility residents and their association with clinical status.: Kusaka S., Haruta A., Kawada-Matsuo M., Le M., Yoshikawa M., Kajihara T., Yahara K., Hisatsune J., Nomura R., Tsuga K., Ohge H., Sugai M., Komatsuzawa H.: Microbiology and Immunology, in press.
- 13: A third supernumerary tooth occurring in the same region: A case report.: Akitomo T.*, Asao Y., Iwamoto Y., Kusaka S., Usuda M., Kametani M., Ando T., Sakamoto S., Mitsuhashi C., Kajiya M., Kozai K., Nomura R.: Dentistry Journal, 11(2), 49, 2023.
- 14: Age estimation using post-mortem computed tomography and fetal dental radiographic findings in an early to mid-pregnancy fetus: A case report.: Oka H., Asao Y., Ohbayashi N., Nakao N., Ishiuchi N., Fukumoto W., Matsumoto Y., Kakimoto N., Nagao M., Kozai K.: Legal Medicine, 62, 102232, 2023.
- 15: Five-year follow-up of a child with non-syndromic oligodontia from before the primary dentition stage: A case report. Akitomo T.*, Kusaka S., Iwamoto Y., Usuda M., Kametani M., Asao Y., Nakano M., Tachikake M., Mitsuhashi C., Nomura R.: Children, 10(4), 717, 2023.
- 16: Application of the salivary multi test in children with severe congenital neutropenia: A case report.: Iwamoto Y.*, Tatsukawa N., Irie Y., Kusaka S., Mitsuhashi C., Nomura R.: Pediatric Dental Journal, 33(2), 152-158, 2023.
- 17: Eruption disturbance in first molar and primary second molar caused by multiple compound odontomas: A Case report.: Akitomo T.*, Iwamoto Y., Kaneki A., Nishimura T., Ogawa M., Usuda M., Kametani M., Kusaka S., Mitsuhashi C., Nomura R. Journal of Clinical Pediatric Dentistry, in press.
- 18: Dens invaginatus of fourteen teeth in a pediatric patient.: Usuda M.[#], Akitomo T.[#], Kametani M., Kusaka S., Mitsuhashi C., Nomura R.: Pediatric Dental Journal, 33(3), 240-245, 2023.
- 19: Fusion of a tooth with a supernumerary tooth: A case report and literature review of 35 cases.: Akitomo T.*, Kusaka S., Usuda M., Kametani M., Kaneki A., Nishimura T., Ogawa M., Mitsuhashi C., Nomura R.: Children, 11(1), 6, 2023.

B) Review

- 1: Multiple-ion releasing bioactive surface pre-reacted glass-ionomer (S-PRG) filler: Innovative technology for dental treatment and care.: Imazato S., Nakatsuka T., Kitagawa H., Sasaki J., Yamaguchi S., Ito S., Takeuchi H., Nomura R., Nakano K.: Journal of Functional Biomaterials, 14(4), 236, 2023.

C) Publications

- 1: Japanese Journal of Clinical Dentistry for Children, 28(1), Clinical activities of Department of Pediatric Dentistry at Hiroshima University, Nakano M., Mitsuhashi C., Nomura R. (co-authored): Tokyo Clinical Publication (Tokyo), 35-40, 2023.
- 2: Japanese Journal of Clinical Dentistry for Children, 28(6), Systemic diseases and periodontal disease in children, Mitsuhashi C., Nomura R. (co-authored): Tokyo Clinical Publication (Tokyo), 52-59, 2023.
- 3: Pediatric Dentistry 6th Edition Immunology/Allergic diseases: Ryota Nomura (co-authored): Ishiyaku Publishing Co., Ltd. (Tokyo), 409-412, 2023.
- 4: Pediatric Dentistry, 3rd edition, Periodontal tissues, and periodontal diseases in children: Chieko Mitsuhashi C., Nomura R. (co-authored): Nagasue Shoten (Kyoto), 161-177, 2023.

- 5: Well-being Guidelines for infants & Pre-schoolers: Nomura R., Tachikake M., Iwamoto Y.: Japan National Council of Social Welfare (Tokyo), 171-174, 2023
- 6: DENTAL DIAMOND special issue: 27 Q&As in pediatric dentistry, answered according to the child's oral developmental stage: Mitsuhashi C., Iwamoto Y., Asao Y. (co-authored): Dental Diamond Co. (Tokyo), 66-69, 2023.
- 7: DENTAL DIAMOND special issue: 27 Q&As in pediatric dentistry, answered according to the child's oral developmental stage: Nakano M., Nomura R. (co-authored): Dental Diamond Co. (Tokyo), 140-143, 2023.
- 8: Support Book for making regular oral health checkups a habit starting from childhood, Member benefits of SHOFU SHIKA CLUB : Iwamoto Y., Tachikake M., Nomura R., 1-40, 2023.
- 9: Dental Life Design 2023 Children's systemic diseases that dental clinics should be aware of Part 1: Childhood type 1 diabetes: Iwamoto Y., Nomura R., J. MORITA CORP. (Osaka), web, 2023.
- 10: Dental Life Design 2023 Children's systemic diseases that dental clinics should take care of Part 2: Congenital heart disease: Iwamoto Y., Nomura R., J. MORITA CORP. (Osaka), web, 2023.
- 11: Dental Life Design 2023 Children's systemic diseases that should be taken care of at dental clinics Part 3: Childhood cancer survivors: Iwamoto Y., Nomura R., M J. MORITA CORP. (Osaka), web, 2023.

D) Other Publications

E) Presentations at Scientific Meetings

International conference

- 1: Three-year survey of dental caries conditions in Cambodian public primary school: Asao Y., Iwamoto Y., Nakano M., Akitomo T., Usuda M., Kametani M., Kusaka S., Tachikake M., Mitsuhashi C., Nomura R.: Korean Academy of Pediatric Dentistry 2023 Conference (Seoul), 2023.
- 2: Interaction of essential oils in *Citrus unshiu* to cause inhibition of *Streptococcus mutans* bacterial growth: Okuda M., Ohata J., Matayoshi S., Nomura R., Nakano K.: Korean Academy of Pediatric Dentistry 2023 Conference (Seoul, Korea), 2023.
- 3: Contributions of *Streptococcus mutans* to dental caries and infective endocarditis: Suehiro Y., Matayoshi S., Otsugu M., Nomura R., Nakano K.: Korean Academy of Pediatric Dentistry 2023 Conference (Seoul, Korea), 2023.
- 4: IgA adherence to *Streptococcus mutans* Cnm for IgA nephropathy onset: Matsuoka D., Suehara K., Naka S., Misaki T., Nagasawa Y., Ito S., Nomura R., Nakano K.: 101st General Session & Exhibition of the IADR (Bogotá, Colombia), 2023.
- 5: Effects of mouthwash on oral and systemic health of diabetic: Tojo F., Matayoshi S., Nomura R., Nakano K.: 101st General Session & Exhibition of the IADR (Bogotá, Colombia), 2023.
- 6: Periodontal disease in dogs correlates with FimA of *Porphyromonas gulae*: Suehiro Y., Matayoshi S., Yasuda J., Yasuda H., Gongora E., Matsumoto-Nakano M., Nomura R., Nakano K.: 101st General Session & Exhibition of the IADR (Bogotá, Colombia), 2023.
- 7: Association of *Helicobacter pylori* in oral cavity and Parkinson's disease: Kadota T., Matsuoka Y., Hamada M., Ogaya Y., Nomura R., Nakano N.: 101st General Session & Exhibition of the IADR (Bogotá, Colombia), 2023.
- 8: Possible unique oral microbiome characteristics in children harboring *Helicobacter pylori* in the oral cavity: Ogaya Y., Kadota Y., Nomura R., Nakano K.: 101st General Session & Exhibition of the IADR (Bogotá, Colombia), 2023.
- 9: Serum agglutinating ability of *Streptococcus mutans* killed by antibiotic: Suehiro Y., Matayoshi S., Otsugu M., Nomura R., Nakano K.: 101st General Session & Exhibition of the IADR (Bogotá, Colombia), 2023.
- 10: Effects of continuous dental support on periodontal status and oral health activities of hemophilic patients: Kametani M., Akitomo T., Niizato N., Usuda M., Kusaka S., Asao Y., Nakano M., Iwamoto Y., Tachikake M., Mitsuhashi C., Nomura R.: 29th IAPD Congress (Maastricht, Netherlands), 2023.
- 11: Inhibitory effects of S-PRG filler eluate on acid tolerance of *Streptococcus mutans*: Usuda M., Kametani M., Akitomo T., Nakano M., Suehiro Y., Matayoshi S., Mitsuhashi C., Nakano K., Nomura R.: 29th IAPD Congress (Maastricht, Netherlands), 2023.
- 12: Effect of professional mechanical tooth cleaning paste with high-performance silica on stain deposition: Akitomo T., Kusaka S., Usuda M., Kametani M., Hirose M., Takane S., Mitsuhashi C.,

- Nakano K., Nomura R.: 29th IAPD Congress (Maastricht, Netherland), 2023.
- 13: Pathogenicity of collagen-binding protein in *Streptococcus mutans*: Matsuoka D., Naka S., Goto K., Nomura R., Nakano K., Matsumoto-Nakano M.: 29th IAPD Congress (Maastricht, Netherland), 2023.
 - 14: Cariology and systemic disorder collagen-binding properties of killed *Streptococcus mutans* strains: Suehiro Y., Matayoshi S., Otsugu M., Nomura R., Nakano K.: 29th IAPD Congress (Maastricht, Netherland), 2023.
 - 15: Association of *Helicobacter pylori* in the oral cavity and dental caries with lifestyle-related disease: Kadota T., Hamada M., Nomura R., Nakano K.: The 70th ORCA congress (Egmond aan zee, Netherland), 2023.
 - 16: Absorption effect of high-performance silica on food-derived dyes: Akitomo T., Kusaka S., Usuda M., Kametani M., Ogawa M., Kaneki A., Mitsuhata C. Nomura R.: 32nd Annual Conference of the Taiwan Academy of Pediatric Dentistry (Kaohsiung, Taiwan), 2023.
 - 17: The changes on dental caries status of first molars among primary school children in Cambodia: Asao Y., Iwamoto Y., Nishimura T., Nakano M., Tachikake M., Mitsuhata C., Nomura R.: 32nd Annual Conference of the Taiwan Academy of Pediatric Dentistry (Kaohsiung, Taiwan), 2023.
 - 18: Evaluation of killed *Streptococcus mutans* strains by fluorescence microscopy: Mikasa Y., Suehiro Y., Matayoshi S., Otsugu M., Nomura R., Nakano K.: 32nd Annual Conference of the Taiwan Academy of Pediatric Dentistry (Kaohsiung, Taiwan), 2023.
 - 19: Possible mediation of tonsils to IgA nephropathy caused by *cnm*-positive *Streptococcus mutans*, a major pathogen of dental caries: Misaki T., Naka S., Nagasawa Y., Matsuoka D., Matayoshi S., Ito S., Nomura R., Matsumoto-Nakano M., Nakano K.: 17th International symposium on IgA nephropathy (IIgAN) (Tokyo), 2023.
 - 20: Relation between *Porphyromonas gingivalis* infection in oral cavity and elevated galactose-deficient IgA1 in IgA nephropathy: Ito S., Misaki T., Nagasawa Y., Nomura R., Naka S., Fukunaga A., Matsuoka D., Matayoshi S., Matsumoto-Nakano M., Kazuhiko Nakano K.: 17th International symposium on IgA nephropathy (IIgAN) (Tokyo), 2023.
 - 21: Prevalence of periodontitis-related bacteria in tonsils of IgA nephropathy patients compared with those in habitual tonsilitis patients: Nagasawa Y., Nomura R., Misaki T., Ito S., Naka S., Matsuoka D., Matayoshi S., Matsumoto-Nakano M., Nakano K.: 17th International symposium on IgA nephropathy (IIgAN) (Tokyo), 2023.
 - 22: *cnm*-positive *Streptococcus mutans*, a major pathogen of dental caries may cause IgA nephropathy via tonsils: Misaki T., Naka S., Nagasawa Y., Matsuoka D., Matayoshi S., Ito S., Nomura R., Matsumoto-Nakano M., Nakano K.: The Kidney Week 2023 (Philadelphia, USA), 2023.
 - 23: Collagen-binding protein pathogenicity in rat model of IgA nephropathy: Suehara K., Matsuoka D., Naka S., Misaki T., Nagasawa Y., Ito S., Nomura R., Nakano K., Matsumoto-Nakano M.: Japanese Association for Dental Research (JADR) (Sendai), 2023.
 - 24: The oral conditions of Cambodian public primary school children before and after the COVID-19 pandemic: Asao Y., Iwamoto Y., Nishimura T., Kaneki A., Usuda M., Kametani M., Akitomo T., Nakano M., Kondo M., Ogura T., Mitsuhata M., Nomura R., Naito M.: 15th International Conference of the Asian Academy of Preventive Dentistry (Hong Kong), 2023.
 - 25: Dental anomaly detection using RadImageNet transfer learning models: Okazaki S., Mine Y., Iwamoto Y., Nishimura T., Nomura R., Murayama T.: Joint 37th IADR-SEA Annual Scientific Meeting and 2nd International Oral Health Symposium (Singapore), 2023.

Domestic conference

- 1: Inhibitory mechanisms of S-PRG filler eluate on *Streptococcus mutans* in the presence of sucrose: Usuda M., Kametani M., Akitomo T., Nakano M., Suehiro Y., Matayoshi S., Mitsuhata C., Nakano K., Nomura R.: 61st Japanese Society of Pediatric Dentistry, Young People's Meeting (Nagasaki), 2023.
- 2: Evaluation of the effect of continuous dental visits on periodontal condition and oral hygiene habits of hemophilic patients: Kametani M., Akitomo T., Usuda M., Kusaka S., Asao Y., Nakano M., Iwamoto Y., Tachikake M., Mitsuhata C., Nomura R.: 61st Japanese Society of Pediatric Dentistry, Young People's Meeting (Nagasaki), 2023.
- 3: A study on dental caries of the first molar among Cambodian public primary school children: Asao Y., Iwamoto Y., Usuda M., Kametani M., Kusaka S., Akitomo T., Nakano M., Tachikake M., Mitsuhata C., Naito M., Nomura R.: 56th Annual Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 4: Isolation and characterization of drug-resistant bacteria from nasal and oral cavities: Kawayanagi T., Kawada-Matsuo M., Nguyen-Tra Le M., Kusaka S., Haruta A., Nomura R., Shiba H., Tsuga K.,

- Komatsuzawa H.: 56th Hiroshima University Dental Society General Meeting (Hiroshima), 2023.
- 5: Isolation and characterization of drug-resistant bacteria from nasal and oral cavity: Kawayanagi T., Kawada-Matsuo M., Nguyen-Tra Le Mi., Takeshita T., Hisatsune J., Kusaka S., Nomura R., Shiba H., Sugai M., Komatsuzawa H.: 96th Japanese Society of Bacteriology (Himeji), 2023.
 - 6: Effects of killed treatment on collagen-binding properties of *Streptococcus mutans*: Suehiro Y., Matayoshi S., Otsugu M., Nomura R., Nakano K.: The 61st Congress of Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
 - 7: Molecular biological investigation of the binding of human IgA by collagen-binding protein Cnm: Matsuoka D., Naka S., Goto K., Nomura R., Nakano K., Matsumoto-Nakano M.: The 61st Congress of Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
 - 8: Relationship of collagen-binding protein-positive *Streptococcus mutans* strain distribution with dental caries incidence in children: Okuda M., Matayoshi S., Tojo F., Naka S., Matsumoto-Nakano M., Nomura R., Nakano K.: The 61st Congress of Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
 - 9: Effect of continuous oral health activities for hemophilic children in mixed dentition: Kametani M., Akitomo T., Niizato N., Usuda M., Kusaka S., Asao Y., Nakano M., Iwamoto Y., Tachikake M., Mitsuhata C., Nomura R.: The 61st Congress of Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
 - 10: A case of multiple teeth with dens invaginatus: Usuda M., Akitomo T., Kametani M., Kusaka S., Nakano M., Iwamoto Y., Niizato N., Mitsuhata C., Nomura R.: The 61st Congress of Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
 - 11: A case of crown malformation and enamel hypoplasia of succedaneous teeth derived from traumatic injuries to upper anterior primary teeth in 1-year-old child: Asao Y., Tachikake M., Usuda M., Kametani M., Iwamoto Y., Mitsuhata C., Nomura R.: The 61st Congress of Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
 - 12: Long-term observation of child with fibrodysplasia ossificans progressive (FOP): Tachikake M., Asao Y., Kusaka S., Nakano M., Akitomo T., Mitsuhata C., Nomura R.: The 61st Congress of Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
 - 13: *Porphyromonas gulae* fimA genotype differences for determining biofilm formation: Yoshida S., Inaba H., Nomura R., Nakano K., Matsumoto-Nakano M.: The 61st Congress of Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
 - 14: Inhibitory effect of allyl isothiocyanate on *Streptococcus mutans*: Akitomo T., Usuda M., Kametani M., Kusaka S., Mitsuhata C., Nomura R.: The 61st Congress of Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
 - 15: Relationship between Cnm gene-positive *S. mutans* in the oral cavity and abnormal glycan IgA deposition in patients with IgA nephropathy: Misaki T., Naka S., Suzuki J., Lee M., Aoki R., Nagasawa Y., Matsuoka D., Ito S., Nomura R., Matsumoto-Nakano M., Suzuki Y., Nakano K.: 66th Annual Meeting of the Japanese Society of Nephrology (Yokohama), 2023.
 - 16: Examination of the detection rate of periodontal disease bacteria in the Sasayama cohort study: Nagasawa Y., Nomura R., Hattori Y., Usuda M., Kametani M., Akitomo T., Mitsuhata C., Yamazaki H., Shoshima K., Mori T., Kusunoki H., Kishimoto H., Shinmura K.: 27th Academic Meeting of the Japanese Society of General Hospital Medicine (Tokyo), 2023.
 - 17: A case in which a broken instrument was found in the root canal of a deciduous molar and was treated and followed up through the eruption of the successional tooth: Nakano M., Ogawa M., Kaneki A., Usuda M., Hamaguchi S., Akitomo T., Iwamoto Y., Mitsuhata C., Nomura R.: The 42nd Congress of Japanese Society of Pediatric Dentistry Kinki Branch (Toyonaka), 2023.
 - 18: A case of eruption disturbance in primary second molar and first molar caused by odontomas: Akitomo T., Iwamoto Y., Nishimura T., Kametani M., Kusaka S., Asao Y., Nakano M., Tachikake M., Mitsuhata C., Nomura R.: The 42nd Congress of Japanese Society of Pediatric Dentistry Kinki Branch (Toyonaka), 2023.
 - 19: Color absorption effect of high-performance silica: Akitomo T., Kusaka S., Kaneki A., Ogawa M., Mitsuhata C., Nomura R.: The 42nd Congress of Japanese Society of Pediatric Dentistry Chushikoku Branch (Yonago), 2023.
 - 20: Investigation of the mechanism of the inhibitory effect of hydroxyapatite produced from discarded shells on *Streptococcus mutans*: Kaneki A., Ogawa M., Usuda M., Kametani M., Akitomo T., Suehiro Y., Matayoshi S., Naka S., Okawa R., Mitsuhata C., Matsumoto-Nakano M., Nakano K., Nomura R.: The 42nd Congress of Japanese Society of Pediatric Dentistry Chushikoku Branch (Yonago), 2023.

- 21: Investigation of the antibacterial effect of citrus peel extract against *Streptococcus mutans*: Kusaka S., Akitomo T., Usuda M., Kametani M., Mitsuhashi C., Nakano K., Nomura R.: The 42nd Congress of Japanese Society of Pediatric Dentistry Chushikoku Branch (Yonago), 2023.
- 22: A case of malformation of successor permanent teeth derived from dental trauma to primary teeth in 1-year-old.: Tachikake M., Nakano M., Asao Y., Akitomo T., Hayashi F., Mitsuhashi C., Nomura R.: The 42nd Congress of Japanese Society of Pediatric Dentistry Chushikoku Branch (Yonago), 2023.
- 23: A case of four impacted supernumerary teeth found due to eruption disorder of a mandibular left second molar: Nakano M., Tachikake M., Kusaka S., Asao Y., Mitsuhashi C., Nomura R.: The 42nd Congress of Japanese Society of Pediatric Dentistry Chushikoku Branch (Yonago), 2023.
- 24: A case of long-term observation using denture for deciduous teeth after early loss of multiple deciduous teeth due to traumatic injuries: Asao Y., Tachikake M., Nishimura T., Nakano M., Iwamoto Y., Mitsuhashi C., Nomura R.: The 42nd Congress of Japanese Society of Pediatric Dentistry Chushikoku Branch (Yonago), 2023.
- 25: A case of extraction of several supernumerary teeth located in the premolar region that obstructed the eruption of permanent teeth during the replacement period.: Iwamoto Y., Akitomo T., Asao Y., Tachikake M., Mitsuhashi C., Nomura R.: The 35th Annual Meeting and Academic conference of Japanese Society of Pediatric Oral and Maxillofacial Surgery (Tokyo), 2023.

F) Special lectures in academic meetings

- 1: Hiroshima Pediatric Dentistry Clinical Study Group Lecture (Hiroshima): “My pediatric dentistry clinical activities”: Nomura R., 2023.
- 2: Osaka University School of Dentistry Alumni Association Hiroshima/Yamaguchi Branch General Meeting (Hiroshima): “Pediatric dental treatment for general dentists”: Nomura R., 2023.
- 3: 66th Annual Meeting of the Japanese Society of Nephrology (Yokohama): Investigation of the influence of oral bacteria on the development of IgA nephropathy using rats and mice: Nomura R., 2023.
- 4: 63rd Hiroshima City School Health Conference Subcommittee (Hiroshima): “For children's dental health”: Nomura R., 2023.
- 5: 42nd Chugoku-Shikoku Regional Conference of the Japanese Pediatric Dental Association (Yonago): “Cardiovascular diseases caused by oral bacteria”: Nomura R., 2023.
- 6: Dental Health Federation WG “Dental Health Activities Conference to Support Children in Temporary Protection Facilities” (Hiroshima): Regarding the dental findings of children who visited Hiroshima University Hospital Pediatric Dentistry through temporary protection facilities”: Nomura R., 2023.
- 7: Special needs dental practitioner training (Hiroshima): “Advice from a pediatric dentist for special needs dental treatment”: Nomura R., 2023.
- 8: Hiroshima West Rotary Club International Community Service Committee Training Session: “Learning about International Community Service from Experienced Persons” Dental Support Activity in Cambodia: Iwamoto Y.: Hiroshima Shudo University Hiroshima Kyoso Junior & Senior High School (Hiroshima), 2023.5.13.
- 9: Ehime dental hygienists' association 2023 4th professional training session of 5th lifelong training system: Oral function in children -Diagnosis and management of pediatric oral dysfunction-: Iwamoto Y.: (online), 2023.8.6.

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

- 1: Grant-in-Aid for Scientific Research (C): Nomura R. (Principal Investigator), A new strategy for the prevention of *Helicobacter pylori* colonization in children focusing on dental caries and the oral environment. 21K10184. ¥700,000.
- 2: Grant-in-Aid for Scientific Research (B): Nomura R. (Co-Investigator), Investigation of new mechanisms for the control of systemic diseases induced by cariogenic bacteria. 21H03149. ¥1,900,000.
- 3: Fostering Joint International Research (B): Nomura R. (Co-Investigator), A new strategy to reduce systemic disease in low- and middle-income countries focusing on the collagen-binding ability of cariogenic bacteria. 21KK0160. ¥1,350,000.
- 4: Grant-in-Aid for Scientific Research (C): Nomura R. (Co-Investigator), Investigation of the colonization environment and methods to prevent the colonization of cariogenic bacteria, which are

- highly associated with systemic diseases. 22K10268. ¥228,677.
- 5: Grant-in-Aid for Scientific Research (C): Nomura R. (Co-Investigator), Investigation of the association between *Helicobacter pylori* and periodontopathic bacterial colonization in the oral cavity of children. 22K10269. ¥400,000.
 - 6: Grant-in-Aid for Scientific Research (C): Nomura R. (Co-Investigator), Elucidation of the mechanism of development of red complex species and IgA nephropathy and development of new treatment methods. 21K08242. ¥250,000.
 - 7: Grant-in-Aid for Scientific Research (C): Nomura R. (Co-Investigator), Pathogenicity and function/structure relationships of *S. mutans* collagen-binding proteins solved by antibody-mimetic molecules. 22K10233. ¥100,000.
 - 8: Grant-in-Aid for Scientific Research (C): Nomura R. (Co-Investigator), Research on *Helicobacter pylori* infection in the oral cavity and Parkinson's disease. 23K09387. ¥200,000.
 - 9: Grant-in-Aid for Scientific Research (C): Mitsuhashi C. (Principal Investigator), Effect of childhood stress on developmental brain formation. 21K10161. ¥600,000.
 - 10: Grant-in-Aid for Scientific Research (C): Iwamoto Y. (Co-Investigator), Effect of childhood stress on developmental brain formation. 21K10161. ¥100,000.
 - 11: Grant-in-Aid for Early-Career Scientists: Akitomo T. (Principal Investigator), Innovation of oral-systemic relationship research focusing on the collagen-binding ability of oral streptococci from pediatric. 23K16205. ¥1,200,000.
 - 12: Academic instruction fee, Kyocera Corporation: Nomura R., ¥200,000
 - 13: Young Member Research Presentation Encouragement Project, 29th International Pediatric Dentistry Congress: Usuda M., Inhibitory mechanisms of S-PRG filler eluate on *Streptococcus mutans* in the presence of sucrose. ¥54,000
 - 14: Young Member Research Presentation Encouragement Project, 29th International Pediatric Dentistry Congress: Kametani M., Evaluation of the effect of continuous dental visits on periodontal condition and oral hygiene habits of hemophilic patients. ¥54,000
 - 15: Futokukai Public Interest Incorporated Foundation Researcher Grant: Asao Y., Analysis of the impact of the new coronavirus infection on the oral cavity of children admitted to temporary protection facilities. ¥300,000.
 - 16: Hiroshima University Satake Fund 2023 Student Research Grant: Usuda M., Research aimed at preventing cardiovascular diseases caused by caries-causing bacteria using hydroxyapatite produced from discarded shells. ¥200,000.
 - 17: Ryokufukai Educational Research Encouragement Award (Overseas Training Support Fund): Kametani M., ¥100,000.
 - 18: Hiroshima University Emergent Next Generation Researcher Development and Support Program: Kaneki A., An innovative challenge to reduce and prevent systemic diseases in Cambodia, focusing on the collagen-binding ability of *mutans streptococci*. ¥400,000.

(5) Academic Awards, etc.

- 1: Kametani M.: Ryokufukai Educational Research Encouragement Award.
- 2: Usuda M.: Hiroshima University Excellent Student Scholarship.
- 3: Iwamoto Y.: Excellent presentation award, The 35th Annual Meeting and Academic conference of Japanese Society of Pediatric Oral and Maxillofacial Surgery.

(6) Patents

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Department of Dental Anesthesiology Division of Oral & Maxillofacial Surgery and Oral Medicine, (Department of Dental Anesthesiology)

(1) Staff and Students

Lecturer: Mitsuhiro Yoshida (*) Chief: Mitsuhiro Yoshida (by-work)
Assistant Professor: Yoshitaka Shimizu, Mitsuru Doi, Akari Mukai (~Mar.), Kana Oue
Resident: Tamayo Takahashi, Aya Oda, Hisanobu Kamio, Serika Imamura, Utaka Sasaki
(~Feb.), Eiji Imado
Clinical Trainee: Masaki Yasusaka, Taiga Yoshinaka, Yuka Maetani

(2) Main Research Activities

- 1: Study on mechanisms of general anesthetic action
- 2: Development of a novel general anesthetic method applying enhancement of descending pain suppression system
- 3: Study on role of each neuron in an intravenous anesthetic agent-induced anesthetic factor
- 4: Study on a stage of delirium in general anesthesia
- 5: Study on involvement of dopamine neurons in awakening from general anesthesia
- 6: Study on antianxiety effects of sedative drugs
- 7: Study on respiratory sound monitor during dental treatment under sedation
- 8: Study on effects of nitrous oxide on cardiovascular system
- 9: Study on chronic pain
- 10: Study on medical emergency during dental treatments

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Analgesia-based Sedation for Oral Surgery in Patients With Chronic Respiratory Obstructive Disease: Takahashi T, Yoshida M, Ono S, Kanda T, Obayashi F, Kamio H, Oda A, Oue K, Mukai A, Doi M, Shimizu Y: J Craniofac Surg, 34(1): e70-e74, 2023.
- 2: N-methyl-d-aspartate receptors and glycinergic transmission, respectively, mediate muscle relaxation and immobility of pentobarbital in mice: Mukai A, Irifune M, Shimizu Y, Doi M, Kikuchi Y, Katayama S, Oue K, Yoshida M, Ago Y, Okada Y, Morioka N, Nakata Y, Sakai N: Neurosci Lett, 802:137175, 2023.
- 3: Efficacy and safety of remimazolam besilate for sedation in outpatients undergoing impacted third molar extraction: a prospective exploratory study: Oue K, Oda A, Shimizu Y, Takahashi T, Kamio H, Sasaki U, Imamura S, Imado E, Mukai A, Doi M, Sakuma M, Ono S, Aikawa T, Yoshida M: BMC Oral Health., Oct 21; 23(1): 774, 2023.
- 4: Spinal Muscular Atrophy Type III Recognized After Delayed Recovery From Neuromuscular Blockade After an Orthognathic Surgery: Oda A, Oue K, Yoshida M: J Craniofac Surg., Sep 1; 34(6): e580-e582, 2023.
- 5: Detailed findings of videofluoroscopic examination among patients with Parkinson's disease on the effect of cervical percutaneous interferential current stimulation: Nakamori M, Toko M, Yamada H, Hayashi Y, Haruta A, Hiraoka A, Yoshikawa M, Nagasaki T, Ushio K, Yoshikawa K, Shimizu Y, Mikami Y, Maruyama H: Front Neurol, Nov 7; 14: 1279161, 2023.
- 6: New acoustic monitoring system quantifying aspiration risk during monitored anaesthesia care: Shimizu Y, Ohshimo S, Saeki N, Oue K, Sasaki U, Imamura S, Kamio H, Imado E, Sadamori T, Tsutsumi YM, Shime N: Scientific Reports, Nov18;13(1):20196, 2023.
- 7: Usefulness of new acoustic respiratory sound monitoring with artificial intelligence for upper airway assessment in obese patients during monitored anesthesia care: Shimizu Y, Saeki N, Ohshimo S, Doi M, Oue K, Yoshida M, Takahashi T, Oda A, Sadamori T, Tsutsumi YM, Shime N: J Med Invest,

- 70(3.4): 430-435, 2023.
- 8: Swallowing sound index analysis using electronic stethoscope and artificial intelligence for patients with Parkinson's disease: Nakamori M, Shimizu Y, Takahashi T, Toko M, Yamada H, Hayashi Y, Ushio K, Yoshikawa K, Hiraoka A, Yoshikawa M, Nagasaki T, Mikami Y, Maruyama H: J Neurol Sci, Nov 15; 454: 120831, 2023.
 - 9: Swallowing sound evaluation using an electronic stethoscope and artificial intelligence analysis for patients with amyotrophic lateral sclerosis: Nakamori M, Ishikawa R, Watanabe T, Toko M, Naito H, Takahashi T, Simizu Y: Front Neurol, Aug 3; 14: 1212024, 2023.
 - 10: Impact of neck percutaneous interferential current sensory stimulation on swallowing function in patients with Parkinson's disease: A single-arm, open-label study protocol: Nakamori M, Toko M, Yamada H, Hayashi Y, Yoshikawa K, Yoshikawa M, Nagasaki T, Hiraoka A, Shimizu Y, Mikami Y, Maruyama H: Contemp Clin Trials Commun, Jun 10; 33: 101158, 2023.
 - 11: Features and mechanisms of propofol-induced protein kinase C (PKC) translocation and activation in living cells: Noguchi S, Kajimoto T, Kumamoto T, Shingai M, Narasaki S, Urabe T, Imamura S, Harada K, Hide I, Tanaka S, Yanase Y, Nakamura S, Tsutsumi Y, Sakai N: Front Pharmacol, Nov 7: 14: 1284586, 2023.
 - 12: Severe perioperative lactic acidosis in a pediatric patient with glycogen storage disease type Ia: a case report: Takahashi T, Oue K, Imado E, Doi M, Shimizu Y, Yoshida M: JA Clinical Reports, 9:91, 2023.
 - 13: Oral surgery under general anesthesia in a patient with catecholaminergic polymorphic ventricular tachycardia: A case report: Sachiko Yamasaki, Yukio Yoshioka, Kana Oue, Koichi Koizumi, Souichi Yanamoto: Oral Science International; 1–5, 2023.

B) Review

- 1: 〈Special Article〉Chronic Orofacial Pain Cognitive Behavioral Therapy: Doi M: Pain clinic, 44(4): 362-368, 2023.

C) Publications

- 1: Respiratory and airway, skin and skeletal muscle: Anesthesiology Troubleshooting A to Z 2nd ed. (Takasaki M, Kawamoto M, Shirakami G, Matsumoto M, Hirota K): Shimizu Y: Bunkodo Co. (Tokyo), 366, 520, 2022.
- 2: Treatment of Orofacial Pain (General Therapy) 7. Cognitive Behavioral Therapy: Guidebook for Diagnosis and Treatment of Orofacial Pain 3rd ed. (The Japanese Association for Orofacial Pain): Doi M: Ishiyaku Publishers Inc. (Tokyo), 181-185, 2023.

D) Other Publications

E) Presentations at Scientific Meetings

- 1: A case of wisdom tooth extraction for an intellectually disability patient with CPVT: Yoshioka Y, Yamasaki S, Oue K, Ito N, Yanamoto S: The 32nd annual meeting of Japanese society of dentistry for medically compromised patient (Karuizawa), 2023.
- 2: A case of general anesthesia management of an intellectually disability patient with CPVT: Takahashi T, Oue K, Imado E, Imamura S, Kamio H, Oda A, Doi M, Shimizu Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
- 3: A case study of anesthetic management for a patient with autism spectrum disorder and dental phobia with Fontan circulation: Takahashi T, Oue K, Imado E, Oda A, Mukai A, Oda Y, Shimizu Y, Okada Y, Yoshida M: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health (Sapporo), 2023.
- 4: A Study of the Impact of the Spread of COVID-19 Infection on Patients Receiving Stress-free dental clinic at the Hiroshima University Hospital ① -Comparison of the number of COVID-19 infected patients and the number of patients consulted-: Oda A, Takahashi T, Imado E, Imamura S, Kamio H, Oue K, Doi M, Shimizu Y, Yoshida M: The 107th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2023.
- 5: A Study of the Impact of the Spread of COVID-19 Infection on Patients Receiving Stress-free dental

- clinic at the Hiroshima University Hospital ② -age, anesthesia management category, anesthesia management method, assesment of general condition, use of local anesthesia-: Takahashi T, Oda A, Imado E, Imamura S, Kamio H, Oue K, Doi M, Shimizu Y, Yoshida M: The 107th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2023.
- 6: Periodontal infection in diet-induced obesity causes cognitive impairment associated with microglial activation: Kana Oue, Yusuke Morioka, Eiji Imado, Testuya Tamura, Yosuke Yamawaki, Kazuhisa Ouhara, Mitsuhiro Yoshida, Takashi Kanematsu, Yukio Ago: IAGG Asia/Oceania Regional Congress (Yokohama), 2023.
 - 7: Efficacy and safety of remimazolam for sedation undergoing dental procedure: Oue K, Oda A, Takahashi T, Kamio H, Sasaki U, Imamura S, Imado E, Mukai A, Doi M, Shimizu Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 8: Electroencephalogram of intravenous sedation during dental procedures with remimazolam: Oda A, Oue K, Takahashi T, Kamio H, Imamura S, Sasaki U, Imado E, Mukai A, Doi M, Shimizu Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 9: Canacoustic monitoring with artificial intelligence aspiration risk during monitored anaesthesia care of patients with obesity: Shimizu Y, Saeki N, Doi M, Oue K, Oue K, Yoshida M, Takahashi T, Oda, Ohsimo S, Sadamori T, Shime N: The 6th Annual Meeting of Japanese Airway Management Society (Oomiya), 2023.
 - 10: Canacoustic monitoring with artificial intelligence aspiration risk during dental sedation: Shimizu Y, Saeki N, Doi M, Oue K, Oue K, Takahashi T, Oda, Sasaki U, Imamura S, Imado E, Kamio H, Yoshida M: The 51th Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 11: A case of a patient with Klippel-Trenaunay-Weber syndrome who had difficulty in controlling perioperative hemostasis: Imamura S, Takahashi T, Imado E, Kamio H, Oda A, Oue K, Doi M, Shimizu Y, Yoshida M: The 37th Scientific Meeting of Dental Anesthesiology in Chugoku and Shikoku Branch (Hiroshima), 2023.
 - 12: A case of intravenous sedation in a post-Fontan operation patient with autism: Imamura S, Oue K, Oda A, Kamio H, Imado E, Sasaki U, Takahashi T, Mukai A, Doi M, Shimizu Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 13: Oral Hygiene Management of Patients with Somatic Symptoms Disorder and Delusional Disorder: Yano K, Doi M: The 38th Annual Meeting of the Japanese Society of Dental Psychosomatic Medicine (Koriyama), 2023.
 - 14: An airway management of the patient with Sturge-Weber syndrome in sagittal split ramus osteotomy surgery under general anesthesia: Oda A, Yoshida M, Imado E, Takahashi T, Oue K, Mukai A, Shimizu Y, Oda Y, Okada Y: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 15: A case of a patient with markedly elevated creatinine kinase levels on preoperative blood tests: Imado E, Yoshida M, Imamura S, Takahashi T, Kamio H, Oda A, Oue K, Doi M, Shimizu Y: The 37th Scientific Meeting of Dental Anesthesiology in Chugoku and Shikoku Branch (Hiroshima), 2023.
 - 16: Role of HDAC inhibition in allodynia induced by prenatal valproic acid exposure: Imado E, Nakatsuka T, Ago Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 17: Prenatal exposure to histone deacetylase inhibitors causes mechanical allodynia associated with spinal microglial activation: Imado E, Ono A, Ago Y, Yoshida M: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 18: Role of the VPAC2 receptor overactivation implicated in schizophrenia susceptibility: development of neuron-specific human VPAC2 receptor overexpressing mice: Ono A, Imado E, Ago Y: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 19: In utero exposure to the antiepileptic drug valproic acid induces a long-lasting hyperalgesia and allodynia associated with central sensitization: Tahara T, Imado E, Uta D, Takuma K, Kume T, Kotake Y, Asano S, Ago Y: Forum 2023 Pharmaceutical Health Sciences: Environmental Toxicology (Hiroshima), 2023.
 - 20: In utero exposure to valproic acid causes central sensitization and increased pain sensitivity: Ago Y, Tahara T, Imado E, Uta D, Takuma K, Kume T, Kotake Y, Asano S: The 44th Annual Scientific Meeting of the Japanese Society of Clinical Pharmacology and Therapeutics (Kobe), 2023.

F) Special lectures in academic meetings

- 1: Treatment of Orofacial Pain III - Focusing on Emotion: Doi M: Ministry of Health, Labour and

- Welfare, Model Project for Dissemination of Chronic Pain Treatment System and Human Resource Development (Tohoku Region): Chronic Pain Treatment Workshop for Dentists (Web), 2023.
- 2: Cognitive Behavioral Therapy in Practice: Doi M: The Japanese Association of Orofacial Pain Psychiatry Seminar 2022 (Tokyo), 2023.
 - 3: Cognitive Behavioral Therapy for Patients with Neurological Injury: Doi M: Joint Symposium of Neuropathic Pain Related Dental Societies 2023 (Web), 2023.
 - 4: How to intervene with patients who complain of unidentifiable pain: Doi M: Hiroshima University Dental Hygienist Training Center Recurrent Training Course (Web), 2023.
 - 5: orofacial pain: Doi M: Aki Takata City Dental Association Workshop (AkiTakata), 2023.
 - 6: Symposium 2 Diversity and Possibilities of OFP ~What is ~OFP~? If you want to take the pain away, don't try to take the pain away: Doi M: The 28th Annual Meeting of the Japanese Association for Orofacial Pain(Chikushino), 2023.
 - 7: Emergency care during dental treatment: Shimizu Y: Certified dental hygienist seminars (Hiroshima), 2023.
 - 8: Incidentalities During Dental Treatment: Shimizu Y: Hiroshima prefectural dental association workshop 2022 (Hiroshima), 2023.
 - 9: Incidentalities During Dental Treatment: Shimizu Y: Hiroshima prefectural dental association workshop 2023 (Hiroshima), 2023.

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

- 1: Grant-in-Aid No. 20K10116 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Yoshida M, Clarification of the mechanism of functional alteration of the central nervous system in development of chronic pain of masticatory muscle. ¥4,290,000.
- 2: Grant-in-Aid No. 23K09353 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (New): Yoshida M, Yamamoto T, The analysis of the BDNF-TrkB and descending pathways in chronic masticatory muscle disorder. ¥4,680,000.
- 3: Grant-in-Aid No. 23K09350 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (New): Yamamoto T, Yoshida M, The role of hyperpolarization-activated cyclic nucleotide-gated channels in neuropathic pain. ¥4,810,000.
- 4: Grant-in-Aid No. 21K10072 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Shimizu Y, Sadamori T, Analysis of noise characteristics from dental apparatus during auscultation of breath sounds to prevent from air-way obstruction under sedation. ¥4,160,000.
- 5: Grant-in-Aid No. 23K09183 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (New): Oue K, Study on interaction of obesity and periodontal disease on cognitive impairment. ¥4,680,000.
- 6: Grant-in-Aid No. 17K11908 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Doi M, Functional brain imaging evaluation of treatment effect of cognitive behavioral therapy and antidepressant drugs on glossodynia. ¥4,420,000.
- 7: Grant-in-Aid No. 22K17184 for Early-Career Scientists from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Oda A, Establishment of safe conscious sedation with remimazolam using electroencephalogram and pharmacokinetic analysis. ¥4,550,000.
- 8: Grant-in-Aid No. 23K19455 for Research Activity Start-up from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (New): Research on the pathophysiology and therapeutic basis of developmental disorders targeting pain-related molecules. ¥2,860,000.
- 9: Grant-in-Aid No. 22K20993 for Research Activity Start-up from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Imamura S, Propofol and ketamine-driven signal transduction system and serotonin transporter regulatory mechanism. ¥2,860,000.
- 10: Grant-in-Aid No. 22K17091 for Early-Career Scientists from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Kamio H, Elucidation of the biocompatibility of titanium implants and the role of decorin in surrounding bone regeneration. ¥4,450,000.
- 11: Grant-in-Aid No. 22K21061 for Research Activity Start-up from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Sasaki U, Elucidation of the neurochemical basis for general anesthetic-induced nausea and vomiting. ¥1,430,000.

(5) Academic Awards, etc.

- 1: Shimizu Y: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology -Dentsply Sirona Award-, 2023.
- 2: Shimizu Y: The 6th Annual Meeting of Japanese Airway Management Society -Best Presentation Award-, 2023.

(6) Patents

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Department of Dental Anesthesiology Division of Oral & Maxillofacial Surgery and Oral Medicine, (Department of Dental Anesthesiology)

(2) Staff and Students

Lecturer: Mitsuhiro Yoshida (*) Chief: Mitsuhiro Yoshida (by-work)
Assistant Professor: Yoshitaka Shimizu, Mitsuru Doi, Akari Mukai (~Mar.), Kana Oue
Resident: Tamayo Takahashi, Aya Oda, Hisanobu Kamio, Serika Imamura, Utaka Sasaki
(~Feb.), Eiji Imado
Clinical Trainee: Masaki Yasusaka, Taiga Yoshinaka, Yuka Maetani

(2) Main Research Activities

- 1: Study on mechanisms of general anesthetic action
- 2: Development of a novel general anesthetic method applying enhancement of descending pain suppression system
- 3: Study on role of each neuron in an intravenous anesthetic agent-induced anesthetic factor
- 4: Study on a stage of delirium in general anesthesia
- 5: Study on involvement of dopamine neurons in awakening from general anesthesia
- 6: Study on antianxiety effects of sedative drugs
- 7: Study on respiratory sound monitor during dental treatment under sedation
- 8: Study on effects of nitrous oxide on cardiovascular system
- 9: Study on chronic pain
- 10: Study on medical emergency during dental treatments

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Analgesia-based Sedation for Oral Surgery in Patients With Chronic Respiratory Obstructive Disease: Takahashi T, Yoshida M, Ono S, Kanda T, Obayashi F, Kamio H, Oda A, Oue K, Mukai A, Doi M, Shimizu Y: J Craniofac Surg, 34(1): e70-e74, 2023.
- 2: N-methyl-d-aspartate receptors and glycinergic transmission, respectively, mediate muscle relaxation and immobility of pentobarbital in mice: Mukai A, Irifune M, Shimizu Y, Doi M, Kikuchi Y, Katayama S, Oue K, Yoshida M, Ago Y, Okada Y, Morioka N, Nakata Y, Sakai N: Neurosci Lett, 802:137175, 2023.
- 3: Efficacy and safety of remimazolam besilate for sedation in outpatients undergoing impacted third molar extraction: a prospective exploratory study: Oue K, Oda A, Shimizu Y, Takahashi T, Kamio H, Sasaki U, Imamura S, Imado E, Mukai A, Doi M, Sakuma M, Ono S, Aikawa T, Yoshida M: BMC Oral Health., Oct 21; 23(1): 774, 2023.
- 4: Spinal Muscular Atrophy Type III Recognized After Delayed Recovery From Neuromuscular Blockade After an Orthognathic Surgery: Oda A, Oue K, Yoshida M: J Craniofac Surg., Sep 1; 34(6): e580-e582, 2023.
- 5: Detailed findings of videofluoroscopic examination among patients with Parkinson's disease on the effect of cervical percutaneous interferential current stimulation: Nakamori M, Toko M, Yamada H, Hayashi Y, Haruta A, Hiraoka A, Yoshikawa M, Nagasaki T, Ushio K, Yoshikawa K, Shimizu Y, Mikami Y, Maruyama H: Front Neurol, Nov 7; 14: 1279161, 2023.
- 6: New acoustic monitoring system quantifying aspiration risk during monitored anaesthesia care: Shimizu Y, Ohshimo S, Saeki N, Oue K, Sasaki U, Imamura S, Kamio H, Imado E, Sadamori T, Tsutsumi YM, Shime N: Scientific Reports, Nov18;13(1):20196, 2023.
- 7: Usefulness of new acoustic respiratory sound monitoring with artificial intelligence for upper airway assessment in obese patients during monitored anesthesia care: Shimizu Y, Saeki N, Ohshimo S, Doi M, Oue K, Yoshida M, Takahashi T, Oda A, Sadamori T, Tsutsumi YM, Shime N: J Med Invest,

- 70(3.4): 430-435, 2023.
- 8: Swallowing sound index analysis using electronic stethoscope and artificial intelligence for patients with Parkinson's disease: Nakamori M, Shimizu Y, Takahashi T, Toko M, Yamada H, Hayashi Y, Ushio K, Yoshikawa K, Hiraoka A, Yoshikawa M, Nagasaki T, Mikami Y, Maruyama H: J Neurol Sci, Nov 15; 454: 120831, 2023.
 - 9: Swallowing sound evaluation using an electronic stethoscope and artificial intelligence analysis for patients with amyotrophic lateral sclerosis: Nakamori M, Ishikawa R, Watanabe T, Toko M, Naito H, Takahashi T, Simizu Y: Front Neurol, Aug 3; 14: 1212024, 2023.
 - 10: Impact of neck percutaneous interferential current sensory stimulation on swallowing function in patients with Parkinson's disease: A single-arm, open-label study protocol: Nakamori M, Toko M, Yamada H, Hayashi Y, Yoshikawa K, Yoshikawa M, Nagasaki T, Hiraoka A, Shimizu Y, Mikami Y, Maruyama H: Contemp Clin Trials Commun, Jun 10; 33: 101158, 2023.
 - 11: Features and mechanisms of propofol-induced protein kinase C (PKC) translocation and activation in living cells: Noguchi S, Kajimoto T, Kumamoto T, Shingai M, Narasaki S, Urabe T, Imamura S, Harada K, Hide I, Tanaka S, Yanase Y, Nakamura S, Tsutsumi Y, Sakai N: Front Pharmacol, Nov 7: 14: 1284586, 2023.
 - 12: Severe perioperative lactic acidosis in a pediatric patient with glycogen storage disease type Ia: a case report: Takahashi T, Oue K, Imado E, Doi M, Shimizu Y, Yoshida M: JA Clinical Reports, 9:91, 2023.
 - 13: Oral surgery under general anesthesia in a patient with catecholaminergic polymorphic ventricular tachycardia: A case report: Sachiko Yamasaki, Yukio Yoshioka, Kana Oue, Koichi Koizumi, Souichi Yanamoto: Oral Science International; 1–5, 2023.

B) Review

- 1: 〈Special Article〉 Chronic Orofacial Pain Cognitive Behavioral Therapy: Doi M: Pain clinic, 44(4): 362-368, 2023.

C) Publications

- 1: Respiratory and airway, skin and skeletal muscle: Anesthesiology Troubleshooting A to Z 2nd ed. (Takasaki M, Kawamoto M, Shirakami G, Matsumoto M, Hirota K): Shimizu Y: Bunkodo Co. (Tokyo), 366, 520, 2022.
- 2: Treatment of Orofacial Pain (General Therapy) 7. Cognitive Behavioral Therapy: Guidebook for Diagnosis and Treatment of Orofacial Pain 3rd ed. (The Japanese Association for Orofacial Pain): Doi M: Ishiyaku Publishers Inc. (Tokyo), 181-185, 2023.

D) Other Publications

E) Presentations at Scientific Meetings

- 1: A case of wisdom tooth extraction for an intellectually disability patient with CPVT: Yoshioka Y, Yamasaki S, Oue K, Ito N, Yanamoto S: The 32nd annual meeting of Japanese society of dentistry for medically compromised patient (Karuizawa), 2023.
- 2: A case of general anesthesia management of an intellectually disability patient with CPVT: Takahashi T, Oue K, Imado E, Imamura S, Kamio H, Oda A, Doi M, Shimizu Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
- 3: A case study of anesthetic management for a patient with autism spectrum disorder and dental phobia with Fontan circulation: Takahashi T, Oue K, Imado E, Oda A, Mukai A, Oda Y, Shimizu Y, Okada Y, Yoshida M: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health (Sapporo), 2023.
- 4: A Study of the Impact of the Spread of COVID-19 Infection on Patients Receiving Stress-free dental clinic at the Hiroshima University Hospital ① -Comparison of the number of COVID-19 infected patients and the number of patients consulted-: Oda A, Takahashi T, Imado E, Imamura S, Kamio H, Oue K, Doi M, Shimizu Y, Yoshida M: The 107th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2023.
- 5: A Study of the Impact of the Spread of COVID-19 Infection on Patients Receiving Stress-free dental

- clinic at the Hiroshima University Hospital ② -age, anesthesia management category, anesthesia management method, assesment of general condition, use of local anesthesia-: Takahashi T, Oda A, Imado E, Imamura S, Kamio H, Oue K, Doi M, Shimizu Y, Yoshida M: The 107th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2023.
- 6: Periodontal infection in diet-induced obesity causes cognitive impairment associated with microglial activation: Kana Oue, Yusuke Morioka, Eiji Imado, Testuya Tamura, Yosuke Yamawaki, Kazuhisa Ouhara, Mitsuhiro Yoshida, Takashi Kanematsu, Yukio Ago: IAGG Asia/Oceania Regional Congress (Yokohama), 2023.
 - 7: Efficacy and safety of remimazolam for sedation undergoing dental procedure: Oue K, Oda A, Takahashi T, Kamio H, Sasaki U, Imamura S, Imado E, Mukai A, Doi M, Shimizu Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 8: Electroencephalogram of intravenous sedation during dental procedures with remimazolam: Oda A, Oue K, Takahashi T, Kamio H, Imamura S, Sasaki U, Imado E, Mukai A, Doi M, Shimizu Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 9: Canacoustic monitoring with artificial intelligence aspiration risk during monitored anaesthesia care of patients with obesity: Shimizu Y, Saeki N, Doi M, Oue K, Oue K, Yoshida M, Takahashi T, Oda, Ohsimo S, Sadamori T, Shime N: The 6th Annual Meeting of Japanese Airway Management Society (Oomiya), 2023.
 - 10: Canacoustic monitoring with artificial intelligence aspiration risk during dental sedation: Shimizu Y, Saeki N, Doi M, Oue K, Oue K, Takahashi T, Oda, Sasaki U, Imamura S, Imado E, Kamio H, Yoshida M: The 51th Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 11: A case of a patient with Klippel-Trenaunay-Weber syndrome who had difficulty in controlling perioperative hemostasis: Imamura S, Takahashi T, Imado E, Kamio H, Oda A, Oue K, Doi M, Shimizu Y, Yoshida M: The 37th Scientific Meeting of Dental Anesthesiology in Chugoku and Shikoku Branch (Hiroshima), 2023.
 - 12: A case of intravenous sedation in a post-Fontan operation patient with autism: Imamura S, Oue K, Oda A, Kamio H, Imado E, Sasaki U, Takahashi T, Mukai A, Doi M, Shimizu Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 13: Oral Hygiene Management of Patients with Somatic Symptoms Disorder and Delusional Disorder: Yano K, Doi M: The 38th Annual Meeting of the Japanese Society of Dental Psychosomatic Medicine (Koriyama), 2023.
 - 14: An airway management of the patient with Sturge-Weber syndrome in sagittal split ramus osteotomy surgery under general anesthesia: Oda A, Yoshida M, Imado E, Takahashi T, Oue K, Mukai A, Shimizu Y, Oda Y, Okada Y: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 15: A case of a patient with markedly elevated creatinine kinase levels on preoperative blood tests: Imado E, Yoshida M, Imamura S, Takahashi T, Kamio H, Oda A, Oue K, Doi M, Shimizu Y: The 37th Scientific Meeting of Dental Anesthesiology in Chugoku and Shikoku Branch (Hiroshima), 2023.
 - 16: Role of HDAC inhibition in allodynia induced by prenatal valproic acid exposure: Imado E, Nakatsuka T, Ago Y, Yoshida M: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology (Nagasaki), 2023.
 - 17: Prenatal exposure to histone deacetylase inhibitors causes mechanical allodynia associated with spinal microglial activation: Imado E, Ono A, Ago Y, Yoshida M: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 18: Role of the VPAC2 receptor overactivation implicated in schizophrenia susceptibility: development of neuron-specific human VPAC2 receptor overexpressing mice: Ono A, Imado E, Ago Y: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 19: In utero exposure to the antiepileptic drug valproic acid induces a long-lasting hyperalgesia and allodynia associated with central sensitization: Tahara T, Imado E, Uta D, Takuma K, Kume T, Kotake Y, Asano S, Ago Y: Forum 2023 Pharmaceutical Health Sciences· Environmental Toxicology (Hiroshima), 2023.
 - 20: In utero exposure to valproic acid causes central sensitization and increased pain sensitivity: Ago Y, Tahara T, Imado E, Uta D, Takuma K, Kume T, Kotake Y, Asano S: The 44th Annual Scientific Meeting of the Japanese Society of Clinical Pharmacology and Therapeutics (Kobe), 2023.

F) Special lectures in academic meetings

- 1: Treatment of Orofacial Pain III - Focusing on Emotion: Doi M: Ministry of Health, Labour and

- Welfare, Model Project for Dissemination of Chronic Pain Treatment System and Human Resource Development (Tohoku Region): Chronic Pain Treatment Workshop for Dentists (Web), 2023.
- 2: Cognitive Behavioral Therapy in Practice: Doi M: The Japanese Association of Orofacial Pain Psychiatry Seminar 2022 (Tokyo), 2023.
 - 3: Cognitive Behavioral Therapy for Patients with Neurological Injury: Doi M: Joint Symposium of Neuropathic Pain Related Dental Societies 2023 (Web), 2023.
 - 4: How to intervene with patients who complain of unidentifiable pain: Doi M: Hiroshima University Dental Hygienist Training Center Recurrent Training Course (Web), 2023.
 - 5: orofacial pain: Doi M: Aki Takata City Dental Association Workshop (AkiTakata), 2023.
 - 6: Symposium 2 Diversity and Possibilities of OFP ~What is ~OFP~? If you want to take the pain away, don't try to take the pain away: Doi M: The 28th Annual Meeting of the Japanese Association for Orofacial Pain(Chikushino), 2023.
 - 7: Emergency care during dental treatment: Shimizu Y: Certified dental hygienist seminars (Hiroshima), 2023.
 - 8: Incidentalities During Dental Treatment: Shimizu Y: Hiroshima prefectural dental association workshop 2022 (Hiroshima), 2023.
 - 9: Incidentalities During Dental Treatment: Shimizu Y: Hiroshima prefectural dental association workshop 2023 (Hiroshima), 2023.

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

- 1: Grant-in-Aid No. 20K10116 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Yoshida M, Clarification of the mechanism of functional alteration of the central nervous system in development of chronic pain of masticatory muscle. ¥4,290,000.
- 2: Grant-in-Aid No. 23K09353 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (New): Yoshida M, Yamamoto T, The analysis of the BDNF-TrkB and descending pathways in chronic masticatory muscle disorder. ¥4,680,000.
- 3: Grant-in-Aid No. 23K09350 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (New): Yamamoto T, Yoshida M, The role of hyperpolarization-activated cyclic nucleotide-gated channels in neuropathic pain. ¥4,810,000.
- 4: Grant-in-Aid No. 21K10072 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Shimizu Y, Sadamori T, Analysis of noise characteristics from dental apparatus during auscultation of breath sounds to prevent from air-way obstruction under sedation. ¥4,160,000.
- 5: Grant-in-Aid No. 23K09183 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (New): Oue K, Study on interaction of obesity and periodontal disease on cognitive impairment. ¥4,680,000.
- 6: Grant-in-Aid No. 17K11908 for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Doi M, Functional brain imaging evaluation of treatment effect of cognitive behavioral therapy and antidepressant drugs on glossodynia. ¥4,420,000.
- 7: Grant-in-Aid No. 22K17184 for Early-Career Scientists from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Oda A, Establishment of safe conscious sedation with remimazolam using electroencephalogram and pharmacokinetic analysis. ¥4,550,000.
- 8: Grant-in-Aid No. 23K19455 for Research Activity Start-up from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (New): Research on the pathophysiology and therapeutic basis of developmental disorders targeting pain-related molecules. ¥2,860,000.
- 9: Grant-in-Aid No. 22K20993 for Research Activity Start-up from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Imamura S, Propofol and ketamine-driven signal transduction system and serotonin transporter regulatory mechanism. ¥2,860,000.
- 10: Grant-in-Aid No. 22K17091 for Early-Career Scientists from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Kamio H, Elucidation of the biocompatibility of titanium implants and the role of decorin in surrounding bone regeneration. ¥4,450,000.
- 11: Grant-in-Aid No. 22K21061 for Research Activity Start-up from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (Continued): Sasaki U, Elucidation of the neurochemical basis for general anesthetic-induced nausea and vomiting. ¥1,430,000.

(5) Academic Awards, etc.

- 1: Shimizu Y: The 51st Annual Meeting of the Japanese Dental Society of Anesthesiology -Dentsply Sirona Award-, 2023.
- 2: Shimizu Y: The 6th Annual Meeting of Japanese Airway Management Society -Best Presentation Award-, 2023.

(6) Patents

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Department of Public Oral Health

(1) Staff and Students

Professor: Kouji Ohta (*) Chief in Department of Oral Health: Kouji Ohta
 Associate Professor: Hideo Shigeishi
 Assistant Professor: Tomoko Maehara, Yoshino Kaneyasu
 Graduate Student: Kanako Yano (D2), Wu Chia-Hsin (M2),
 Mio Sasaki, Natsuki Hamada, Honami Kitasaki (M2), Honoka Inoue (M1)

(2) Main Research Activities

- 1: Study on Prevention for oral infection and oral complication of systemic diseases
- 2: Study on efficacy of perioperative oral care on systemic diseases
- 3: Study on human papillomavirus in oral squamous cell carcinoma
- 4: Study on mechanism of oral mucosa against microorganisms
- 5: Study on the development of new devices and examination for oral hygiene management
- 6: Study on associations between dysphagia and lifestyle for Japanese adults
- 7: Study on cigarette smoke extract and oral keratinocytes or host immune responses.
- 8: Study on the pathogenesis of medication-related osteonecrosis of the jaw (MRONJ)

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Prevalence and risk factors for oral HPV16/18 and candida in Japanese people without oral cancer or premalignant lesions: Shigeishi H, Ohta K, Sugiyama M.: *Oral Sci Int*, 20(1), 10-17, 2023.
- 2: Physical Properties and Antimicrobial Release Ability of Gentamicin-Loaded Apatite Cement/ α -TCP Composites: An In Vitro Study. Sasaki K, Ninomiya Y, Takechi M, Tsuru K, Ishikawa K, Shigeishi H, Ohta K, Aikawa T.: *Materials (Basel)*, 16(3):995, 2023.
- 3: Associations between Oral Human Herpesvirus-6 and -7 and Periodontal Conditions in Older Adults: Hamada N, Shigeishi H, Oka I, Sasaki M, Kitasaki H, Nakamura M, Yano K, Wu C-H, Kaneyasu Y, Maehara T, Sugiyama M, Ohta K.: *Life (Basel)*, 13(2):324, 2023.
- 4: LL-37-dsRNA Complexes Modulate Immune Response via RIG-I in Oral Keratinocytes: Kato H, Ohta K, Akagi M, Fukada S, Sakuma M, Naruse T, Nishi H, Shigeishi H, Takechi M, Aikawa T.: *Inflammation*, 46(3):808-823, 2023.
- 5: Effectiveness of e-learning to promote oral health education: A systematic review and meta-analysis: Kaneyasu Y, Shigeishi H, Sugiyama M, Ohta K.: *Medicine (Baltimore)*, 102(51):e36550, 2023.
- 6: Efficacy of Low-Level Laser Therapy for Oral Mucositis in Hematologic Patients Undergoing Transplantation: A Single-Arm Prospective Study. Nishi H, Horikoshi S, Ohta K, Yoshida T, Fukushima N, Oshita K, Munenaga S, Eda Hiro T, Ureshino H, Shigeishi H, Yoshioka Y, Konishi M, Ide N, Ogawa Y, Marukawa R, Shintani T, Ino N, Kajiya M, Kakimoto N, Ohge H, Ichinohe T, Kawaguchi H.: *J Pers Med*, 13(11):1603, 2023.
- 7: Development and evaluation of the "Toothbrushing Timer with Information on Toothbrushes" application: A prospective cohort pilot study: Kaneyasu Y, Shigeishi H, Sugiyama M, Ohta K.: *Clin Exp Dent Res*, 9(6):1206-1213, 2023.
- 8: Head and neck cancer patients show poor oral health as compared to those with other types of cancer: Nishi H, Obayashi T, Ueda T, Ohta K, Shigeishi H, Munenaga S, Kono T, Yoshioka Y, Konishi M, Taga R, Toigawa Y, Naruse T, Ishida E, Tsuboi E, Oda K, Dainobu K, Tokikazu T, Tanimoto K, Kakimoto N, Ohge H, Kurihara H, Kawaguchi H.: *BMC Oral Health*, 23(1):647, 2023.
- 9: Association of daily physical activity and leisure-time exercise with dysphagia risk in community-dwelling older adults: A cross-sectional study: Maehara T, Nishimura R, Yoshitake A, Tsukamoto M, Kadomatsu Y, Kubo Y, Okada R, Nagayoshi M, Tamura T, Hishida A, Takeuchi K, Wakai K, Naito M.: *Scientific Reports*. 10893, 2023.

- 10: Kajihara T, Yahara K, Yoshikawa M, Haruta A, Kawada-Matsuo M, Le MN, Arai C, Takeuchi M, Kitamura N, Sugawara Y, Hisatsune J, Kayama S, Ohta K, Tsuga K, Komatsuzawa H, Ohge H, Sugai M. Oral and Rectal Colonization by Antimicrobial-Resistant Gram-Negative Bacteria and Their Association with Death among Residents of Long-Term Care Facilities: A Prospective, Multicenter, Observational, Cohort Study. *Gerontology*, 69(3):261-272, 2023
- 11: Shintani T, Ohta K, Ando T, Hayashido Y, Yanamoto S, Kajiya M, Shiba H. Retrospective study on the therapeutic efficacy of zinc acetate hydrate administration to patients with hypozincemia-induced dysgeusia. *BMC Oral Health*, 18;23(1):159, 2023.
- 12: Effects of leaflet and e-learning education materials on oral hygiene status and knowledge, attitudes, and practice related to oral health in university students. Kaneyasu Y, Hamasaki M, Inoue A, Shigeishi H, Ohta K. *Hiroshima Univ. Dent. Soc.*, 55, 1-8, 2023.

B) Review

- 1: Association between human papillomavirus and oral cancer: a literature review: Shigeishi H.: *Int J Clin Oncol.* 28(8):982-989, 2023.
- 2: Effectiveness of e-learning to promote oral health education: A systematic review and meta-analysis: Kaneyasu Y, Shigeishi H, Sugiyama M, Ohta K.: *Medicine (Baltimore)*, 102(51): e36550, 2023.

C) Publications

- 1: [Learn on the bulletinboard] What form does our bone?. Kaneyasu Y. Higashiyamasyobo, pp82-83, 2023.
- 2: [Learn on the bulletinboard] Let's get technique for first aid!. Kaneyasu Y. Higashiyamasyobo, pp100-101, 2023.

D) Other Publications

E) Presentations at Scientific Meetings

- 1: The prevalence and risk factors for oral HPV16/18 in Japanese people: Shigeishi H, Sugiyama M, Ohta K.: The 35th International Papillomavirus Conference (Web), 2023.
- 2: Relationships between oral human herpesvirus-6 and -7 and periodontal condition in older adults: A cross-sectional study: Hamada N, Shigeishi H, Oka I, Sasaki M, Kitasaki H, Nakamura M, Yano K, Wu Chia-Hsin, Kaneyasu Y, Maehara T, Niitani Y, Takemoto T, Ohta K.: The 56th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2023.
- 3: Effect of cigarette smoke extract on cell injury and immune responses in oral keratinocytes: Kitasaki H, Ohta K, Hamada N, Sasaki M, Chia-Hsin Wu, Maehara T, Kaneyasu Y, Akagi M, Shigeishi H.: The 56th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2023.
- 4: Bactericidal activity of slightly acidic electrolyzed water against the cariogenic bacterium *Streptococcus mutans* and other oral bacteria: Nishihama S, Miyata A, Le Nguyen Tra Mi, Kawada-Matsuo M, Kaneyasu Y, Ohta K, Ohge H, Shiba H, Komatsuzawa H.: The 56th Annual Meeting of the Hiroshima University Dental Society (Hiroshima), 2023.
- 5: Association between oral HPV16/18 infection and clinical factors: Sasaki M, Shigeishi H, Hamada N, Kitasaki H, Kaneyasu Y, Sugiyama M, Ohta K.: The 72th General meeting of Japanese Society for Oral Health (Osaka), 2023.
- 6: Relationships between oral human herpesvirus -7 and periodontal condition: Hamada N, Shigeishi H, Sasaki M, Kitazaki H, Kaneyasu Y, Sugiyama M, Ohta.: The 72th General Meeting of Japanese Society for Oral Health (Osaka), 2023.
- 7: Relationships between oral human herpesvirus 16/18 and clinical parameter: Sasaki M, Shigeishi H, Hamada N, Kitazaki H, Kaneyasu Y, Sugiyama M, Ohta Kouji.: The 72th General Meeting of Japanese Society for Oral Health (Osaka), 2023.
- 8: Effect of cigarette smoke extract on cell injury and immune responses in oral keratinocytes: Kitazaki H, Ohta K, Hamada N, Sasaki M, Maehara T, Kaneyasu Y, Shigeishi H.: The 72th General Meeting of Japanese Society for Oral Health (Osaka), 2023.

- 9: Association between oral human herpesvirus-7 infection and periodontitis: Hamada N, Shigeishi H, Sasaki M, Kitasaki H, Kaneyasu Y, Sugiyama M, Ohta K.: The 72nd General meeting of Japanese Society for Oral Health (Tochigi), 2023.
- 10: Anti-fungal and biofilm removal effect of slightly acidic electrolyzed water on *Candida* species: Wu C, Kaneyasu Y, Niitani Y, Hamada N, Kitazaki H, Sasaki M, Shigeishi H, Ohta K.: The 32nd Japanese Association for Oral Infectious Diseases (Tochigi), 2023.
- 11: Cigarette smoke extract injures oral keratinocytes and changes host immune responses: Kitasaki H, Ohta K, Hamada N, Sasaki M, Wu C, Yano K, Maehara T, Kaneyasu Y, Akagi M, Shigeishi H.: The 32nd Japanese Association for Oral Infectious Diseases (Tochigi), 2023.
- 12: Current Status of Human Resource Development Program for Dental Hygienists Engaged in Home Dental Health Care at Hiroshima University: Hata N, Tetsumori K, Nishimura R, Maehara T, Matsumoto A, Miyoshi S, Nairo M.: The 18th Annual Meeting of the Japan Society for Dental Hygiene (Shizuoka), 2023.
- 13: Anti-fungal and biofilm removal effect of slightly acidic electrolyzed water on *Candida* species: Chia-Hsin-Wu, Kaneyasu Y, Niitani Y, Hamada N, Kitasaki H, Sasaki M, Maehara T, Shigeishi H, Ohta K.: The 34th annual local meeting of Kinki-Chugoku-Shikoku Branch, Japanese Society for Oral Health (Hiroshima), 2023.
- 14: Comparison wide head toothbrush with compact head toothbrush against bristle splaying and gingival health condition: Tanaka N, Kaneyasu Y, Maeda K, Niitani Y, Shigeishi H, Ohta K.: 34th Annual Meeting of the Society for Kinki-Chugoku-Shikoku Oral Health (Hiroshima), 2023.
- 15: Temporal and seasonal changes in the number of airborne microorganisms and related factors in a dental clinical practice room: Nomi H, Nagasato M, Watanabe N, Maehara T, Ohta K. The 34th annual local meeting of Kinki-Chugoku-Shikoku Branch, Japanese Society for Oral Health (Hiroshima), 2023.
- 16: Induction of ACE2 expression in oral mucosal cells by introducing inflammatory cytokines and nucleic acids.: Akagi M, Ohta K, Fukada S, Sakuma M, Kato H, Naruse T, Nakagawa T, Tobiume K, Shigeishi H, Aikawa T. The 77th Annual Meeting of Japanese Stomatological society (Okayama), 2023
- 17: Anti-tumoral effect of leflunomide, an anti-rheumatic agent, on oral squamous cell carcinoma via suppressing angiogenesis. Niwata C, Nakagawa T, Ohta K, Ono S, Yamakado N, Akagi M, Ohdan K, Tobiume K, Takechi M, Aikawa T.: The 77th Annual Meeting of Japanese Stomatological society (Okayama), 2023
- 18: Expression of ACE2 and spike protein-mediated immune responses in oral mucosal cells.: Akagi M, Ohta K, Sakuma M, Yamakado N, Niwata C, Naruse T, Nakagawa T, Ono S, Tobiume K, Shigeishi H, Aikawa T. The 43rd Annual Meeting of the Japanese Society of Oral Therapeutics and Pharmacology, The 32nd Annual Meeting of The Japanese Association for Oral Infectious Diseases (Tochigi), 2023
- 19: ACE2 expression in oral mucosal cells and immune response mediated by Spike protein.: Akagi M, Ohta K, Sakuma M, Yamakado N, Niwata T, Naruse T, Nakagawa T, Tobiume K, Shigeishi H, Aikawa T. The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023
- 20: Anti-rheumatic drug leflunomide's antitumor effect on oral squamous cell carcinoma.: Niwata T, Nakagawa T, Ohta K, Ono S, Yamakado N, Akagi M, Ohdan K, Tobiume K, Aikawa T. The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023
- 21: Equisetum arvense (Sugina) relieves pain in oral mucositis model: Shiba N, Miyauchi M, Maekawahara S, Shimizu R, Inoue A, Ohta K. The 68th Annual Meeting of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023

F) Special lectures in academic meetings

- 1: Ohta K: Infection prevention measures in dental practice. 67th Society of occupational health conference in Chugoku-Shikoku (Ehime), 2023
- 2: Ohta K: Problems in community of dental treatment and promotion of infection measure education in local area 61th Education working group block work shop in National university hospital infection control conference (Kagawa), 2023.
- 3: Ohta K : Antimicrobial resistance measures and correct use of antimicrobial agent in dental practice. Miyoshi-Shi dental association academic lecture (Hiroshima), 2023.
- 4: Ohta K : Correct use of antimicrobial agent in dental treatment based on AMR. Asa dental

- association academic lecture (Hiroshima), 2023.
- 5: Ohta K : Correct use of antimicrobial agent and antimicrobial resistance measures. Hiroshima prefectural dental association academic lecture (Hiroshima), 2023.
 - 6: Ohta K : Types of pain and how to use of analgesics in dental treatment. Hiroshima prefectural dental association academic lecture (Hiroshima), 2023.

G) Contribution to Community

- 1: Kaneyasu Y: Hiroshima City International Adolescent Volunteer Project, “About Washing your hands”, Providing the education materials (Hiroshima), 2023.
- 2: Kaneyasu Y: the 24th International Festival, “Washing hands”, Providing the education materials (Hiroshima), 2023.
- 3: Maehara T: Assessment of oral function at special nursing home “Kosei-En” (Hiroshima), 2023.
- 4: Maehara T: Hiroshima dental hygienist education meeting, lecture, “Oral hygiene management for persons with disabilities” (2023.6.12 web)
- 5: Maehara T: Hiroshima Dental Hygienists’ Association, Director, Public Relations
- 6: Ohta K, Maehara T: Japan Dental Hygienist Society Certified Dental Hygienist Seminar Staff of Dental Care Safety Management Course, 2023.
- 7: Ohta K: Hiroshima dental hygienist education meeting, lecture, “How to diagnose oral mucosal diseases in daily clinical practice” (2023. web)
- 8: Ohta K: Japanese society for infection prevention and control, educational tool, “Diagnose, treatment and prevention of oral candidiasis” (2023. web)

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

- 1: Grants-in-Aid for Scientific Research (Scientific Research (C) : new: Shigeishi H (Main-researcher) : Elucidation of the regulatory mechanism of cancer stem cell traits mediated by Beclin-1 in oral squamous cell carcinoma cells highly expressing CD44. (23K09370).
- 2: Grants-in-Aid for Scientific Research (Scientific Research (C): new: Ohta K (Main- researcher): Elucidation of the novel functions of the new coronavirus target protein in the oral mucosa and its expression regulatory factors (23K09371).
- 3: Grants-in-Aid for Scientific Research (Scientific Research (C): new: Ohta K (Co-researcher): Elucidation of factors influence esophageal cancer treatment using comprehensive analysis of the oral microbiome (23K09311)
- 4: Grants-in-Aid for Scientific Research (Scientific Research (C) : Ohta K (Co- researcher): Basic research for developing dental implant treatment guidelines for patients receiving bisphosphonates. (21K09952)
- 5: Grants-in-Aid for Scientific Research (Scientific Research (C) : Ohta K (Co-researcher): Development of transplantation material for treatment of jaw bone necrosis with angiogenic effect. (21K10094)
- 6: Grants-in-Aid for Scientific Research (Scientific Research (C) : Ohta K (Co-researcher): Effect of distribution of resistant bacteria in the oral cavity and managing oral hygiene on medical / long term care related pneumonia (No.20K10248)
- 7: Grants-in-Aid for Scientific Research (Scientific Research (C) : Ohta K (Co-researcher): Establishment of IPS-derived jawbone and gingival organoids by conglomerate culture technology and advancement of oral regenerative medicine (No.22H03275)
- 8: Grants-in-Aid for Scientific Research (Early-Career Scientists : Maehara T (Main-researcher) : Physical Activity and Social Factors for Prevention of Oral Functional Decline. (No. 23K16228).
- 9: Research grant(FUTOKU foundation): Yano K (Principal Investigator): Study of antifungal drug susceptibility and pathogenic factors of *Candida* strains isolated from the oral cavity of patients: ¥200,000

(5) Academic Awards, etc.

- 1: Yano K.: The 17th Annual meeting of the Japan Society for Dental Hygiene, Oral Presentation Award, Lion Dental Hygiene Research Institute Award. Antifungal susceptibility of *Candida* isolated from the oral cavity of patients with head and neck cancer and esophageal cancer.
- 2: Sasaki M.: The 17th Annual meeting of the Japan Society for Dental Hygiene, Student Award, Lion Dental Hygiene Research Institute Award. Relationship between oral sensation and nutritional intake status in young adults.
- 3: Kitasaki H.: The 32nd Japanese Association for Oral Infectious Diseases, chairman's award. Cigarette smoke extract injures oral keratinocytes and changes host immune responses.

(6) Patents

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Department of Oral Epidemiology

(1) Staff and Students

Professor: NAITO Mariko

Research Associate: NISHIMURA Rumi

Graduate Student:

ASAEDA Mayuka

ARIMOTO Nishiki

YAMADA Sachiko

HAMA Yohko (Advanced Prosthodontics)

NISHIMOTO Misa

KURAWAKI Yuuko

MATUO Katsuhiko (Oral Physiology)

KONDO Minami

OMODA Maho

FUKUTANI Haruka

TAKESHITA Moeno

ISHIGAMI Marin

Research Scientist:

SUZUKI Yoshitaka

(2) Main Research Activities

- 1: Study on the methods for Oral health care
- 2: Study on the education program for Oral health
- 3: Study on the development of oral function
- 4: Epidemiological studies regarding associations between oral health and general health
- 5: Molecular epidemiology and gene-environmental interaction
- 6: Associations between health screening behavior, health status and lifestyle
- 7: Research for dysphagia patients and their caregivers
- 8: QOL/PRO research

(3) Achievements

A) Original Papers (including Case Reports)

- 1: Effects of oral health-related quality of life on total mortality: a prospective cohort study.: Arimoto N, Nishimura R, Kobayashi T, Asaeda M, Naito T, Kojima M, Umemura O, Yokota M, Hanada N, Kawamura T, Wakai K, Naito M. BMC Oral Health, 23(1), 708, 2023.
- 2: Quality of life after tongue cancer treatment and its influencing factors: A cross-sectional study of Japanese patients: Sasahara H, Kurawaki Y, Uchida K, Matsumura T, Shigeishi H, Hayashido Y, Toratani S, Iida S, Mishima K, Ohta K, Sugiyama M.: Oral Sci Int, 21(1), 2023.
- 3: Associations between nutrient and food group choices and dysphagia risk in community-dwelling older adults: Yamada S: The Journal of Hiroshima University Dental Society, 55(2), 94-101, 2023.
- 4: Severe Periodontitis Increases the Risk of Oral Frailty: A Six-Year Follow-Up Study from Kashiwa Cohort Study. Nishimoto M, Tanaka T, Hirano H, Watanabe Y, Ohara Y, Shirobe M, Iijima K: Geriatrics (Basel) 13;8(1):25. doi: 10.3390/geriatrics8010025, 2023.
- 5: Severe Periodontitis Increases the Risk of Oral Frailty: A Six-Year Follow-Up Study from Kashiwa Cohort Study. Nishimoto M, Tanaka T, Hirano H, Watanabe Y, Ohara Y, Shirobe M, Iijima K: Geriatrics (Basel), 8(1), 25. doi: 10.3390/geriatrics8010025, 2023.
- 6: Searching for Ways to Improve Visiting Oral Health Care Services in Korea through Comparison with Japanese System in Long-Term Care Insurance.: Oh S, Nishimura R, Hwang S: Journal of Dental Hygiene Science 23, 154-168, 2023.
- 7: Association of daily physical activity and leisure-time exercise with dysphagia risk in community-dwelling older adults: a cross-sectional study. Maehara T, Nishimura R, Yoshitake A, Tsukamoto M,

- Kadomatsu Y, Kubo Y, Okada R, Nagayoshi M, Tamura T, Hishida A, Takeuchi K, Wakai K, Naito M. *Sci Rep.*, 13(1), 10893. doi: 10.1038/s41598-023-37605-z, 2023.
- 8: Taste-taste associations in chemotherapy-induced subjective taste alterations: findings from a questionnaire survey in an outpatient clinic. Obayashi N, Sugita M, Shintani T, Nishi H, Ando T, Kajiya M, Kawaguchi H, Ohge H, Naito M. *Support Care Cancer*. 2023 Sep 2;31(9):552. doi: 10.1007/s00520-023-08013-w.
 - 9: Resting saliva volume as a risk factor for hypogeusia: A retrospective study. Shintani T, Naito M, Obayashi N, Ando T, Kawaguchi H, Yanamoto S, Kajiya M, Sugita M. *Physiol Behav*. 2023;267:114224. doi: 10.1016/j.physbeh.2023.114224.
 - 10: Body mass index and esophageal and gastric cancer: A pooled analysis of 10 population-based cohort studies in Japan. Koyanagi YN, Matsuo K, Ito H, Wang C, Tamakoshi A, Sugawara Y, Tsuji I, Ono A, Tsugane S, Sawada N, Wada K, Nagata C, Takeuchi T, Kitamura T, Utada M, Sakata R, Mizoue T, Abe SK, Inoue M; Research Group for the Development and Evaluation of Cancer Prevention Strategies in Japan. *Cancer Sci*. 2023;114(7):2961-2972. doi: 10.1111/cas.15805.
 - 11: Anti-*Helicobacter pylori* antibody status is associated with cancer mortality: A longitudinal analysis from the Japanese DAIKO prospective cohort study. Nishizuka SS, Nakatochi M, Koizumi Y, Hishida A, Okada R, Kawai S, Sutoh Y, Koeda K, Shimizu A, Naito M, Wakai K. *PLOS Glob Public Health*. 2023;3(2):e0001125. doi: 10.1371/journal.pgph.0001125.
 - 12: Sleep conditions and breakfast intake of university students under COVID-19 crisis: Sasahara H, Taji T, Nishimura R, Maehara T, Nikawa H: *CAMPUS HEALTH*, 60 (2), 26 -32, 2023.

B) Review

None

C) Publications

- 1: QOL Assessment Manual (Edited by Shinichi Noto, Supervised by Kojiro Shimoizuma) :Mariko Naito, 32 GOHAI (General Oral Health Assessment Index): Igaku Shoin, Tokyo, 2023.

D) Other Publications

- 1: Let's get back to work. Recurrent education is spreading. The Journal Of Dental Hygienist10: InagakiK, KosakaT, YatsuyanagiH, KaneokaA, YamamotoK, KodabashiM, ToyamaT, ShinadaK, OtaniA, OkadaM, TakemotoT, NaitoM, KurawakiY, OshimuraN : Quintessence Publishing Co., Ltd, (Tokyo), 69-75, 2023.
- 2: Chapter 8 Caries activity tests : Prophylactic Treatment of Dental Caries for Dental Hygienists 2nd: Niitani Y, Nishimura R(ed. By Nakagaki H, Katou K, Ishitobi K and Kousaka T): Ishiyaku Publishers,Inc (Tokyo), 122-130, 2023.
- 3: Implant treatment: The newest series of textbook for dental hygienist education -Basic theory and practical process for prosthodontic dentistry: Nishimura R (ed. By Akagawa Y, Sueue K, Masui I, Aiba C and Yamada S): Ishiyaku Publishers, Inc (Tokyo), 202-211, 2023.
- 4: Dysphagia Rehabilitation for Dental Hygienists 2nd: Nishimura R (ed. By Inoue M, Kikutani T, Sato Y, Shimoyama K, Fujitani J, Huruya J, Mizugami M and Mukai Y) : Ishiyaku Publishers,Inc (Tokyo), 135-144, 2023.
- 5: DHstyle April issue, Let's solve questions in daily clinical practice with research (9) Let's try to present at conferences! , Nishimura R, Dental Diamond (Tokyo), 42-45, 2023.
- 6: Dental Hygiene Newsletter, Report on Survey Results, Nishimura R, the Japan Dental Hygienists' Association (Tokyo), 1-3,2023.
- 7: Deterioration of oral function : DentalNews.com (KOREA): http://xn--vb0bt7hhzpl6k.com/board/view.php?bo_table=influencer_hygienist&wr_id=26&page=, 2023.2.20.
- 8: Oral frailty: DentalNews.com (KOREA): http://xn--vb0bt7hhzpl6k.com/board/view.php?bo_table=influencer_hygienist&wr_id=26&page=,20230412.
- 9: Checkpoints in the examination room: DentalNews.com (KOREA): http://xn--vb0bt7hhzpl6k.com/board/view.php?bo_table=influencer_hygienist&wr_id=26&page=,20230524.
- 10: Dysphagia rehabilitation: DentalNews.com (KOREA): http://xn--vb0bt7hhzpl6k.com/board/view.php?bo_table=influencer_hygienist&wr_id=26&page=,20230621.

- 11: 구강기능재활학 : 저자, 권현숙,김창숙,오상환,이미옥,이선미,이정화,장경애,조미숙,Masaru Sugiyama,Rumi Nishimura: Jee Sung Publishing (KIREA), 2023.

E) Presentations at Scientific Meetings

- 1: A case of maxillary canine eruption by rapid maxillary expansion appliances in sagittal plane analysis for skeletal Class II with growth deficiency of maxilla: Suzuki Y, Matsumoto-Nakano M, Naito M: The 61st Annual Congress of the Japanese Society of Pediatric Dentistry (Nagasaki), 2023.
- 2: A case of displaced maxillary canine tooth germs treated with rapid maxillary expansion in stages.: Suzuki Y, Kuroe K, Naito M, Matsumoto-Nakano M, Tanimoto K: The 82nd Annual Meeting of the Japanese Orthodontics Society (Nigata), 2023.
- 3: A case of phase I orthodontic treatment using rapid maxillary expansion devices and functional orthodontic appliances to improve oral morphology and function: Suzuki Y, Matsumoto-Nakano M, Naito M: The 42th Congress of Japanese Society of Pediatric Dentistry Chushikoku Branch (Yonago), 2023.
- 4: Associations Between Masticatory Ability, Oral Health Habits, and Physical Function: A Cohort Study: Takeshita M, Nishimura R, Fukutani H, Kondo M, Uchibori N, Naito M: The 15th International Conference of the Asian Academy of Preventive Dentistry (Hong Kong) , 2023.
- 5: The oral conditions of Cambodian public primary school children before and after the COVID-19 pandemic: Asao Y, Iwamoto Y, Nishimura T, Kaneki A, Usuda M, Kametani M, Akitomo T, Nakano M, Kondo M, Ogura T, Mitsuhata M, Nomura R, Naito M: The 15th International Conference of the Asian Academy of Preventive Dentistry (Hong Kong), 2023.
- 6: A case of quantitative analysis of sleep bruxism in an older cerebral palsy patient using a temporalis muscle activity measuring device: Oda Y, Asahina H, Hama Y, Okada Y: The 34th Annual Meeting of the Japanese Society of Gerodontology. (Yokohama),2023.
- 7: A case of general anesthesia to the autism spectrum disorder with severe obesity: Oishi M, Yasuda S, Okino E, Morishita K, Yamaguchi M, Ochiai I, Hama Y, Oda Y, Miyauchi M: The 51st Annual Meeting of the Japanese Society of Anesthesiology. (Nagasaki), 2023.
- 8: A study of prevalent cases of oral management under vital sign measurement: Okino E, Oishi M, Yasuda S, Morishita K, Yamaguchi M, Ochiai I, Hama Y, Oda Y, Miyauchi M: The 51st Annual Meeting of the Japanese Society of Anesthesiology. (Nagasaki), 2023.
- 9: A survey on the sense of security and satisfaction with day dental treatment under general anesthesia for children at Hiroshima Oral Health Center and postoperative trends: Kawamoto H, Hama Y, Oda Y, Miyauchi M, Yamanaka H, Kamikawa K, Yamasaki K : The 34st general meeting of Kinki, Chugoku, Shikoku Society for Oral Health (Hiroshima),2023.
- 10: Postgraduate Training Initiatives at the Center for Dental Hygienist Education and Training, Hiroshima University School of Dentistry- Overview of skill enhancement training, and summary of participant survey results - : Misumi K, Kurawaki Y, Aimi R, Nishimura R, Matsumoto A, Naito M, Takemoto T : The 34st general meeting of Kinki, Chugoku, Shikoku Society for Oral Health (Hiroshima) , 2023.
- 11: Comparison of new dental hygienists who underwent technical training before and after training : Kurawaki Y, Aimi R, Misumi K, Nishimura R, Matsumoto A, Naito M, Takemoto T: The 34st general meeting of Kinki, Chugoku, Shikoku Society for Oral Health (Hiroshima) , 2023.
- 12: A study on oral sensation and nutritional intake status: Yamakido H, Tusunaba R, Nishimura R, Naito M: The 34st general meeting of Kinki, Chugoku, Shikoku Society for Oral Health (Hiroshima) , 2023.
- 13: A Study on the Cooperation of Dental Professionals in School Dental Health Education: Masui A, Sato A, Omoda M, Kondo M, Shintani H, Suzuki J, Yamane T, Maejima M, Nishimura R, Naito M: The 34st general meeting of Kinki, Chugoku, Shikoku Society for Oral Health (Hiroshima) , 2023.
- 14: Association between processed food intake and chewing and swallowing difficulties : Shiomizu S, Yamamoto T, Kondo M, Omoda M, Nishimura R, Naito M : The 34st general meeting of Kinki, Chugoku, Shikoku Society for Oral Health (Hiroshima) , 2023.
- 15: Consideration of dental hygienist clinical training during the spread of COVID-19 infection: Okino E, Oishi M, Yasuda S, Morishita K, Yamaguchi M, Ochiai I, Hama Y, Oda Y, Miyauchi M, Shintani H, Yamanaka H, Kamikawa K, Yamasaki K: The 40th Annual Meeting of the Japanese Society for

- Disability and Oral Health. (Sapporo), 2023.
- 16: Examination of effective premedication administration methods for intellectually disabled patients who have difficulty entering the clinic: Oda Y, Oue K, Miyazaki H, Oda A, Furutani C, Nishio Y, Yamaguchi H, Morimoto M, Asahina H, Fujiwara R, Nishio R, Yoshida Y, Hama Y, Miyauchi M, Okada Y: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health. (Sapporo), 2023.
 - 17: A case of dental treatment and oral hygiene management for a patient with Zimmermann-Laband syndrome: Yamaguchi M, Oishi M, Yasuda S, Okino E, Morishita K, Ochiai I, Hama Y, Oda Y, Miyauchi M, Shintani H, Yamanaka H, Kamikawa K, Yamasaki K: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health. (Sapporo), 2023.
 - 18: A study of trends after day dental treatment under general anesthesia for children with disabled patients at Hiroshima oral health center: Morishita K, Oishi M, Yasuda S, Okino E, Yamaguchi M, Ochiai I, Hama Y, Oda Y, Miyauchi M, Shintani H, Yamanaka H, Kamikawa K, Yamasaki K: The 40th Annual Meeting of the Japanese Society for Disability and Oral Health. (Sapporo), 2023.
 - 19: Regarding the use of vital signs when managing the oral hygiene of medically compromised patients: Okino E, Oda Y, Oishi M, Ochiai I, Morishita K, Yamaguchi M, Hama Y, Miyauchi M, Kawamoto H, Yamanaka H, Kamikawa K, Yamasaki K: The 62th Scientific Meeting of Hiroshima Prefecture Dental Association and 107th Scientific Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
 - 20: A case of displaced maxillary permanent central incisor tooth germs treated with rapid maxillary expansion in stages: Suzuki Y, Kawamoto M, Takeda N, Waki Y, Oosugi S, Sugai C, Suzuki Y, Nakajima M, Tanimoto K, Yoshida M, Matsumoto-Nakano M, Nishimura R, Naito M: The 62th Scientific Meeting of Hiroshima Prefecture Dental Association and 107th Scientific Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
 - 21: A Survey on the Application of Fluoride in Schools and Other Settings in Hiroshima Prefecture: Suzuki J, Shintani H, Yamane T, Maehara M, Yamanaka H, Kawamoto H, Kamikawa K, Yamasaki K, Nishimura R, Naito M: The 62th Scientific Meeting of Hiroshima Prefecture Dental Association and 107th Scientific Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
 - 22: Evaluation of removable denture wearers and oral-related quality of life: Arimoto N, Nishimura R, Asaeda M, Kurawaki Y, Naito T, Kojima M, Umemura O, Yokota M, Hanada N, Wakai K, Naito M: The 72nd Academic Conference of the Japanese Society for Oral Health (Osaka), 2023.
 - 23: Evaluation of bacterial contamination during mutual practice of dental hygiene students Part II: Effects of ultrasonic scalers: Arimoto N, Yamamoto K, Nakagawa Y, Nakamura T: The 14th Academic Conference of Japanese Society of Dental Hygiene Education (Tokyo), 2023.
 - 24: Evaluation of bacterial contamination during mutual practice of dental hygiene students Part I: Effects of hand scaling: Yamamoto K, Arimoto N, Nakagawa Y, Nakamura T: The 14th Academic Conference of Japanese Society of Dental Hygiene Education (Tokyo), 2023.
 - 25: Changes over time in occupational stress and self-evaluation among the participants of the Center for Dental Hygienists' Education and Training at Hiroshima University School of Dentistry. : Kurawaki Y, Aimi R, Misumi K, Nishimura R, Matsumoto A, Naito M, Takemoto T: The 18th Annual Meeting of the Japan Society for Dental Hygiene (Shizuoka), 2023.
 - 26: Investigating the effectiveness of a nutrition questionnaire for management of oral-frailty in older people: Fukuda M, Ezaki H, Takahashi Y, Yamashiro K, Miyazawa A, Ujihashi T, Asaeda M, Nishiyasu A, Yoshida Y: The 18th Annual Meeting of the Japan Dental Hygiene (Shizuoka), 2023.
 - 27: A survey on the actual state of operations of dental hygienists in Hiroshima Prefecture engaged in visiting dental care: Miyoshi S, Fujiwara C, Kuwahara S, Nishimura R, Aimi R: The 18th Annual Meeting of the Japanese Society of Dental Hygiene (Shizuoka), 2023.
 - 28: Current status of the human resource development programme for dental hygienists engaged in home dental care at Hiroshima University: Hata N, Tetsumori K, Nishimura R, Maehara T, Matsumoto A, Miyoshi S, Naito M: The 18th Annual Meeting of the Japanese Society of Dental Hygiene (Shizuoka), 2023.
 - 29: General Oral Health Assessment Index norms for the Japanese general population: Naito M, Nishimoto M, Arimoto N, Kurawaki Y, Nishimura R, Suzukamo Y : ISOQOL 30th Annual Conference(Canada), 2023.
 - 30: A study on subjective swallowing function and oral-related quality of life among community-dwelling elderly people : Ishigami M, Omoda M, Kondo M, Fukutani H, Nishimura R, Suzukamo Y, Naito M : The 82nd Annual Meeting of the Japanese Society of Public Health (Ibaraki) ,2023.

- 31: Association of subjective oral status and oral health behaviours with history of systemic disease : Fukutani H, Takeshita M, Ishigami M, Omoda M, Nishimura R, Naito M: The 82nd Annual Meeting of the Japanese Society of Public Health (Ibaraki) ,2023.
- 32: Association between the number of existing teeth and renal dialysis: a cross-sectional study of adult men and women : Kondo M, Ishigami M, Omoda M, Takeshita M, Nishimura R, Wakai K, Naito M : The 82nd Annual Meeting of the Japanese Society of Public Health (Ibaraki) 2023.
- 33: Relationships between oral health status and attitudes towards oral health among new university students - Comparison of students from the Department of Oral Health Sciences, Faculty of Health Sciences, with students from other departments, K University -: Asaeda M, Yagi T, Nishiyasu A, Mizumura Y, Ujihashi T, Miyazawa A, Nakamura M, Hama Y, Yoshida Y: The 30th Annual Meeting of the Japanese Society of Health, Fitness and Nutrition (Kobe), 2023.
- 34: Effect of using an application and a wearable masticatory frequency measuring device on masticatory behavior: Yagi T, Asaeda M, Mizumura Y, Ujihashi T, Nishiyasu A: The 30th Annual Meeting of the Japanese Society of Health, Fitness and Nutrition (Kobe), 2023.
- 35: Psychosocial effects of whitening on university students' interest in oral health: Ujihashi T, Yagi T, Fukuda M, Hama Y, Nakamura M, Mizumura Y, Asaeda M, Nishiyasu A, Yoshida Y: The 30th Annual Meeting of the Japanese Society of Health, Fitness and Nutrition (Kobe), 2023.
- 36: Report on the activities of the oral health consultation and support for children and parents: Takahashi Y, Miyazawa A, Ezaki H, Nishiyasu A, Asaeda M, Mizumura Y, Ujihashi T, Nakamura M, Hama Y, Fukuda M, Sawada M, Uehara H, Yagi T, Yoshida Y: The 30th Annual Meeting of the Japanese Society of Health, Fitness and Nutrition (Kobe), 2023.
- 37: Association between sarcopenia and oral function in older people: Fukuda M, Ezaki H, Takahashi Y, Yamashiro K, Miyazawa A, Ujihashi T, Asaeda M, Nishiyasu A, Yoshida Y: The 30th Annual Meeting of the Japanese Society of Health, Fitness and Nutrition (Kobe), 2023.
- 38: Effect of orthodontic treatment status on oral hygiene status among new university students: Yagi T, Asaeda M, Nishiyasu A: The 82nd Annual Meeting of the Japanese Orthodontic Society (Niigata), 2023.
- 39: Psychosocial effects of whitening and changes in oral health behavior among young people: Ujihashi T, Miyazawa A, Asaeda M, Yagi T: The 34th Annual Meeting of Japan Academy of Esthetic Dentistry (Kagoshima), 2023.
- 40: Survey on dental check-up of new students at Kobe Tokiwa University: Nakamura M, Yagi T, Hama Y, Miyazawa A, Ujihashi T, Mizumura Y, Asaeda M, Nishiyasu A, Ezaki H, Fukuda M, Takahashi Y, Moritani N, Yamashiro K, Uehara H, Sawada M, Murosaki Y, Bannaka K, Yoshida Y: The 11th Kobe Tokiwa Academic Forum (Kobe), 2023.
- 41: A case of severe dysphagia after maxillary tumor surgery: Nagasaki Y, Yamada S, Yoshikawa M, Shimabukuro K, Ohtsuka M, Suei Y, Konishi M, Nakamoto T, Kakimoto N: The 4th Autumn Conference of Japanese Society for Oral and Maxillofacial Radiology (Osaka), 2023.
- 42: An Attempt to Quantify the Pharyngeal Residual Amount of Test Food (Contrast Agent) in Video-Fluoroscopic Examination -Pilot Study-:Nagasaki Y, Yamada S, Yoshikawa M, Shimabukuro K, Ohtsuka M, Suei Y, Konishi M, Nakamoto T, Kakimoto N:The 63rd Conference of Japanese Society for Oral and Maxillofacial Radiology (Fukuoka), 2023.
- 43: Association of sleep and dysphagia risk in community-dwelling older adults: Hama Y, Yamada S, Nishimura R, Yoshida M, Tsuga K, Morita E, Tamada Y, Kato Y, Kubo Y, Okada R, Nagayoshi M, Tamura T, Hishida A, Naito M: 2023 DRS Annual Meeting and World Dysphagia Summit (USA), 2023.
- 44: Relationship between feeding and swallowing-related symptoms and oral-related QOL in institutionalized elderly residents.: Omoda M, Kondo M, Ishigami M, Matsuda Y, Fujii W, Akifusa S, Suzukamo Y, Nishimura R, Naito M: The 29th Annual meeting of the Japanese society of dysphagia rehabilitation (Kanagawa), 2023.

F) Lectures

- 1: Asaeda M: Kobe Tokiwa University Suko-Labo Lecture “Pathogenesis and prevention of aspiration pneumonia” (Web), 2023.
- 2: Asaeda M: 2023 KOBE TOKIWA Kenko-Fureai Festa Suko-Labo Lecture “STOP! Aspiration pneumonia!”: Kobe Tokiwa University (Kobe), 2023.

- 3: Nishimura R: Oral Rehabilitation Society Advanced Course (KOREA) , 2023.
- 4: Nishimura R : RDH STUDY, “How should you prepare as a dental hygienist in Korea now?” (KOREA), 2023.

G) Social Contributions

- 1: Nishiki Arimoto: 2023 KOBE TOKIWA Health Fureai Festa: Oral Functional Assessment at Kobe Tokiwa University (Kobe), 2023.
- 2: Asaeda M: Oral health consultation for infants: Child-care Comprehensive Support Facility ‘KIT’, ‘Toki-wan Moto-roku’ and ‘Toki-wan Noe-suta’ (Kobe), 2023.
- 3: Asaeda M: Assessment of oral function at Tokiwa Kindergarten attached to Kobe Tokiwa University (Kobe), 2023.
- 4: Asaeda M: 2023 KOBE TOKIWA Kenko-Fureai Festa: Assessment of oral function at Kobe Tokiwa University (Kobe), 2023.
- 5: Nishimura R, Kondo M, Omoda M.: Assessment of oral function at special nursing home “Kosei-En” (Hiroshima), 2023.
- 6: Nishimura R.: Project to improve the qualifications of dental hygienists for the promotion of home dental care (Hiroshima), 2023.

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

- 1: Grant-in-Aid for Scientific Research (C): Naito M (Principal Investigator): Research on the impact of tooth loss on QOL, Project No. 21K10211, ¥1,300,000.
- 2: Grants-in-Aid for Scientific Research Scientific Research (C): Asaeda M (Co-researcher): Effect of lip closing force on young children (aged 3-5years) growth and development. Project No. 21K10845. ¥200,000.
- 3: Grant-in-Aid for Scientific Research (C): Nishimura R (Co-researcher): Research on the impact of tooth loss on QOL, Project No. 21K10211, ¥100,000.

(5) Academic Awards, etc.

- 1: Sasaki M: Student Research Award (The Japan Dental Hygienists’ Association), 2023.
- 2: Suzuki Y: Best Presentation Award (Japanease Orthodontic Society), 2023.

(6) Patents

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Department of Anatomy and Functional Restorations

(1) Staff and Students

Professor : Masato Kaku
 Associate Professor : Saiji Shimoe
 Graduate Students : Haruya Kawabata, Kosuke Yamada, Sumire Ohba
 Undergraduate Student : Nao Sakamoto, Rinko Shubiki, Nene Morie, Nana Morikiyo, Soichiro Yamaga, Koto In, Sayo Endo, Nonoka Suzuki, Miyuki Nakamura, Moe Fukuda
 Research Student : Shogo Iwaguro
 Clinical Resident : Kazunori Itatani

(2) Main Research Activities

- 1: Effects of mechanical stress on bone metabolism and angiogenesis
- 2: Tongue-palatal contact during articulation and swallow
- 3: Study on dental materials for esthetic
- 4: Study on new clinical application using novel dental ceramic
- 5: Study on objective evaluation using the three-dimensional image

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Peng TY, Shimoe S, Higo M, Kato M, Hirata S, Iwaguro S, Kaku M. 2023, Effect of laser engraving on shear bond strength of polyetheretherketone to indirect composite and denture-base resins. *J Dent Sci*, 19: 32-38.
- 2: Kaku M, Kagawa H, Yamamoto T, Kojima S, Kamiya T, Shimoe S, Mine Y, Murayama T, Yamamoto I, Tanimoto K. 2023, The physiological function of deglutition and swallowing in patients with maxillary protrusion after mandibular advancement. *J Craniofac Surg*, 34:1966-1970.
- 3: Yamamoto T, Kaku M, Ono S, Takechi M, Tanimoto K. 2023, Correction of severe skeletal Class II high angle case with mandibular retrusion and a gummy smile by double jaw surgery. *Bull Tokyo Dent Coll*, 63:177-187, doi: 10.2209/tdcpublication.
- 4: Yashima Y, Kaku M, Yamamoto T, Medina CC, Ono S, Takeda Y, Tanimoto K. 2023, Camouflage correction of skeletal Class III severe open bite with tooth ankyloses treated by temporary anchorage devices: A case report. *Dent J (Basel)*, 11: doi: 10.3390/dj1140107.
- 5: Kawabata H, Shimoe S, Yamamoto R, Iwaguro S, Higo M, Hirata I, Kaku M: Effect of UV irradiation on adhesion of PEEK to composite resin and denture base resin. *Journal of Nippon Academy of Dental Technology*, 44: 41-47, 2023.

B) Review

C) Publications

D) Other Publications

E) Presentation at Scientific Meeting

- 1: Yamada K, Ohba S, Mine Y, Shimoe S, Taji T, Nikawa H, Murayama T, Kaku M : Effects of cyclic tensile forces on bone metabolic markers in sclerostin deficient osteocyte. The 95th Annual Meeting, Japanese Tissue Culture Association (Okayama), 2023.
- 2: Sakamoto N, Shimoe S, Kawabata H, Higo M. Kaku M : Effect of primer treatments on bonding of PEEK with micro-retention device and composite resin. The 45th the meeting of the Nippon Academy

of Dental Technology (Fukuoka), 2023.

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

Grant-in-Aid for Scientific Research(C): (representative) Saiji Shimoe, (member) Masato Kaku, Isao Hirata: Development of bio-friendly polyetheretherketone (PEEK) complex type restoration. (No. 21K10002), ￥960,000

(5) Academic Awards, etc.

- 1: Rei Ueda : The 26th Student's Carving Contest, Gold Award, 2023.3.23
- 2: Risa Yamamoto : The 26th Student's Carving Contest, Bronze Award, 2023.3.23
- 3: Nao Sakamoto, Saiji Shimoe, Haruya Kawabata, Momoyo Higo, Masato Kaku : The 45th Japanese Academy of Dental Technology, Best Presentation Award, 2023.11.3
- 4: Haruya Kawabata, 2022 Hiroshima University Excellent Student Scholarship, 2023.

(6) Patents

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Program of Oral Health Sciences

Department of Medical System Engineering

(1) Staff and Students

Professor : Takeshi Murayama
 Lecturer : Yuichi Mine
 Graduate Students : Memori Minoda, Shota Okazaki, Yuuki Sasaki, Mami Kato, Hiroki Hase,
 Keiki Tanioka, Kohei Yamamoto, Moeka Kasagawa, Mizuho Sano
 Graduation Research Students : Mahina Kamada, Honoka Aoe, Hinako Atarashi, Momoka Ikuma,
 Mei Ishikawa, Reon Furukawa, Noriko Mae, Yuki Hayakawa,
 Ryohei Tokinaga, Masahiro Hara, Mako Yamamoto, Yukinaga Kurokui,
 Yukako Ichikawa

(2) Main Research Activities

- 1: Application of artificial intelligence to dentistry
- 2: Application of 3-d technologies to dentistry
- 3: Study on mechanisms of medication-related osteonecrosis of the jaw (MRONJ)

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Effects of the methyl methacrylate addition, polymerization temperature and time on the MBG@PMMA core-shell structure and its application as addition in electrospun composite fiber bioscaffold: Lin HN, Peng TY, Kung YR, Chiou YJ, Chang WM, Wu SH, Mine Y, Chen CY, Lin CK: *Ceramics International*, 49(5), 7630-7639, 2023.
- 2: An in vitro study of digital impressions and three-dimensional printed models of orbital defects using mobile devices and monoscopic photogrammetry: Tabira K, Kawaguchi R, Mine Y, Iwaguro S, Peng TY, Tsuchida Y, Takayama Y, Okazaki S, Taji T, Murayama T: *Journal of Oral Science*, 65(2), 127-130, 2023.
- 3: Effect of Various Airborne-particle Abrasion Conditions on Bonding Between Polyether-ether-ketone (PEEK) and Dental Resin Cement: Lee PC, Peng TY, Ma TL, Jiang GY, Mine Y, Lee IT, Yu CC, Chen SF, Yu JH: *Polymers*, 15(9), 2114, 2023.
- 4: Enhancing Dental Cement Bond Strength with Autofocus Laser Cutter-Generated Grooves on Polyetheretherketone Surfaces: Peng TY, Ma TL, Lee IT, Wu SH, Mine Y, Lin CC: *Polymers*, 15(18), 3670, 2023.
- 5: The Physiological Function of Deglutition and Swallowing in Patients With Maxillary Protrusion After Mandibular Advancement: Kaku M, Kagawa H, Yamamoto T, Kojima S, Kamiya T, Shimoe S, Mine Y, Murayama T, Yamamoto I, Tanimoto K: *Journal of Craniofacial Surgery*, 34(7), 1966-1970, 2023.
- 6: Optimizing Dental Bond Strength: Insights from Comprehensive Literature Review and Future Implications for Clinical Practice: Fan-Chiang YS, Chou PC, Hsiao YW, Cheng YH, Huang Y, Chiu YC, Lin YJ, Mine Y, Feng SW, Lee IT, Peng TY: *Biomedicines*, 11(11), 2995, 2023.
- 7: Evaluation of shade correspondence between high-translucency pre-colored zirconia and shade tab by considering the influence of cement shade and substrate materials: Kang CM, Huang YW, Wu SH, Mine Y, Lee IT, Peng TY: *Heliyon*, 9(12), e23046, 2023.
- 8: Innovation from Dentistry: The Inside Story From Research to Patents, Licenses, and Royalty Income: Nikawa H, Taji T, Mine Y, Shimoe S, Kaku M, Murayama T: *Journal of Oral Tissue Engineering* 21(2): 50-57. 2023.
- 9: Image preprocessing with contrast-limited adaptive histogram equalization improves the segmentation performance of deep learning for the articular disk of the temporomandibular joint on magnetic

resonance images: Yoshimi Y, Mine Y, Ito S, Takeda S, Okazaki S, Nakamoto T, Nagasaki T, Kakimoto N, Murayama T, Tanimoto T: Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology in press.

B) Review

C) Publications

D) Other Publications

E) Presentation at Scientific Meeting

- 1: A multi-pass scheduling method using neural networks: Eguchi T, Kataoka T, Murayama T: 2023Annual Conference of Manufacturing Systems Division, The Japan Society of Mechanical Engineers (Kitakyushu), 2023.
- 2: Transformer: Super-resolution of dental images using artificial intelligence model: Mine Y, Okazaki S, Murayama T: The 81st Academic Meeting of The Japanese Society for Dental Materials and Devices (Tokyo), 2023.
- 3: Detecting the presence of supernumerary teeth on panoramic radiographs using deep learning - RadImageNet for transfer learning -: Okazaki S, Mine Y, Murayama T: The 81st Academic Meeting of The Japanese Society for Dental Materials and Devices (Tokyo), 2023.
- 4: An in vitro study of digital impressions and 3D printed models of orbital defects using mobile devices and monoscopic photogrammetry: Mine Y, Okazaki S, Eguchi T, Murayama T: The 14th Annual Conference of Japan Academy of Digital Dentistry (Yokosuka), 2023.
- 5: RadImageNet as a dataset of transfer learning in dental image assessment: Okazaki S, Mine Y, Ito S, Yoshimi Y, Takeda S, Tanimoto K, Murayama T: The 14th Annual Conference of Japan Academy of Digital Dentistry (Yokosuka), 2023.
- 6: Gender determination and feature visualization on lateral cephalograms using deep learning approach: Hase H, Mine Y, Okazaki S, Yoshimi Y, Ito S, Takeda S, Tanimoto K, Murayama T: The 14th Annual Conference of Japan Academy of Digital Dentistry (Yokosuka), 2023.
- 7: Detecting the articular disc of temporomandibular joint on MR images using object detection AI model: Sano M, Mine Y, Yoshimi Y, Okazaki S, Ito S, Takeda S, Tanimoto K, Murayama T: The 14th Annual Conference of Japan Academy of Digital Dentistry (Yokosuka), 2023.
- 8: Comparison of pre-trained convolutional neural networks for skeletal pattern prediction from facial photographs: Yoshimi Y, Mine Y, Ito S, Okazaki S, Hase H, Takeda S, Murayama T, Tanimoto K: The 14th Annual Conference of Japan Academy of Digital Dentistry (Yokosuka), 2023.
- 9: Examination of the effect of L. rhamnosus L8020 biogenics on tight junctions: Kamiura I, Mine Y, Taji T, Nikawa H: The 132nd Annual Meeting of Japan Prosthodontic Society (Yokohama), 2023.
- 10: Scheduling considering multi-objective evaluation of delivery dates using neural networks: Eguchi T, Kataoka T, Murayama T: 2023 Conference of Japan Society for Design Engineering Chugoku Branch (Higashi-hiroshima), 2023.
- 11: Effect of mechanical stress on bone metabolic factors in sclerostin-deficient bone cells: Yamada K, Oba S, Mine Y, Shimoe S, Taji T, Nikawa H, Murayama T, Kaku M: 95th Annual Meeting of the Japanese Tissue Culture Association (Okayama), 2023.
- 12: Gene expression induced by stimulation of P. gingivalis cells in gingival epithelial-like cells and effects of oral lactic acid bacteria SD powder: Kanzaki S, Fujishiro R, Kamiura I, Tanaka S, Mine Y, Kumagaya H, Sasahara K, Kawahara K, Taji T, Nikawa H: 2023 Annual Meeting of Japan Prosthodontic Society Chugoku & Shikoku Branch (Takamatsu), 2023.
- 13: Job Shop Scheduling with Operators (Learning Priority Rule Using Neural Network): Yoshida T, Eguchi T, Murayama T: 2023Annual Congress of The Japan Society of Mechanical Engineers (Tokyo), 2023.
- 14: Learning Scheduling Rule for Job Shop Considering Multi-Objective Evaluation Related to Due Date: Kanamaru K, Eguchi T, Murayama T: 2023Annual Congress of The Japan Society of Mechanical Engineers (Tokyo), 2023.
- 15: Alternation of CTGF expression by PDGFR in malignant mesothelioma: Suehiro T, Mine Y, Fujii M:

- The 82nd Annual Meeting of the Japanese Cancer Association (Yokohama), 2023.
- 16: Sex determination and feature visualization on lateral cephalograms using deep learning approach: Hase H, Yoshimi Y, Mine Y, Ito S, Okazaki S, Takeda S, Tanimoto K, Murayama T: The 82nd Annual Meeting of the Japanese Orthodontic Society (Niigata), 2023.
 - 17: Dental Anomaly Detection Using RadImageNet Transfer Learning Models: Okazaki S, Mine Y, Iwamoto Y, Nishimura T, Nomura R, Murayama T: Joint 37th IADR-SEA Annual Scientific Meeting and 2nd International Oral Health Symposium (Singapore), 2023.
 - 18: Sex determination and feature visualization on lateral cephalograms using deep learning approach: Hase H, Mine Y, Okazaki S, Yoshimi Y, Ito S, Takeda S, Kakimoto N, Tanimoto K, Murayama T: The 62nd Hiroshima Prefectural Dental Association/107th Regular Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
 - 19: Prediction of skeletal system angle and visualization of features from facial photographs using deep learning: Aoe H, Mine Y, Ito S, Yoshimi Y, Okazaki S, Takeda S, Kakimoto N, Tanimoto K, Murayama T: The 62nd Hiroshima Prefectural Dental Association/107th Regular Meeting of Hiroshima University Dental Society (Hiroshima), 2023.

F) Special Lectures in Academic Meetings

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

- 1: KAKENHI Grant-in-Aid for Scientific Research (C): (Co-Investigator) Mine Y, Development of a Prophylaxis for Cognitive Decline Using Biogenics. Grant Number 23K09296.
- 2: KAKENHI Grant-in-Aid for Scientific Research (C): (Principal Investigator) Mine Y, Development of a Novel Treatment for MRONJ by Regulation of Local Bone Metabolism. Grant Number 22K10059.
- 3: KAKENHI Grant-in-Aid for Scientific Research (C): (Co-Investigator) Murayama T, Mine Y, A Pioneering Support System for Maxillofacial Prosthesis Realized by Digital Transformation. Grant Number 21K10020.
- 4: Technical guidance, Higashihiroshima Fire Department: Yuichi Mine:

(5) Academic Awards, etc.

- 1: Mine Y, Okazaki S, Murayama T : Wada precision dental laboratory Co. Ltd. Award at the 81st Academic Meeting of The Japanese Society for Dental Materials and Device, 2023.
- 2: Mine Y, Okazaki S, Eguchi T, Murayama T : Excellent presentation award of the 14th Annual Conference of Japan Academy of Digital Dentistry, 2023.
- 3: Hase H, Mine Y, Okazaki S, Yoshimi Y, Ito S, Takeda S, Tanimoto K, Murayama T : Excellent presentation award of the 14th Annual Conference of Japan Academy of Digital Dentistry, 2023.
- 4: Okazaki S : 26th Encouragement Award of Hiroshima University School of Dentistry Alumni Association, 2023.

(6) Patents

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Department of Oral Biology & Engineering

(1) Staff and Students

Professor : Hiroki Nikawa
 Associate Professor : Tsuyoshi Taji
 Education and Research Support Staff : Kaori Taguchi
 Research Student : Kazuko Kawahara(-2023.9)
 Graduate Student: Ibuki Kamiura, Ryo Fujishiro, Nanao Kinoshita, Ato Isshiki, Mako Shimizu,
 Koji Munemoto, Sarara Kanzaki
 Undergraduate Student: Nanaka Tsujimoto, Honoka Okada, Mei Inoue, Miharuru Ono, Reon Komatsu,
 Ryo Okamoto, Masaki Natsu, Shota Takayama, Sota Nakatani

(2) Main Research Activities

- 1: Study on candidal biofilms and denture plaque
- 2: Study on dental caries and probiotics
- 3: Design for cationic antimicrobial peptides
- 4: Study on mechanisms of the alveolar bone resorption
- 5: Development of bone-resorption inhibitors
- 6: Study on dental implant materials
- 7: Collaborative research about allergy
- 8: Study on digital dentistry
- 9: Collaborative research about aortic aneurysm
- 10: Development of oral function devices
- 11: Analysis of food texture

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1 : Effect of CD146+ SHED on bone regeneration in a mouse calvaria defect model : Rikitake K, Kunitatsu R, Yoshimi Y, Nakajima K, Hiraki T, Aisyah Rizky Putranti N, Tsuka Y, Abe T, Ando K, Hayashi Y, Nikawa H, Tanimoto K : *Oral Dis*, 29, 725-734, 2023.
- 2 : Comparison of the accuracy of different handheld-type scanners in three-dimensional facial image recognition : Yumi Tsuchida, Maho Shiozawa, Kazuyuki Handa, Hidekazu Takahashi, Hiroki Nikawa : *J Prosthodont Res*, 67, 222-230, 2023.
- 3 : Effect of *Lactobacillus rhamnosus* L8020 on the abundance of periodontal pathogens in individuals with intellectual disability : a randomized clinical trial : Oda Y, Kawano R, Murakami J, Kado I, Okada Y, Nikawa H. : *Quintessence Int*, 54, 372-383, 2023.
- 4 : Comparison of dental plaque flora between intellectually disabled patients and healthy individuals: a cross-sectional study : Oda Y, Furutani C, Kawano R, Murakami J, Mizota Y, Okada Y, Nikawa H : *Odontology*, Online ahead of print, 2023.
- 5 : Effects of various functional monomers' reaction on the surface characteristics and bonding performance of polyetheretherketone : Huang HY, Feng SW, Chiang KY, Li YC, Peng TY, Nikawa H : *J Prosthodont Res*, Online ahead of print, 2023.
- 6 : Trisomy 12 compromises the mesendodermal differentiation propensity of human pluripotent stem cells : Yohei Hayashi, Kana Yanagihara, Yujung Liu, Tomoko Yamaguchi, Yasuko Hemmi, Minako Kokunugi, Kozue Ichio Yamada, Ken Fukumoto, Mika Suga, Satoshi Terada, Hiroki Nikawa, Kenji Kawabata, Miho Furue : *In Vitro Cellular & Developmental Biology*, accepted
- 7 : An in vitro study of digital impressions and three-dimensional printed models of orbital defects using mobile devices and monoscopic photogrammetry : Kosei Tabira, Riho Kawaguchi, Yuichi Minei, Shogo Iwaguro, Tzu-Yu Peng, Yumi Tsuchida, Yukihiro Takayama, Shota Okazaki, Tsuyoshi Taji, Takeshi Murayama : *Journal of Oral Science*, 65(2), 127-130, 2023.
- 8 : Comparative analysis of the retention force and deformation of PEEK and PEKK removable partial

- denture clasps with different thicknesses and undercut depths : W.-F. Lee, M.-S. Chen, T.-Y. Peng, P.-C. Huang, H. Nikawa, P.-W. Peng* : Journal of Prosthetic Dentistry (JPD), in press (2023/12/5).
- 9 : In vitro study of optimal removable partial denture clasp design made from novel high-performance polyetherketoneketone : P.-W. Peng, M.-S. Chen, T.-Y. Peng, P.-C. Huang, H. Nikawa, W.-F. Lee* : Journal of Prosthodontic Research (JPR), 2023, accept (2023/12/17).

B) Review

- 1 : Innovation from Dentistry: The Inside Story From Research to Patents, Licenses, and Royalty Income : Hiroki Nikawa, Tsuyoshi Taji, Yuichi Mine, Saiji Shimoe, Masato Kaku, Takeshi Murayama : J of Oral Tissue Engin, Accepted.

C) Publications

- 1 : Development of Etak, an ethoxysilane-based immobilized antibacterial and antiviral agent : Hiroki Nikawa and Takemasa Sakaguchi : Biomedical Engineering (印刷中)

D) Other Publications

E) Presentation at Scientific Meeting

F) Symposium and special lecture

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

- 1 : Grants-in-Aid for Scientific Research (Scientific Research (C)) : Tsuyoshi Taji (Head), Hiroki Nikawa (Co-investigators), Research Project Number: 21K10020. \1,170,000
- 2 : Grants-in-Aid for Scientific Research (Scientific Research (C)) : Yuichi Mine(Head), Hiroki Nikawa (Co-investigators), Research Project Number: 22K10059. \1,430,000
- 3 : Grants-in-Aid for Scientific Research (Scientific Research (C)) :Hiroki Nikawa (Head), Yuichi Mine, Tsuyoshi Taji (Co-investigators), Research Project Number: 23K09296. \1,820,000
- 4 : Donation from Shikoku nyugyou corporation to Hiroki Nikawa. \300,000
- 5 : Donation from JEX Co., Ltd. to Hiroki Nikawa. \500,000
- 6 : Donation from Hiroshima Red Cross Hospital & Atomic-bomb Survivors Hospital. to Hiroki Nikawa. \5,000

(5) Academic Awards, etc.

(6) Patents

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Center for Cause of Death Investigation Research & Education

(1) Staff and Students

Associate Professor/Lecturer: Hiroko Oka (Special Designation)

(2) Main Research Activities

- 1: Cuses of death and oral findings
- 2: Age prediction using oral specimen and findings
- 3: Personal identification system
- 4: Education method and assessment on forensic odontology

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Oka H, Asao Y, Nakao N, Mitsuhashi C, Matsumoto Y, Nomura R, Kakimoto N, Nagao M, Kozai K: Dental radiographic information of term newborn babies within the first month: Analyzing five radiographic cases along with physical attributes in Japan. *Legal Medicine (Tokyo)*, 60:102171, 2023. (Epub 2022)
- 2: Oka H, Asao Y, Ohbayashi N, Nakao N, Ishiuchi N, Fukumoto W, Matsumoto Y, Kakimoto N, Nagao M, Kozai K: Age estimation using post-mortem computed tomography and fetal dental radiographic findings in an early to mid-pregnancy fetus: A case report. *Legal Medicine (Tokyo)*, 62:102232. 2023.
- 3: Ohbayashi N, Shintani T, Kamegashira A, Oka H, Ando T, Miyata R, Kawaguchi H, Kajiya M: A case report of allergic reaction with acute facial swelling: a rare complication of dental acrylic resin. *Journal of International Medical Research*, 51:3000605231187819, 2023.
- 4: Oka H, Ohbayashi N, Yoshikawa M, Katsuya N, Kakimoto N, Nagao M: Metal component of dental restorations and fixed prostheses in the oral cavity of 43 cases of adults aged 55 years or older in forensic autopsy. *Journal of Oral Science*. 2023. Online ahead of print.

B) Review

C) Publications

D) Other Publications

E) Presentations at Scientific Meetings

- 1: Oka H, Kawaguchi H: Toward the training of disaster-initial-action at the outpatient dental section for dental trainees: The 28th Annual Meeting of Japanese Association for Disaster Medicine (Iwate), 2023.
- 2: Oka H: Study on the age estimation using tooth DNA methylation - Effect of methylation on root calcification: The 107th Congress of The Japanese Society of Legal Medicine (Kanagawa) 2023.
- 3: Oka H, Saito H, Minegishi S, Nagao M: Survey on Dental Treatment Materials in Vietnam: The 107th

Congress of The Japanese Society of Legal Medicine (Kanagawa) 2023.

- 4: Oka H, Nagao M: Relationship between personality and stress coping skills and dental students' willingness to participate in anatomy assistance: The 17th Annual Meeting of Japanese Society of Forensic Dental Science (Tokyo), 2023.
- 5: Oka H, Suzuki T, Ohtani M, Tsuzuki T, Aboshi H, Yamada Y: A Survey Plan of Undergraduate Education on Forensic Odontology Report 1. A preliminary study based on the situation of two dental schools: The 42th Annual Academic Meeting of Japanese Dental Education Association (Web), 2023.

F) Special lectures in academic meetings

- 1: Hiroko Oka (Symposiast of US3): Toward age estimation using DNA methylation of samples obtained from the oral cavity. The 65th Annual Meeting of Japanese Association of Oral Biology (Tokyo), 2023.
- 2: Hiroko Oka (Lecturer): Practice and Research in Forensic Dentistry - Activities of the Division of Forensic Dentistry, Center for Cause of Death Investigation Research and Education, Hiroshima University The 27th Seminar of the Center for Cause of Death Investigation Education and Research/ 2023 FD Lecture in Dentistry of School of Dentistry/ Research Seminar of Graduate School of Dentistry, Hokkaido University (Web), 2023.

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

- 1: Grants-in-Aid for Scientific Research (Scientific Research(C)): Hiroko Oka, No. 21K10253

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Division of General Dentistry

Department of General Dentistry

(1) Staff and Students

Professor: Hiroyuki Kawaguchi
 Assistant Professor: Hiromi Nishi, Susumu Horikoshi
 Resident: Nami Obayashi, Noriaki Ide

(2) Main Research Activities

1. Research in patient-centered dentistry based on narrative approach
2. Research in general dentistry
3. Examination of postgraduate dental training program
4. Research in health communication strategy
5. Research in clinical education
6. Research in assessment of clinical skills
7. Research in development and standardization of simulated patients
8. Research in taste disorder of patients receiving chemotherapy
9. Research in allergy related to dental materials

(3) Research Achievements

A) Original Papers (including Case Reports)

1. Suzuki K, Sasada S, Nishi H, Kimura Y, Shintani T, Emi A, Masumoto N, Kadoya T, Kawaguchi H, Okada M. Impact of oral hygiene on febrile neutropenia during breast cancer chemotherapy. *Breast Cancer*. 2023 Jan;30(1):151-155. doi: 10.1007/s12282-022-01410-9. Epub 2022 Oct 21. PMID: 36271187. 2023
2. Obayashi N, Sakayori N, Kawaguchi H, Sugita M. Effect of irinotecan administration on amiloride-sensitive sodium taste responses in mice. *European Journal of Oral Sciences*. 2023;1-16. DOI: 10.1111/eos.12922
3. Fukada S, Ohta K, Sakuma M, Akagi M, Kato H, Naruse T, Nakagawa T, Shigeishi H, Nishi H, Takechi M, Aikawa T. Sunitinib promotes apoptosis via p38 MAPK activation and STAT3 downregulation in oral keratinocytes. *Oral Dis*. 2022 Nov 29. doi: 10.1111/odi.14457. Epub ahead of print. PMID: 36447393. 2023
4. Ide N, Kawada-Matsuo M, Le MN, Hisatsune J, Nishi H, Hara T, Kitamura N, Kashiya S, Yokozaki M, Kawaguchi H, Ohge H, Sugai M, Komatsuzawa H. Different CprABC amino acid sequences affect nisin A susceptibility in *Clostridioides difficile* isolates. *PLoS One*. 2023 Jan 20;18(1):e0280676. doi: 10.1371/journal.pone.0280676. PMID: 36662820; PMCID: PMC9858009. 2023
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- T. ACE2 expression and spike S1 protein - mediated immune responses in oral mucosal cells. *Oral Dis.* 2023 Jul 19. doi: 10.1111/odi.14670. Epub ahead of print. PMID: 37466124. 2023
10. Yano K, Nishi H, Shigeishi H, Kaneyasu Y, Kawaguchi H, Ohta K. Detection and Antifungal Susceptibility of Candida Strains Isolated from the Oral Cavity of Patients with Head and Neck Cancer and Esophageal Cancer. *Japanese Society of Dental Hygiene*, 2023
 11. Morimoto S, Kajiya M, Yoshii H, Yoshino M, Horikoshi S, Motoike S, Iwata T, Ouhara K, Ando T, Yoshimoto T, Shintani T, Mizuno N. A Cartilaginous Construct with Bone Collar Exerts Bone-Regenerative Property Via Rapid Endochondral Ossification. *Stem Cell Rev Rep.* 2023 Aug;19(6):1812-1827. doi: 10.1007/s12015-023-10554-w. Epub 2023 May 11. PMID: 37166558
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 13. Obayashi N, Sugita M, Shintani T, Nishi H, Ando T, Kajiya M, Kawaguchi H, Ohge H, Naito M. Taste-taste associations in chemotherapy-induced subjective taste alterations: findings from a questionnaire survey in an outpatient clinic. *Supportive Care in Cancer.* (2023)31:552. DOI: [10.1007/s00520-023-08013-w](https://doi.org/10.1007/s00520-023-08013-w)
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 15. Obayashi F, Koizumi K, Ito N, Obayashi N, Shintani T, Kajiya M, Yanamoto S. Skin Symptoms That Appeared after Fixation with a Titanium Plate in a Jaw Deformity Patient Suffering from Palmoplantar Pustulosis: A Case Report. *Dentistry Journal.* 2023,11,257. <https://doi.org/10.3390/dj11110257>
 16. Nishi H, Horikoshi S, Ohta K, Yoshida T, Fukushima N, Oshita K, Munenaga S, Edahiro T, Ureshino H, Shigeishi H, Yoshioka Y, Konishi M, Ide N, Ogawa Y, Marukawa R, Shintani T, Ino N, Kajiya M, Kakimoto N, Ohge H, Ichinohe T, Kawaguchi H. Efficacy of Low-Level Laser Therapy for Oral Mucositis in Hematologic Patients Undergoing Transplantation: A Single-Arm Prospective Study. *J Pers Med.* 2023 Nov 13;13(11):1603. doi: 10.3390/jpm13111603. PMID: 38003918; PMCID: PMC10672422.
 17. Yoshino M, Kajiya M, Yoshii H, Morimoto S, Horikoshi S, Tari M, Iwata T, Ouhara K, Ando T, Yoshimoto T, Shintani T, Mizuno N. Distinctive Biological Properties between Mesenchymal Stem Cell Spheroids and Clumps of Mesenchymal Stem Cells/Extracellular Matrix Complexes in 3D Culture Systems. *Appl Sci.* 2023 Nov 29, 13(23), 12790; <https://doi.org/10.3390/app132312790>
 18. Matsuda S, Shintani T, Miyagawa T, Yumoto H, Komatsu Y, Dewake N, Iwata T, Nagano T, Morozumi T, Goto R, Kato S, Kitamura M, Shin K, Sekino S, Yamashita A, Yamashita K, Yoshimura A, Sugaya T, Takashiba S, Taguchi Y, Nemoto E, Nishi H, Mizuno N, Numabe Y, Kawaguchi H. Effect of Periodontal Treatment on Reducing Chronic Inflammation in Systemically Healthy Patients With Periodontal Disease. *The American Journal of Medicine* <https://doi.org/10.1016/j.amjmed.2023.11.001>

B) Review

C) Publications

1. Hiromi Nishi: ECMO Management Helper Handbook - What Should Be Noted in Oral Care During ECMO? - : pp. 128-130, Medica Publishing Co., Ltd., Published on February 20, 2023

D) Other Publications

- 1: 2023 Regenerative Therapy Guidelines for Patients with Periodontal Disease: Kawaguchi H (Co-author) Ishiyaku Pub. 2023

E) Presentations at Scientific Meetings

1. Sasada S, Nishi H, Emi J, Kadoya M, Okada M. Investigation of Oral Hygiene Indices in Febrile

- Neutropenia During Breast Cancer Chemotherapy. The 20th Annual Meeting of the Japanese Society of Clinical Oncology JSMO 230316-18, 2023
2. Aoki S, Nishi H, Nezu T, Shiga Y, Uemura T, Eto F, Imamura E, Maruyama H. The Impact of Periodontal Bacterial Load in the Oral Cavity on the Onset and Outcome of Stroke. STROKE 2023: The 48th Annual Meeting of the Japan Stroke Society, The 52nd Annual Meeting of the Japanese Society for Surgery of Stroke, The 39th SAH/Spasm Symposium. March 16-18, 2023, Hybrid/Yokohama.
 3. Tahara H, Iketani K, Nishi H, Tsukahara A, Iwasa F, Baba K. Effect of CPC Single Agent Mouthwash on the Bacterial Flora in Denture Plaque. The 132nd Academic Conference of the Japan Prosthodontic Society - 90th Anniversary Conference - May 19-21, 2023, Pacifico Yokohama (Hybrid)
 4. Ino N, Tokikazu T, Naganuma K, Sou Y, Nishi H, Nakaoka M, Konishi M, Kakimoto N, Kawaguchi H. A Case of Perioperative Oral Hygiene Management for High-Dose-Rate Brachytherapy in Tongue Cancer. The 72nd Academic Conference of the Japanese Society of Oral Hygiene, May 19-21, 2023, Osaka International Exchange Center.
 5. Matsuda S, Sugaya T, Kato Y, Nemoto E, Takeuchi Y, Yamashita K, Numabe Y, Nishida T, Ogata Y, Shin K, Nagano T, Morozumi T, Komatsu Y, Dewake N, Goto R, Kitamura M, Taguchi Y, Takashiba S, Yumoto H, Yamashita A, Yoshinaga Y, Yoshimura A, Kawaguchi H. Identification of new periodontal examination to evaluate the association between periodontitis and systemic diseases ~ multi centered study ~ 2nd report 66th Spring Meeting of the Japanese Society of Periodontology Takamatsu 23/5/26,27
 6. Pham Trong Phat, Ayako Nakajima, Shunsuke Miyauchi, Hisako Furosho, Miki Matsuo, Kazuhisa Ouhara, Hiromi Nishi, Yukiko Nakano, Hitoshi Komatsuzawa, Mutsumi Miyauchi. Relationship between atrial invasion of Porphyromonas gingivalis from the periodontitis area and atrial fibrosis. Hiroshima University Dental Society, Hiroshima, June 3, 2023
 7. Morimoto S, Kajiya M, Horikoshi S, Yoshii H, Yoshino M, Ouhara K, Matsuda S, Iwata T, Sasaki S, Hamamoto Y, Tari M, Taniguchi Y, Yoshimoto T, Mizuno N. A cartilaginous construct with bone collar exerts bone-regenerative property via rapid endochondral ossification. 66th Annual Meeting in Autumn of the Japanese Society of Periodontology, Nagasaki, October 12-14, 2023
 8. Yoshino M, Kajiya M, Morimoto S, Yoshii H, Yoshimoto T, Horikoshi S, Tari M, Iwata T, Ouhara K, Matsuda S, Sasaki S, Hamamoto Y, Taniguchi Y, Mizuno N. The development of a bone marrow adipose tissue-like in vitro model using clumps of MSCs/ECM complexes. 66th Annual Meeting in Autumn of the Japanese Society of Periodontology, Nagasaki, October 12-14, 2023
 9. Yoshii H, Kajiya M, Morimoto S, Yoshino M, Horikoshi S, Tari M, Taniguchi Y, Sasaki S, Hamamoto Y, Matsuda S, Iwata T, Ouhara K, Yoshimoto T, Mizuno N. YAP/TAZ mechanosignaling regulates cytoprotective factors production in mesenchymal stem cells. 66th Annual Meeting in Autumn of the Japanese Society of Periodontology, Nagasaki, October 12-14, 2023
 10. Tokui A, Miyazaki H, Morimoto M, Yamaguchi H, Nishi H, Nakaoka M, Yoshida Y, Ogasawara T, Okada Y. Contamination Status on Caregivers During Assisted Brushing - Differences in Contamination Sites with Manual and Sonic Toothbrushes. The 40th General Meeting and Academic Conference of the Japanese Society of Dentistry for the Disabled, Hokkaido, November 10, 2023
 11. Tahara H, Iketani K, Nishi H, Tsukahara A, Iwasa F, Baba K. Effect of CPC single agent mouthwash on the bacterial flora in denture plaque. The ICP 2023 London Satellite Meeting and the Biennial Meeting in Shanghai 8/30 -9/2 2023
 12. Nami Obayashi, Makoto Sugita, Tomoaki Shintani, Toshinori Ando, Rie Miyata, Hiroyuki Kawaguchi, Mariko Naito, Mikihiro Kajiya: Validation of stimulated saliva in different age groups from children to the elderly: The 33th Annual Meeting of the Japanese Society of Oral Medicine (Tochigi, Hybrid), 23/11/22-24
 13. Nami Obayashi, Tomoaki Shintani, Hiroko Oka, Toshinori Ando, Hiroyuki Kawaguchi, Mikihiro Kajiya: Approach of the Oral Examination Center for Patients with Suspected Denatal Material-Related Allergy: The 107th Meeting of Hiroshima University Dental Society (Hiroshima), 202

F) Implementation of Seminars / Workshops

1. Kawaguchi H (Facilitator): Reiwa 5th year Japan Dental Hygienist Association Certified Dental Hygienist Seminar. (Hiroshima) 23/8/26,27
2. Kawaguchi H (Facilitator): Seminar of Instructor of Dentist Clinical Training by Himawari Dental Clinic. (Hiroshima) 23/9/17,18
3. Kawaguchi H (Facilitator): Reiwa 5th year Seminar of Instructor of Dentist Clinical Training at

- Kyushu University Hospital. (Fukuoka) 23/10/21,22
4. Kawaguchi H (Facilitator): Reiwa 5th year Seminar of Instructor of Dentist Clinical Training at Kagoshima University Hospital. (Kagoshima) 23/11/11,12

G) Lecturer • Symposium

1. Hiromi Nishi: "Regional Collaboration - Points of Disease to Be Aware Of -" - Hiroshima Prefecture Dental Health and Medical Service Provision Difficulty Consultation Doctor Training Workshop (Hiroshima), January 29, 2023
2. Kawaguchi H : "Management of Medical Safety" Certified Dental Hygienist Seminar "Dental Safety Management" Course (On demand WEB), 23/8/5~9/3
3. Kawaguchi H : "Resilience Engineering and Medical Safety" Certified Dental Hygienist Seminar "Dental Safety Management" Course (On demand WEB), 23/8/5~9/3
4. Hiromi Nishi: "Perioperative Oral Care and Medical Safety Measures in Home Visits" - Certified Dental Hygienist Seminar "Dental Medical Safety Management" Course (On demand WEB), 23/8/5~9/3
5. Hiromi Nishi: "Hints for Successful Medical-Dental Cooperation - From the Efforts at Hiroshima University Hospital." 2023 International Conference of Multidisciplinary Oral Function Management and Oral Care of Cancer Patients, June 4, 2023
6. Hiromi Nishi: "Prevention and Treatment of Oral Mucosal Disorders" - The First Seminar of Hiroshima Prefecture Hematopoietic Stem Cell Transplantation Hub Hospital, July 22, 2023
7. Hiromi Nishi: "Importance of Oral Care and Dental Treatment in Cardiac Vascular Anesthesia" - The 28th Academic Conference of the Japanese Society of Cardiovascular Anesthesiology (Nara), September 17, 2023
8. Hiromi Nishi: "Self Oral Care: Innovative Approaches in Medical-Dental Collaboration" - The 66th Autumn Meeting of the Japanese Society of Periodontology Luncheon Seminar (Nagasaki), October 14, 2023
9. Kawaguchi H : "Rethinking medical quality and safety management – non-technical skills and resilience engineering –" Reiwa 5th year Seminar of Instructor of Dentist Clinical Training at Kagoshima University Hospital. 2023
10. Hiromi Nishi: 2023 International Conference of Multidisciplinary Oral Function Management and Oral Care of Cancer Patients (Taiwan online), November 19, 2023

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

1. Grant-in-Aid for Scientific Research (C): Principal Investigator: Hiroyuki Kawaguchi, "Elucidation of the oral environment and oral flora involved in the onset of gastric cancer." Project Number 23K09200, 4,680,000 yen
2. Grant-in-Aid for Scientific Research (C): Principal Investigator: Hiromi Nishi, "Elucidation of Factors Affecting Esophageal Cancer Treatment through Comprehensive Analysis of the Oral Microbiome." Project Number 23K09311, 4,550,000 yen
3. AMED Fiscal Year 2023: Co-Investigator: Hiromi Nishi, "Research and Development on Inhibiting the Colonization of Drug-Resistant Bacteria in the Oral and Airway as Part of the Innovative Pharmaceutical Development for Emerging and Re-emerging Infectious Diseases." 1,000,000 yen
4. Joint Research: Principal Investigator: Hiromi Nishi, "Exploratory Study on the Efficacy and Safety of Diode Lasers for Oral Mucositis in Japanese Patients Undergoing Allogeneic and Autologous Hematopoietic Stem Cell Transplantation for Hematologic Malignancies - A Non-Blind Exploratory Study on the Mitigating Effects of Low-Level Laser Therapy on Chemotherapy-Induced Oral Mucositis." Project Number 302KA7382, 500,000 yen
5. Grant-in-Aid for Scientific Research (C): Co-Investigator: Hiromi Nishi, "How Do the Oral and Esophageal Microbiota Affect Esophageal Cancer?" Project Number 21K08710, 400,000 yen
6. Grant-in-Aid for Scientific Research (C): Co-Investigator: Hiromi Nishi, "Can Periodontal Bacterial Infection Be a Predictive Factor for the Onset and Prognosis of Stroke?" Project Number 21K10210, 200,000 yen
7. Grants-in-Aid for Scientific Research (Early-Career Scientists): Principal Investigator: Susumu Horikoshi, "Development of a novel periodontal tissue regeneration therapy using clumps of

mesenchymal stem cell induced endochondral ossification ex vivo.” Project Number 22K17060, 4,550,000 yen

8. Grants-in-Aid for Early-Career Scientists: Obayashi N.: Elucidation the mechanism of taste alteration induced by irinotecan, an anticancer drug focusing on salty taste. 22K17207, 1,560,000 yen

(5) Academic Awards, etc.

(6) Patents

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Division of Oral Health and Development

Department of Oral Health

(1) Staff and Students

Professor: Kouji Oota, Toshinobu Takemoto, Mariko Naito, Hiroki Nikawa, Masato Kaku

(*) Chief: Kouji Oota (by-work)

Associate Professor: Tsuyoshi Taji

Associate Professor/Lecturer: Hideo Shigeishi

Assistant Professor: Yoshie Niitani, Rumi Nishimura, Tomoko Maehara, Yoshino Kaneyasu

Education and Research Support Staff: Sanae Miyoshi, Yuuko Kurawaki, Kotomi Testumori, Ayumi Daijo, Keiko Misumi

Please refer to the research achievements of the following each department.

- Department of Public Oral Health: Kouji Oota, Hideo Shigeishi, Tomoko Maehara, Yoshino Kaneyasu
- Department of Oral Epidemiology: Mariko Naito, Rumi Nishimura, Yuuko Kurawaki
- Department of Oral Health Management: Toshinobu Takemoto, Yoshie Niitani
- Department of Anatomy and Functional Restorations: Masato Kaku
- Department of Oral Biology & Engineering: Hiroki Nikawa, Tsuyoshi Taji, Hisako Sasahara

(2) Main Research Activities

- 1 : Study on oral function in the elderly
- 2 : Study on Job Return Support Program

(3) Achievements

A) Original Papers (including Case Reports)

1 :

B) Review

- 1 : Dental hygiene research becomes one word that 'gets across' A practical example in the community: Sanae Miyoshi, Geriatric Dentistry, 37(4), 282-283, 2023.

C) Publications

D) Other Publications

- 1.: DHstyle February issue, Let's solve questions in daily clinical practice with research (special feature), Yuki Ohara, Sanae Miyoshi, Shiho Morishita, Eri Sanbunichi, Kayoko Ito, Dental Diamonds (Tokyo), 25-26, 2023.
- 2: DHstyle April issue, Let's solve questions in daily clinical practice with research (1) Welcome to the world of research! , Y. Ohara, S. Miyoshi, Dental Diamond (Tokyo), 48-51, 2023.
- 3: DHstyle September issue, Let's solve questions in daily clinical practice with research (6) Research plan! , Y. Ohara, S. Miyoshi, Dental Diamond (Tokyo), 46-50, 2023.

E) Presentations at Scientific Meetings

- 1: A survey on the actual state of operations of dental hygienists in Hiroshima Prefecture engaged in visiting dental care: Sanae Miyoshi, Chihiro Fujiwara, Satomi Kuwahara, Rumi Nishimura, Reiko Aimi: The 18th Annual Meeting of the Japanese Society of Dental Hygiene (Shizuoka), 2023.
- 2.: 'Current status of the human resource development programme for dental hygienists engaged in home

- dental care at Hiroshima University': Naoko Hata, Kotomi Tetsumori, Rumi Nishimura, Asako Maehara, Atsue Matsumoto, Sanae Miyoshi, Mariko Naito: The 18th Annual Meeting of the Japanese Society of Dental Hygiene (Shizuoka), 2023.
- 3: Changes in oral and physical functions of community elderly people who participated in a community-based health exercise program during the COVID-19 epidemic: a two-year prospective cohort study: Sanae Miyoshi, Hideo Shigeishi, Masaru Sugiyama, Koji Ota: 34th Annual Meeting and Congress of the Oral Health Society of Kinki, Chugoku and Shikoku (Hiroshima). 2023.
 - 4: Relationship between physical activity and oral function in elderly people living in the community: Motoga Morishita, Sanae Miyoshi, Yota Kunieda: 10th Annual Meeting of the Japanese Society for Preventive Physiotherapy (Hakodate), 2023.
 - 5: Postgraduate Training Initiatives at the Center for Dental Hygienist Education and Training, Hiroshima University School of Dentistry- Overview of skill enhancement training, and summary of participant survey results - : Misumi K, Kurawaki Y, Aimi R, Nishimura R, Matsumoto A, Naito M, Takemoto T : The 34th general meeting of Kinki, Chugoku, Shikoku Society for Oral Health (Hiroshima) , 2023.
 - 6: Comparison of new dental hygienists who underwent technical training before and after training : Kurawaki Y, Aimi R, Misumi K, Nishimura R, Matsumoto A, Naito M, Takemoto T: The 34th general meeting of Kinki, Chugoku, Shikoku Society for Oral Health (Hiroshima) , 2023.
 - 7: Changes over time in occupational stress and self-evaluation among the participants of the Center for Dental Hygienists' Education and Training at Hiroshima University School of Dentistry. : Kurawaki Y, Aimi R, Misumi K, Nishimura R, Matsumoto A, Naito M, Takemoto T: The 18th Annual Meeting of the Japan Society for Dental Hygiene (Shizuoka), 2023.
 - 8: Current status of the human resource development programme for dental hygienists engaged in home dental care at Hiroshima University: Hata N, Tetsumori K, Nishimura R, Maehara T, Matsumoto A, Miyoshi S, Naito M: The 18th Annual Meeting of the Japanese Society of Dental Hygiene (Shizuoka), 2023.

F) Lectures

- (4) Status of Receiving Grants-in Aid for Scientific Research, etc.
- (5) Academic Awards, etc.
- (6) Patents

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Division of Oral Health and Development Department of Special Care Dentistry

(1) Staff and Students

Professor : Yoshiyuki Okada
 (※) Chief: Yoshiyuki Okada
 Lecturer : Yuki Oda (lecturer in Hospital) (～June)
 Assistant Professor : Yuriko Yoshida
 Medical Doctor : Chiaki Furutani, Hironao Asahina, Rieko Fujiwara
 Clinical Staff : Hironori Miyazaki, Hisaho Yamaguchi, Masako Morimoto, Yoshifumi Nishio,
 Ryo Nishino
 Research Student : Hironori Miyazaki, Hisaho Yamaguchi, Masako Morimoto, Yoshifumi Nishio,
 Ryo Nishino
 Researcher : Yuki Oda (July～)
 Clinical Trainee : Fumiko Hayashi, Nobuyuki Ando

(2) Main Research Activities

- 1: Underlying mechanisms of suppressed pressor responses to pain stimulation by N₂O inhalation.
- 2: Effects of N₂O inhalation on baroreflex sensitivity.
- 3: Association between intra-oral inflammation and central arterial stiffness and its effect on blood pressure baroreflex sensitivity.
- 4: Effect of vasoconstrictors added to local anesthetics on blood pressure reflex sensitivity.
- 5: A study about the influence of *L. Rhamnoses* on caries and periodontal risk with disabled patients.
- 6: A study on relationship between autism spectrum disorder and oral-intestinal flora.
- 7: Effect of different administration route of midazolam on sedation in patients with intellectual disabilities.
- 8: Evaluation of anxiety and stress caused by the spread of Covid-19 infection in people involved in Special Care Dentistry.
- 9: A study on the mechanism of the nerve tracts of the spinal cord using the soleus H-reflex.
- 10: Effects of Bruxism and Hypoxic Sleep on Central Circulatory Regulatory Mechanisms.
- 11: A study on the frequency of bruxism and clenching during sleep in patients with cerebral palsy.
- 12: Effect of licking training for the deterioration of oral function in people with Down syndrome.
- 13: A study on the chronological changes in the oral microbiota of tube-fed patients with xerostomia.
- 14: Compensation of impaired baroreceptor reflexes in patients with pacemakers.
- 15: Effects of sedation on vascular resistance and arterial pulse wave.
- 16: The Relationship between Behavioral Patterns of Down Syndrome Patients and Gut Microbiota, and the Impact of Probiotics.
- 17: Research on the establishment of oral care methods for people with oral membranous substances.
- 18: Research on the effects of pectin-containing oral moisturizers.

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Repetitive pain experiences modulate feedforward control of hemodynamics and modification by nitrous oxide/oxygen inhalation sedation in humans: Hironori Miyazaki, Yoshifumi Nishio, Kohta Miyahara, Chiaki Furutani, Ziqiang Xu, Noboru Saeki, Toshio Tsuji, Yoshiyuki Okada: Heliyon, DOI: <https://doi.org/10.1016/j.heliyon.2023.e231219>(12), 2023.
- 2: Palatal microbiota associated with membranous substances in older Japanese individuals undergoing tube feeding in long-term care: A cross-sectional study: Hironao Asahina, Tadashi Ogasawara, Toshie Akieda, Kohta Miyahara, Yoshiyuki Okada, Kohei Matsumura, Makoto Taniguchi, Akihiro Yoshida, Yasuaki Kakinoki: Heliyon, DOI: [10.1016/j.heliyon.2023.e20401](https://doi.org/10.1016/j.heliyon.2023.e20401), 2023.
- 3: Comparison of dental plaque flora between intellectually disabled patients and healthy individuals: a

- cross-sectional study: Yuki Oda, Chiaki Furutani, Reo Kawano, Jumpei Murakami, Yuika Mizota, Yoshiyuki Okada, Hiroki Nikawa: *Odontology*, DOI: 10.1007/s10266-023-00837-6. 2023.
- 4: Greater resting muscle sympathetic nerve activity reduces cold pressor autonomic reactivity in older women, but not older men: John D Akins, Yoshiyuki Okada, Joseph M Hendrix, Wanpen Vongpatanasin, Qi Fu: *Am J Physiol Regul Integr Comp Physiol*. 324(5): R656-R66, 2023.
 - 5: N-methyl-d-aspartate receptors and glycinergic transmission, respectively, mediate muscle relaxation and immobility of pentobarbital in mice: Akari Mukai, Masahiro Irifune, Yoshitaka Shimizu, Mitsuru Doi, Yuka Kikuchi, Sotaro Katayama, Kana Oue, Mitsuhiro Yoshida, Yukio Ago, Yoshiyuki Okada, Norimitsu Morioka, Yoshihiro Nakata, Norio Sakai: *Neurosci Lett*. doi: 10.1016/j.neulet.2023.137175. 2023
 - 6: Effects of remote facilitation on ankle joint movement: Focusing on occlusal strength and balance: Yuki Yamada, Ryo Hirabayashi, Yoshiyuki Okada, Hirotake Yokota, Chie Sekine, Mutsuaki Edama: *Health Sci Rep*. 6(2): e1098. 2023
 - 7: Effect of *Lactobacillus rhamnos* L8020 on the abundance of periodontal pathogens in individuals with intellectual disability: a randomized clinical trial: Yuki Oda, Reo Kawano, Jumpei Mirakami, Isamu Kada, Yoshiyuki Okada, Hiroki Nikaawa: *Quintessence International* 19, 54(5), 372-383, 2023.
 - 8: Differential regulation of sympathetic neural burst frequency and amplitude throughout normal pregnancy: a longitudinal study: Andrew W D'Souza, Sarah L Hissen, Yoshiyuki Okada, Sara S Jarvis, Takuro Washio, John D Akins, David B Nelson, Qi Fu: *Am J Physiol Regul Integr Comp Physiol*. 324(2): R249-R259. 2023
 - 9: A study of dental visits and related factors in special needs patients during the COVID-19 Pandemic: Oda Yuki, Chiaki Furutani, Hironori Miyazaki, Masako Morimoto, Yoshifumi Nishio, Hisaho Yamaguchi, Hironao Asahina, Yuriko Yoshida, Mariko Naito, Yoshiyuki Okada: *JJSDH* 44 (1), pp. 1-9, 2023.
 - 10: Change in attitudes toward people with intellectual disabilities before and after special Olympics dental health examination volunteer activities: Yuriko Yoshida, Takahashi Hisao, Tsuboi Shinji, Shimada Saya, Chika Kozono, Yuki Oda, Tadashi Ogasawara, Yoshiyuki Okada: *JJSDH* 44 (2), pp. 173-179, 2023.

B) Review

- 1: Noxious stimulation and blood vessels: What we learned from vascular elasticity research: Noboru Saeki, Ryuji Nakamura, Satoshi Kamiya, Yoshiyuki Okada, Masao Yoshisu, Toshio Tsuji, Masashi Kawamoto, Yasuo Tsutsumi: *Anesthesia/Intensive Care and Technology*, Vol. 2021 Page79-84, 2022.

C) Publications

- 1: Dental Hygiene Separate Volume "What if a patient with a disability comes to your dental clinic?" Introduction to dentistry for people with disabilities for dental hygienists: Yoshiyuki Okada (co-author) (Co-author: Disease characteristics and points to note in treatment - Integration Ataxia: Page 87-90), Nihon Ishiyaku Publishing (Tokyo) 2023.
- 2: Easy-to-understand geriatric dentistry 2nd edition, "Epidemiology of the elderly": Yoshiyuki Okada (co-author) (Co-author: Epidemiology of the elderly: Pages 17-19): Suenaga Shoten (Kyoto City) 2023.

D) Other Publications

- 1: Facility dental checkup manual for children with disabilities: Yoshiyuki Okada (supervisor), Masako Morimoto (editor), Toshiya Morimi, Hiromitsu Kawajiri, Toshiro Miyoshi, Atsushi Kono, Eiji Wada, Ryori Kawagoe (author), Fumi Tokui (illustration)): Hiroshima Prefecture Dental Hygiene Liaison Council 1st edition 2nd printing 2023. (1st printing 2022.3)

E) Presentations at Scientific Meetings

- 1: A case of accidental discovery of non-invasive maxillary sinus fungal infection during oral management of a BRONJ patient: Hironao Asahina, Yuki Oda, Yuriko Yoshida, Hironori Miyazaki, Yosifumi Nishio, Masako Morimoto, Hisaho Yamaguchi, Yoshiyuki Okada: The 32nd Annual Meeting of Japanese Society of Dentistry for Medically Compromised Patient (Karuizawa), 2023.
- 2: A case of dental treatment in a dementia patient after variable pressure shunt surgery: Masako Morimoto, Hironao Asahina, Hironori Miyazaki, Yoshifumi Nishio, Hisaho Yamaguchi, Kota Miyahara, Chiaki Furutani, Yuriko Yoshida, Yuki Oda, Yoshiyuki Okada: The 32nd Annual Meeting of Japanese Society of Dentistry for Medically Compromised Patient (Karuizawa), 2023.
- 3: A case of gingivectomy and fenestration for numerous impacted teeth in patients with Reye's syndrome: Yuki Oda, Hironori Miyazaki, Hironao Asahina, Kota Miyahara, Masako Morimoto, Hisaho Yamaguchi, Yoshifumi Nishio, Yuriko Yoshida, Yoshiyuki Okada: The 32nd Annual Meeting 1. of Japanese Society of Dentistry for Medically Compromised Patient (Karuizawa), 2023.
- 4: A case of tooth extraction of a vertical root fracture in diabetic nephropathy patients with intellectual disability before starting hemodialysis: Yoshifumi Nishio, Hironori Miyazaki, Kota Miyahara, Masako Morimoto, Hisaho Yamaguchi, Hironao Asahina, Chiaki Furutani, Yuriko Yoshida, Yuki Oda, Yoshiyuki Okada: The 32st Annual Meeting of Japanese Society of Dentistry for Medically Compromised Patient (Karuizawa), 2023.
- 5: A case of mastication difficulty due to enamel dysplasia: A case of oral function improvement in a patient with oculo-dento-digital dysplasia ODDD: Yamaguchi Hisaho, Oda Yuki, Miyazaki Hironori, Nishio Yoshifumi, Morimoto Masako, Asahina Naohiro, Furutani Chiaki, Yoshida Yuriko, Okada Yoshiyuki: The 32nd Japanese Society of Dentistry for Medically Compromised Patient(Karuizawa), 2023.
- 6: A case of quantitative analysis of sleep bruxism using a temporal muscle electromyogram device (GrindCare®) in a aged patient with cerebral palsy: Yuki Oda, Hironao Asahina, Yoko Hama, Yoshiyuki Okada: The 34th Annual Meeting of the Japanese Society of Gerontology (Yokohama), 2023.
- 7: A case of training for general anesthesia of a severely obese patient with autism spectrum disorder: Mizuki Oishi, Sayo Yasuda, Eri Okino, Karin Morishita, Mai Yamaguchi, Ikuko Ochiai, Yoko Hama, Yuki Oda, Miwa Miyauchi: The 51st Annual Meeting of the Japanese Dental Society od Anesthesiology (Nagasaki), 2023.
- 8: A study of cases of patients with oral hygiene management based on vital signs measurements at the Hiroshima Oral Health Center: Eri Okino, Mizuki Oishi, Sayo Yasuda, Karin Morishita, Mai Yamaguchi, Ikuko Ochiai, Yoko Hama, Yuki Oda, Miwa Miyauchi: The 51st Annual Meeting of the Japanese Dental Society od Anesthesiology (Nagasaki), 2023.
- 9: Survey and study on the sense of security and satisfaction with pediatric day-case dental treatment under general anesthesia and postoperative trends at Hiroshima Oral Health Care Center: Hiroya Kawamoto, Yoko Hama, Yuki Oda, Miwa Miyauchi, Fuminori Namanaka, Katsumi Kamikawa, Kenji Yamasaki: The 34th Annual Meeting of Kinki-Chugoku-Shikoku Oral Health Society (Hiroshima), 2023.
- 10: Oral survey of Special Smiles participants at the Special Olympics 2023 Hiroshima Games: Yuriko Yoshida, Hisao Takahashi, Shinji Tsuboi, Saya Shimada, Masako Morimoto, Hisaho Yamaguchi, Hironori Miyazaki, Yoshifumi Nishio, Ryo Nishino, Hironao Asahina, Yuki Oda, Tadashi Ogasawara, Yoshiyuki Okada: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
- 11: Usefulness of Tongue Pressure Test in Individuals with Down's Syndrome: Reproducibility and Factors Influencing the Values: Yamaguchi Hisaho, Oda Yuki, Morimoto Masako, Nishio Yoshifumi, Miyazaki Hironori, Asahina Hironao, Shimizu Chiaki, Fujiwara Rieko, Nishino Ryo, Yoshida Yuriko, Okada Yoshiyuki: The 40nd Japan Society for Disability and Oral Health (Sapporo) , 2023.
- 12: Comparison of PWV,an augmentation index in normal subjects and pacemaker patients: Yoshifumi Nishio, Hisaho Yamaguchi,Masako Morimoto,Ryo Nishino,Hironori Miyazaki, Chiaki Furutani, Hironao Asahina, Yuriko Yoshida, Yuki Oda, Yoshiyuki Okada:The 40th Japanese Society for Disability and Oral Health (sapporo),2023.
- 13: Airway management using submental intubation of a patient with SWS in sagittal split remus osteotomy under general anesthesia: Aya Oda, Mitsuhiro Yoshida, Eiji Imado, Tamayo Takahashi, Kana Oue, Akari Mukai, Yoshitaka Shimizu, Yuki Oda, Yoshiyuki Okada: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
- 14: A study on practical training for dental hygiene students during the Covid-19 pandemic: Eri Okino, Mizuki Oishi, Sayo Yasuda, Karin Morishita, Mai Yamaguchi, Ikuko Ochiai, Yoko Hama, Yuki Oda,

- Miwa Miyauchi, Hiroki Shintani, Fuminori Yamanaka, Katsumi Kamikawa, Kenji Yakmasaki: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
- 15: A study of administering premedication to patients with intellectual disabilities who have difficulty in entering the clinic: Yuki Oda, Kana Oue, Hironori Miyazaki, Aya Oda, Chiaki Furutani, Yoshifumi Nishio, Hisaho Yamaguchi, Masako Morimoto, Hironao Asahina, Yuriko Fujiwara, Ryo Nishino, Yuriko Yoshida, Yoko Hama, Miwa Miyauchi, Yoshiyuki Okada: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 16: A case of dental treatment and oral hygiene management for a patient with Zimmermann-Laband syndrome: Mai Yamaguchi, Mizuki Oishi, Sayo Yasuda, Eri Okino, Karin Morishita, Ikuko Ochiai, Yoko Hama, Yuki Oda, Miwa Miyauchi, Hiroki Shintani, Fuminori Yamanaka, Katsumi Kamikawa, Kenji Yakmasaki: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 17: Behavioral control for resumption of oral care of a patient with de Lange syndrome in whom inter-professional work had to be interrupted due to exacerbation of self-injury: Tomomi Ando, Yuri Ishikawa, Hiromi Sasai, Kazue Fukumatsu, Kenichi Oishi, Masako Morimoto, Yuki Oda, Yoshiyuki Okada: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 18: A case study of anesthetic management for a patient with autism spectrum disorder and dental phobia with Fontan circulation: Tamayo Takahashi, Kana Oue, Eiji Imado, Aya Oda, Akari Mukai, Yuki Oda, Yoshitaka Shimizu, Yoshiyuki Okada, Mitsuhiro Yoshida: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 19: A study on the situation after dental treatment under general anesthesia for children with disabilities at our Oral Health Center: Karin Morishita, Mizuki Oishi, Sayo Yasuda, Eri Okino, Mai Yamaguchi, Ikuko Ochiai, Yoko Hama, Yuki Oda, Miwa Miyauchi, Hiroki Shintani, Fuminori Yamanaka, Katsumi Kamikawa, Kenji Yakmasaki: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 20: Oral assessment of patients visiting dental facilities for special need: Natsu Matsumoto, Jumpei Murakami, Yuki Oda, Masako Morimoto, Keigo Jinzen, Akiko Ichikawa, Kei Ishida, Shigehisa Akiyama: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 21: Temporal changes in oral microbiota in older people requiring nursing care with tube-feeding: Hironao Asahina, Yoshiyuki Okada, Yuki Oda, Yuriko Yoshida, Rieko Fujiwara, Hironori Miyazaki, Yoshifumi Nishio, Masako Morimoto, Hisaho Yamaguchi, Ryo Nishino, Kahoru Todoroki, Tadashi Ogasawara: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 22: A case report of retrieval of an accidentally ingested foreign body stagnating in the cecum by fluoroscopic colonoscopy: Hironori Miyazaki, Akinao Asahina, Yoshifumi Nishio, Masako Morimoto, Hisaho Yamaguchi, Chiaki Furutani, Yuki Oda, Yuriko Yoshida, Yoshiyuki Okada: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 23: A case of Down syndrome where regular interventions became possible through behavioral therapy immediately following the experience of physical restraint: Rieko Fujiwara, Masaki Toi, Wataru Fujii, Shigeyuki Koyama, Eiko Hayashi, Yoshiyuki Okada, Katsuaki Mishima: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 24: Factors influencing dental visit behavior and tooth brushing habits of people with Down syndrome from a parent questionnaire: Tomoyuki Onishi, Takahiro Funatsu, Takashi Ooka, Yoshiyuki Okada, Miki Kadena, Hirohito Kawai, Hitoshi Sekino, Masahiro Nakamura, Shoji Hironaka, Tadashi Ogasawara: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 25: Contamination situation for caregivers during brushing - differences in contamination areas due to manual and sonic toothbrushes: Fumi Tokui, Hironori Miyazaki, Masako Morimoto, Hisaho Yamaguchi, Hiromi Nishi, Miyuki Nakaoka, Yuriko Yoshida, Tadashi Ogasawara, Yoshiyuki Okada: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 26: Changes in facility use before and after an outbreak of a cluster of novel coronavirus infections in a facility for people with disabilities: Ryo Nishino, Yuki Oda, Yuriko Yoshida, Hironori Miyazaki, Yoshifumi Nishio, Masako Morimoto, Hisaho Yamaguchi, Chiaki Furutani, Kota Miyahara, Hironao Asahina, Yoshiyuki Okada: The 40th Japanese Society for Disability and Oral Health (Sapporo), 2023.
 - 27: Effect of continuous intrathoracic pressure loading time on remote facilitation of soleus H-reflex: Yuriko Yoshida, Hisaho Yamaguchi, Ryo Nishino, Ryo Hirabayashi, Yoshiyuki Okada: The 34th Annual Meeting of the Japanese Society of Sports Dentistry, (Fukuoka), 2023.
 - 28: Effects of bite strength and occlusal area on the H-reflex of the soleus muscle: Yamaguchi Hisaho, Yoshida Yuriko, Nishino Ryo, Okada Yoshiyuki: The 34th Annual Meeting of the Japanese Society of Sports Dentistry, (Fukuoka), 2023.
 - 29: Future Challenges in the Popularization of Mouthguards: Ryo Nishino, Yuriko Yoshida, Hisaho

- Yamaguchi, Yoshikazu Higashihara, Maki Maekawa, Yoshiyuki Okada: The 34th Annual Meeting of the Japanese Society of Sports Dentistry, (Fukuoka), 2023.
- 30: Awareness survey regarding the use of mouthguards among athletic club students who are not required to wear mouthguards: Yoshikazu Higashihara, Maki Maekawa, Yuriko Yoshida, Ryo Nishino, Yoshiyuki Okada: The 34th Annual Meeting of the Japanese Society of Sports Dentistry, (Fukuoka), 2023.
 - 31: Left-right balanced occlusion improves jumping performance: Ryo Hirabayashi, Yuki Yamada, Nao Sugai, Yuto Yoshikawa, Kaho Moriyama, Yoshiyuki Okada, Yuriko Yoshida, Mutsuaki Edama: The 34th Annual Meeting of the Japanese Society of Sports Dentistry, (Fukuoka), 2023.
 - 32: Actual state of the oral environment in university athletes - comparison by competition level -: Maki Maekawa, Yoshikazu Higashihara, Yuriko Yoshida, Ryo Nishino, Yoshiyuki Okada, Tsuyoshi Hayata, Takahito Miura: The 34th Annual Meeting of the Japanese Society of Sports Dentistry, (Fukuoka), 2023.
 - 33: Effect of occlusion on simple reaction time and choice reaction time: Nao Sugai, Ryo Hirabayashi, Kaho Moriyama, Yuto Yoshikawa, Yoshiyuki Okada, Yuriko Yoshida, Mutsuaki Edama: The 34th Annual Meeting of the Japanese Society of Sports Dentistry, (Fukuoka), 2023.
 - 34: Effect of changes in occlusal strength on heading performance: Yuto Yoshikawa, Ryo Hirabayashi, Kaho Moriyama, Nao Sugai, Yoshiyuki Okada, Yuriko Yoshida, Mutsuaki Edama: The 34th Annual Meeting of the Japanese Society of Sports Dentistry, (Fukuoka), 2023.
 - 35: Effect of changes in occlusal strength on soccer shooting performance: Kaho Moriyama, Ryo Hirabayashi, Yuto Yoshikawa, Nao Sugai, Yoshiyuki Okada, Yuriko Yoshida, Mutsuaki Edama: The 34th Annual Meeting of the Japanese Society of Sports Dentistry, (Fukuoka), 2023.

F) Special lectures in academic meetings

- 1: Evaluation of human central circulation regulation function - Application of Microneurography -: Yoshiyuki Okada (Lecturer): Special Lecture at Kyushu University Graduate School 2023, Department of Whole Body Management and Geriatric Dentistry, Kyushu University Graduate School 2023.
- 2: Educational lecture "Dental treatment strategies for patients with congenital heart disease": Yoshiyuki Okada (lecturer): The 40th Japanese Society for Disability and Oral Health (Sapporo), Japanese Society for Disability and Oral Health 2023.
- 3: Committee plan Utilizing the clinical practice manual with participation in geriatric dentistry education Transfer: Yoshiyuki Okada (symposist) The 34th Annual General Meeting and Academic Conference of the Japanese Society of Geriatric Dentistry (Yokohama),: Educational Committee of the Japanese Society of Geriatric Dentistry, 2023
- 4: Committee project "Key points for smooth ethics application based on paper writing": Yoshiyuki Okada (lecturer): 40th General Meeting and Academic Conference of the Japanese Society of Dentistry for the Disabled (Sapporo), Editorial Committee of the Japanese Society of Dentistry for the Disabled. Ethics Review Committee, 2023.
- 5: Oral health management for children with special needs: Yoshiyuki Okada (lecturer): The 31st Hiroshima Prefectural School Dental Health Research Conference, Hiroshima Prefectural Dental Association, Hiroshima Prefectural Board of Education 2023.
- 6: Diagnosis and Treatment Guidelines for Down Syndrome in Dental Practice -Caries in Down Syndrome: Yuki Oda (symposium), The 40th Japanese Society for Disability and Oral Health, Sapporo – Japan, 2023.
- 7: What we can do now to make dental care and welfare for people with disabilities more accessible: Masako Morimoto(symposiast), The 40th Japanese Society for Disability and Oral Health, Sapporo – Japan, 2023.
- 8: Points to note in dental treatment by disease - Cardiovascular disease edition -: Yoshiyuki Okada (lecturer): Kyushu University Systemic Management Dentistry Special Lecture 2023, Kyushu University Graduate School of Dentistry 2023.
- 9: Taking the first step in laughing gas inhalation sedation - Dentistry for people with disabilities aiming for a society where no one is left behind -: Yoshiyuki Okada (lecturer): The 1st Seminar on Dissemination of Dental Care for People with Disabilities (Nagoya), Aichi Prefectural Dentist Association, 2023.
- 10: The potential of sports dentistry and the next step: Yoshiyuki Okada (lecturer): The 1st Hiroshima

- Sports Dentist Association Training Session (Hiroshima), Hiroshima Sports Dentist Association, 2023.
- 11: Behavior adjustment methods and regional cooperation in dentistry for people with disabilities - Referral criteria -: Yoshiyuki Okada (lecturer): Hiroshima Prefecture Special Needs Dental Practitioner Training, Hiroshima Prefecture Regional Medical Care Comprehensive Securing Project, Hiroshima Prefecture Dental Association, 2023.
 - 12: Points to note in dental treatment for people with disabilities according to their co-occurring diseases - Cardiovascular disease edition -: Yoshiyuki Okada (lecturer): Okayama University Special Needs Dentistry Special Lecture 2023, Okayama University Hospital 2023.
 - 13: Basic knowledge and dental treatment for people with disabilities: Yoshiyuki Okada (lecturer): Hiroshima Prefecture Training for Counseling Doctors for People with Difficulties in Providing Dental Health Care Services, Hiroshima Prefecture Dental Hygiene Liaison Council, Hiroshima Prefecture Dental Association 2023.
 - 14: Promoting dental and oral health in schools SDGs - Understanding and supporting disabilities -: Yoshiyuki Okada (lecturer): Community Dental Health Department School Health Seminar, Hiroshima City Dental Association 2023.
 - 15: Process of providing dental medical resources to patients with special needs - Aiming to create referral criteria -: Yoshiyuki Okada (lecturer): The 1st Oral Health Center Division Lecture (Kure), Kure City Dental Association, 2023.
 - 16: Practical, Special Needs Dental Examination - Toward the Construction of a Mobile Examination System -: Yoshiyuki Okada, Masako Morimoto (Lecturer): Training Session on Promoting Dental Health Care for People with Difficulties in Providing Dental Health Care Services, Hiroshima Prefectural Oral Health Promotion Project, Hiroshima Prefectural Dental Association 2023.

G) Organizing conferences and seminars

- 1: The 13th Chugoku Regional Clinical Study Group on Dentistry for Disabilities Disability Dentistry and Preventive Dentistry: Tomoyoshi Uchida (Chairman), Matsumoto (Executive Committee Chair), Yoshiyuki Okada (Representative and Preparation Committee Chair), Matsue City (Shimane) 2023.
- 2: Training session for certified physicians and certified dental hygienists, sponsored by the Japan Society of Dentistry for the Disabled, hosted by the Chugoku Regional Dental Clinic for the Disabled The latest knowledge on pediatric systemic diseases that dentists should also know: Ken Takeya (lecturer), Hiroo Yoshikawa (chair), Yoshiyuki Okada (organizer) Matsue City (Shimane) 2023.

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

- 1: Grants-in-Aid for scientific research (A): Yoshiyuki Okada (partner, new), Creation of a non-invasive microneurography method: Reconstruction of peripheral sympathetic nerve activity from a vascular dynamic model. Assignment number: 22H00197. 41,730,000 yen
- 2: Grants-in-Aid for scientific research Challenging research (exploratory): Yoshiyuki Okada (representative, new), Is hypoxic sleep, which stimulates central chemoreceptors, a trigger for bruxism? Assignment number: 23K18360, 6,370,000 yen
- 3: Grants-in-Aid for scientific research (C): Yoshiyuki Okada (partner, continuing), Relationship between the occurrence of atrial fibrillation after transcatheter aortic valve replacement and the sympathetic baroreflex. Assignment number 21K08053, 4,160,000 yen
- 4: Grants-in-Aid for Scientific Research (C), Yoshiyuki Okada (contributor, continuing), Establishment of a method for evaluating noxious stimulation during surgery by measuring electrical activity in peripheral blood vessels. Assignment number: 21K08923, 4,030,000 yen
- 5: Grants-in-Aid for young scientists: Yuki Oda (PI, Continuance), Effects of probiotics on the oral, intestinal, and brain phases -Examination in autistic spectrum disorder. 21K17199. 4,550,000 yen
- 6: Grants-in-Aid for scientific research (C): Yuki Oda (CI, Continuance), Construction of dental capability strategy for persons with disabilities and their families: Oral and well-being surveys at other facilities. 21K10206. 3,900,000yen
- 7: Grants-in-Aid for young scientists: Yuriko Yoshida (PI, New), Elucidation of spinal circuit mechanisms with a view to developing new exercise prescriptions for long-term care patients. 23K16067. 4,680,000 yen

- 8: Grants-in-Aid for young scientists: Hironao Asahina (PI, New), A study on the chronological changes in the oral microbiota of tube-fed patients with xerostomia. 22K21015. 2,200,000 yen

(5) Academic Awards, etc.

- 1: The 40th Japanese Society for Disability and Oral Health, Excellent Paper Award: A study on age-related changes in prosthesis-wearing rate in persons with disabilities: comparison with the 2016 survey of dental diseases: Yuki Oda, Yuka Wakabayashi, Haruka Yasuda, Hironori Miyazaki, Kota Miyahara, Chiaki Furutani, Yuriko Yoshida, Yoshiyuki Okada.
- 2: The 32nd Annual Meeting of Japanese Society of Dentistry for Medically Compromised Patient, Presentation Award: A case of gingivectomy and fenestration for numerous impacted teeth in patients with Reye's syndrome: Yuki Oda, Hironori Miyazaki, Hironao Asahina, Kota Miyahara, Masako Morimoto, Hisaho Yamaguchi, Yuriko Yoshida, Yoshiyuki Okada.
- 3: The 32nd Annual Meeting of Japanese Society of Dentistry for Medically Compromised Patient Presentation Award: A case of dental treatment in a dementia patient after variable pressure shunt surgery: Masako Morimoto, Hironao Asahina, Hironori Miyazaki, Yoshifumi Nishio, Hisaho Yamaguchi, Kota Miyahara, Chiaki Furutani, Yuriko Yoshida, Yuki Oda, Yoshiyuki Okada.
- 4: The 34th Annual Meeting of the Japanese Society of Sports Dentistry Research Encouragement Award (Lotte Award): Effect of continuous intrathoracic pressure loading time on remote facilitation of soleus H reflex: Yuriko Yoshida, Hisaho Yamaguchi, Ryo Nishino, Ryo Hirabayashi, Yoshiyuki Okada.

(6) Patents

- 1.
- 2.

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Central Clinical Divisions

Special Dental Clinic Section

(1) Staff and Students

Chief Professor : Kotaro Tanimoto
 Research Associate : Sachiko Yamada
 Research Associate : Yukimi Yasuhara

(2) Main Research Activities

- 1: Research for improvement in articulation problem
- 2: Research for relation between lingual pressure and the function of speech/swallowing
- 3: Research for speech and swallowing rehabilitation of oral cancer

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Associations between nutrient and food group choices and dysphagia risk in community-dwelling older adults: Sachiko Yamada: The Journal of Hiroshima University Dental Society,55(2),94-101,2023.

B) Review

C) Publications

D) Other Publications

E) Presentation at Scientific Meeting

- 1 : Outcome of oral myofunctional therapy concurrent with orthodontic treatment for children with Noonan's syndrome : Ando K., Asakawa Y., Okada M., Yamada S., Yamoto S., Nakatani A., Tanimoto K. : The 21st Annual Meeting of the Japan Society for Oral Myofunctional Therapy (Tokyo), 2023.
- 2 : Association between dysphagia risk and sleep quality in community-dwelling older adults: A cross-sectional study: Hama Y, Yamada S, Nishimura R, Yoshida M, Tsuga K, Morita E, Tamada Y, Kato Y, Kubo Y, Okada R, Nagayoshi M, Tamura T, Hishida A, Wakai K, Naito M : 31th DRS Annual Meeting (San Francisco), 2023
- 3 : A case of severe dysphagia after maxillary tumor surgery :Nagasaki Y, Yamada S, Yoshikawa M, Shimabukuro K, Ohtsuka M, Sui Y, Konishi M, Nakamoto T, Kakimoto N: The 4th Autumn Conference of Japanese Society for Oral and Maxillofacial Radiology(Osaka),2023
- 4 : An Attempt to Quantify the Pharyngeal Residual Amount of Test Food (Contrast Agent) in Video-Fluoroscopic Examination-Pilot Study- : Nagasaki Y, Yamada S, Yoshikawa M, Shimabukuro K, Ohtsuka M, Sui Y, Konishi M, Nakamoto T, Kakimoto N: The 63th Conference of Japanese Society

for Oral and Maxillofacial Radiology (Fukuoka), 2023

F) Special lectures in academic meetings
Lecture

- 1: Assessment and actuality of Dysphagia Rehabilitation: Yasuhara Y.: Hiroshima pref. community-based health care and nursing mutual security project: Workshop of the swallowing functional training (Hiroshima), Feb.2023.
- 2: Assessment and actuality of Dysphagia Rehabilitation: Yasuhara Y.: Hiroshima pref. community-based health care and nursing mutual security project: Workshop of the swallowing functional training (Hiroshima), Nov.2023.

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

(5) Academic Awards, etc.

(6) Patents

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Central Clinical Divisions

Center of Oral Clinical Examination

(1) Staff and Students

Director: Mikihito Kajiya
 Lecturer: Tomoaki Shintani
 Research Associate: Toshinori Ando
 Researcher: Tetsuya Yoshimoto
 Dentist: Nami Obayashi (In training from the Department of General Dentistry)
 Graduate Student: Masayuki Suzuki, Yuka Hayashi
 Technician: Rie Miyata, Shiori Yamamoto

(2) Main Research Activities

- 1: Developing the promising tissue regenerative therapy using stem cells and 3D culture techniques.
- 2: Establish a novel culture system that can mimic the oral cavity using 3D cell constructs and micro-devices.
- 3: Diagnostic pathological study on head and neck lesions.
- 4: Study on test and treatment of metal allergy and dry mouth.
- 5: Molecular pathological study on development and progression of oral squamous cell carcinoma.
- 6: Study on molecular target therapy to oral cancer targeted with HBp17/FGFBP.
- 7: Analysis of actual condition of oral bacterial infection.
- 8: Molecular pathological research on oral/head and neck cancer focusing on genomic alterations and the Hippo pathway.

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Secretory carcinoma of the minor salivary gland in the lip with ETV6-NTRK3 fusion: case report and literature review: Hamada A., Tani R., Kimura N., Taguchi Y., Hirota S., Ando T., Okamoto K., Toratani S., Yanamoto S.: *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology*, 35(3): 251-257, 2023.
- 2: A case of multiple myeloma diagnosed by extramedullary disease in the submandibular region: Koizumi K., Sakaue T., Nakase Y., Obayashi F., Ando T., Shintani T., Yanamoto S.: *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology*, 35(3): 247-250, 2023.
- 3: Bovine Lactoferrin Suppresses Tumor Angiogenesis through NF- κ B Pathway Inhibition by Binding to TRAF6: Ayuningtyas NF., Chea C., Ando T., Saninggar KE., Tanimoto K., Inubushi T., Maishi N., Hida K., Shindoh M., Miyauchi M., Takata T.: *Pharmaceutics*, 15(1):165, 2023.
- 4: A Third Supernumerary Tooth Occuring in the Same Region: A Case Report: Akitomo T., Asao Y., Iwamoto Y., Kusaka S., Usuda M., Kametani M., Ando T., Sakamoto S., Mitsuhashi C., Kajiya M., Kozai K., Nomura R.: *Dentistry Journal*, 11(2):49, 2023.
- 5: Retrospective study on the therapeutic efficacy of zinc acetate hydrate administration to patients with hypozincemia-induced dysgeusia: Shintani T., Ohta K., Ando T., Hayashido Y., Yanamoto S., Kajiya M., Shiba H.: *BMC Oral Health*, 23(1): 159, 2023.
- 6: A Cartilaginous Construct with Bone Collar Exerts Bone-Regenerative Property Via Rapid Endochondral Ossification: Morimoto S., Kajiya M., Yoshii H., Yoshino M., Horikoshi S., Motoike S., Iwata T., Ouhara K., Ando T., Yoshimoto T., Shintani T., Mizuno N.: *Stem Cell Reviews and Reports*, 19:1812-1827, 2023.
- 7: Resting saliva volume as a risk factor for hypogeusia: A retrospective study: Shintani T., Naito M., Obayashi N., Ando T., Kawaguchi H., Yanamoto S., Kajiya M., Sugita M.: *Physiology & Behavior*, 267: 114224, 2023.
- 8: Ghost cell odontogenic carcinoma arising in dentinogenic ghost cell tumor, peripheral: a case report: Sakamoto S., Ando T., Mizuta K., Ono S., Konishi M., Miyauchi M., Ogawa I.: *Pathology International*, 73(8):367-372, 2023.

- 9: A case report of allergic reaction with acute facial swelling: a rare complication of dental acrylic resin: Obayashi N., Shintani T., Kamegashira A., Oka H., Ando T., Miyata R., Kawaguchi H., Kajiya M.: *Journal of International Medical Research*, 51(7):3000605231187819, 2023.
- 10 : AXL activates YAP through the EGFR-LATS1/2 axis and confers resistance to EGFR-targeted drugs in head and neck squamous cell carcinoma: Okamoto K., Ando T., Izumi H., Kobayashi S., Shintani T., Gutkind JS., Yanamoto S., Miyauchi M., Kajiya M.: *Oncogene*, 42:2869-2877, 2023.
- 11 : Taste–taste associations in chemotherapy-induced subjective taste alterations: findings from a questionnaire survey in an outpatient clinic: Obayashi N., Sugita M., Shintani T., Nishi H., Ando T., Kajiya M., Kawaguchi H., Ohge H., Naito M.: *Supportive Care in Cancer*, 31(9):552, 2023.
- 12 : Relationship between CD4+ T-cell counts at baseline and initial periodontal treatment efficacy in patients undergoing treatment for HIV infection: A retrospective observational study: Shintani T., Okada M., Iwata T., Kawagoe M., Yamasaki N., Inoue T., Nakanishi J., Furutama D., Takeda K., Ando T., Nakaoka M., Mizuno N., Fujii T., Kajiya M., Shiba H.: *Journal of Clinical Periodontology*, 50(11):1520-1529, 2023.
- 13 : Ultrasonographic features of mass lesions in the oral submucosal epithelium using intraoral ultrasonography: Konishi M., Ando T., Miyauchi M., Kakimoto N.: *Head & Neck*, 45(11):2829-2838, 2023.
- 14 : Distinctive Biological Properties between Mesenchymal Stem Cell Spheroids and Clumps of Mesenchymal Stem Cells/Extracellular Matrix Complexes in 3D Culture Systems: Yoshino M., Kajiya M., Yoshii H., Morimoto S., Horikoshi S., Tari M., Iwata T., Ouhara K., Ando T., Yoshimoto T., Shintani T., Mizuno N.: *Applied Sciences*, 13(23):12790, 2023.
- 15 : Primary Intraosseous Carcinoma Complicated By Cervical Hodgkin Lymphoma: A Rare Case Report: Obayashi F., Koizumi K., Ito N., Higaki M., Ando T., Yoshioka Y., Yanamoto S.: *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology*, 36(1), 38-43, 2023.
- 16 : Tumor-Infiltrating CD45RO+ Memory Cells Are Associated with Favorable Prognosis in Oral Squamous Cell Carcinoma Patients : Ito N., Yamasaki S., Shintani T., Matsui K., Obayashi F., Koizumi K., Tani R., Yanamoto S., Okamoto T.: *Cancers (Basel)*, 15 (8): 2221, 2023.
- 17 : Porphyromonas gingivalis-odontogenic infection is the potential risk for progression of nonalcoholic steatohepatitis-related neoplastic nodule formation : Sakamoto S., Nagasaki A., Shrestha M., Shintani T., Watanabe A., Furusho H., Chayama K., Takata T., Miyauchi M.: *Sci Rep*, 13 (1): 9350, 2023.
- 18 : Efficacy of Low-Level Laser Therapy for Oral Mucositis in Hematologic Patients Undergoing Transplantation: A Single-Arm Prospective Study : Nishi H., Horikoshi S., Ohta K., Yoshida T., Fukushima N., Oshita K., Munenaga S., Eda Hiro T., Ureshino H., Shigeishi H., Yoshioka Y., Konishi M., Ide N., Ogawa Y., Marukawa R., Shintani T., Ino N., Kajiya M., Kakimoto N., Ohge H., Ichinohe T., Kawaguchi H.: *J Pers Med*, 13(11): 1603, 2023.
- 19 : Skin Symptoms That Appeared after Fixation with a Titanium Plate in a Jaw Deformity Patient Suffering from Palmoplantar Pustulosis: A Case Report : Obayashi F., Koizumi K., Ito N., Obayashi N., Shintani T., Kajiya M., Yanamoto S.: *Dent J (Basel)*, 11(11): 257, 2023.
- 20 : Effect of Periodontal Treatment on Reducing Chronic Inflammation in Systemically Healthy Patients With Periodontal Disease : Matsuda S., Shintani T., Miyagawa T., Yumoto H., Komatsu Y., Dewake N., Iwata T., Nagano T., Morozumi T., Goto R., Kato S., Kitamura M., Shin K., Sekino S., Yamashita A., Yamashita K., Yoshimura A., Sugaya T., Takashiba S., Taguchi Y., Nemoto E., Nishi H., Mizuno N., Numabe Y., Kawaguchi H.: *Am J Med*, S0002-9343(23)00706-4, 2023.
- 21 : Mechanosignaling YAP/TAZ-TEAD Axis Regulates the Immunomodulatory Properties of Mesenchymal Stem Cells : Yoshii H., Kajiya M., Yoshino M., Morimoto S., Horikoshi S., Tari M., Motoike S., Iwata T., Ouhara K., Ando T., Yoshimoto T., Shintani T., Mizuno N.: *Stem Cell Rev Rep*, 20(1): 347-361, 2023.
- 22 : Interaction of Integrin $\alpha\text{v}\beta\text{8}$ With Type I Collagen Promotes Squamous Cell Carcinoma Cell Motility via RAC1 Activation : Ishida Y., Shintani T., Nobumoto T., Sakurai S., Hamana T., Yanamoto S., Hayashido Y.: *Anticancer Res*, 43(11): 4833-4841, 2023.
- 23 : Osteocyte RANKL Drives Bone Resorption in Mouse Ligature-induced Periodontitis : Kittaka M., Yoshimoto T., Levitan ME., Urata R., Choi RB., Teno Y., Xie Y., Kitase Y., Prideaux M., Dallas SL., Robling AG., Ueki Y.: *Oct*;38(10):1521-1540. *J Bone Miner Res*, 2023.
- 24 : Effect of irinotecan administration on amiloride-sensitive sodium taste responses in mice : Obayashi

- N., Sakayori N., Kawaguchi H., Sugita M.: *European Journal of Oral Sciences*, 2023.
- 25 : Age estimation using post-mortem computed tomography and fetal dental radiographic findings in an early to mid-pregnancy fetus: a case report : Oka H., Asao Y., Ohbayashi N., Nakao N., Ishiuchi N., Fukumoto W., Matsumoto Y., Kakimoto N., Nagao M., Kozai K.: *Legal Medicine*, in press, 2023.
- 26 : Metal component of dental restorations and fixed prostheses in the oral cavity of 43 cases of adults aged 55 years or older in forensic autopsy : Oka H., Obayashi N., Kitagawa M., Katsuya N., Ishiuchi N., Kakimoto N., Nagao M.: *Journal of Oral Science*, 2023.

B) Review

C) Publications

- 1: DENTAL DIAMOND Dd exam for diagnosis Tumor in upper lip: Uetsuki R., Mizuta K., Ando T., Aikawa T.: 48(7):21-22 (*Dental Diamond*), 2023.

D) Other Publications

E) Presentations at Scientific Meetings

- 1: Transplantation of human clumps of MSCs/ECM complexes induces periodontal tissue regeneration in nude rat : Sone H, Yoshino M, Yoshii H, Iwata T, Ouhara K, Maekawa T, Kunitomi Y, Torii Y, Motoike S, Ikeya M, Mizuno N.: The 22nd Annual Meeting of the Japanese Society for Regenerative Medicine (Kyoto) , 2023.
- 2: Future Basic and Clinical Research for Dental Metal Allergy : Kajiya M.: The 132nd Annual Meeting of the Japana Prosthodontic Society (Yokohama) , 2023.
- 3: Development of promising periodontal regenerative therapy using 3D grafting tissue fabricated by a bio-3D printer : Kajiya M.: 2023 AMED Regenerative Medicine, Cell Therapy, and Gene Therapy Project Research Symposium (Tokyo) , 2023.
- 4: Viral Hepatitis Control Led by the Hiroshima Prefectural Dental Association : Kajiya M.: The 62nd Hiroshima Prefectural Dental Society Meeting (Hiroshima) , 2023.
- 5: Prospects for the Practical Application of Periodontal Tissue Regeneration Therapy Using Autologous Mesenchymal Stem Cells and Bio-3D Printing : Kajiya M.: 2023 Medical-Engineering Collaboration Seminar (Web) , 2023.
- 6: Local Recurrence in Cases of Backward Extension of Oral Cancer : Ito N., Koizumi K., Shintani T., Asada K., Fukutani T., Obayashi F., Higaki M., Hamada A., Yamasaki S., Yoshioka Y., Yanamoto S.: 9th International Academy of Oral Oncology (Inchon), 2023.
- 7: Transformation of an odontogenic keratocyst into a solid variant of odontogenic keratocyst/keratoameloblastoma during long-term follow-up: A case report : Yamasaki S., Shintani T., Ando T., Miyauchi M., Yanamoto S.: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka) , 2023.
- 8: Quality of life (QOL) before and after surgical treatment in patients with medication-related osteonecrosis of the jaw : Odawara A., Yamasaki S., Yoshioka Y., Ishida Y., Ito N., Fukutani T., Hamana T., Koizumi K., Shintani T., Yanamoto S.: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka) , 2023.
- 9: Local Recurrence in Cases of Backward Extension of Oral Cancer : Ito N., Koizumi K., Shintani T., Asada K., Fukutani T., Obayashi F., Higaki M., Hamada A., Yamasaki S., Yoshioka Y., Yanamoto S.: The 62nd Meeting of Hiroshima Prefectural Dental Association/ The 107th Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 10: Quality of life (QOL) before and after surgical treatment in patients with medication-related osteonecrosis of the jaw : Odawara A., Yamasaki S., Yoshioka Y., Ishida Y., Ito N., Fukutani T., Hamana T., Koizumi K., Shintani T., Yanamoto S.: The 62nd Meeting of Hiroshima Prefectural Dental Association/ The 107th Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 11: Evaluation of oral function and oral environment in hemophilia patients on anti-HIV drugs : Okada M., Shintani T., Kawagoe M., Iwata T., Yamasaki N., Fujii T., Shiba H.: The 37th Annual Meeting of Japanese Society for AIDS Research (Kyoto), 2023.

- 12: Comparison of oral cytology and histology in Hiroshima University Hospital : Unehara R., Kamio Y., Nakamura M., Mori T., Fujita N., Mishima S., Ochi M., Oue Y., Shimizu T., Kaneko Y., Ishida K., Ando T., Ogawa I., Miyauchi M., Arihiro K.: The 37th Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Clinical Cytology (Hiroshima), 2023.
- 13: Deciphering the mechanism of cancer immune evasion induced by disruption of the Hippo pathway: Ando T., Okamoto K., Yanamoto S., Miyauchi M., Kajiya M. The 34th annual meeting of the Japanese Society of Oral Pathology (Osaka), 2023.
- 14: YAP/TAZ confers resistance against splicing inhibitors in head and neck squamous cell carcinoma: Ando T., Okamoto K., Shintani T., Yanamoto S., Miyauchi M., Kajiya M.: The 82nd annual meeting of the Japanese Cancer Association (Yokohama), 2023.
- 15: AXL activates YAP and confers resistance to EGFR inhibitors: Okamoto K., Ando T., Kajiya M., Miyauchi M., Yanamoto S.: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023.
- 16: Clinical significance of extranodal extension of cervical lymph node metastasis in oral squamous cell carcinoma : Higaki M., Koizumi K., Ando T., Obayashi F., Ito N., Shintani T., Hamana T., Yoshioka Y., Tani R., Yanamoto S.: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023.
- 17: A retrospective study of high-risk factors for metastasis in patients with resected T1-2N0 tongue cancer: Obayashi F., Koizumi K., Higaki M., Hamada A., Ito N., Ando T., Hamana T., Yoshioka Y., Tani R., Yanamoto S.: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023.
- 18: Prognostic impact of extranodal extension of cervical lymph node metastasis in squamous cell carcinoma of the oral cavity :Higaki M., Koizumi K., Ando T., Hamada A., Ito N., Obayashi F., Asada Y., Ueda Y., Uehara T., Odawara A., Yamasaki E., Eboshida N., Matsuyama T., Okamoto K., Fukutani T., Taguchi Y., Yamasaki S., Hamana T., Yoshioka Y., Tani R., Yanamoto S.: The 62nd Meeting of Hiroshima Prefectural Dental Association/ The 107th Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 19: Approach of the Oral Examination Center for Patients with Suspected Denatal Material-Related Allergy: Obayashi N., Shintani T., Oka H., Ando T., Kawaguchi H., Kajiya M: The 62nd Meeting of Hiroshima Prefectural Dental Association/ The 107th Meeting of Hiroshima University Dental Society (Hiroshima), 2023.
- 20: Clinical significance of extranodal extension of cervical lymph node metastasis in oral squamous cell carcinoma : Higaki M, Koizumi K, Ando T, Obayashi T, Ito N, Shintani T, Hamana T, Yoshioka Y, Tani R, Yanamoto S.: 9th World Congress of the International Academy of Oral Oncology 2023 (Incheon), 2023.11.1~11.4.
- 21: A Retrospective Study of High-risk Factors for Metastasis in Patients with Resected T1-2N0 Tongue Cancer : Obayashi F, Koizumi K, Higaki M, Ito N, Nobumoto T, Fukutani T, Hamada A, Yamasaki S, Ishida Y, Ando T, Hamana T, Yoshioka Y, Shintani T, Tani R, Yanamoto S.: 9th World Congress of the International Academy of Oral Oncology 2023 (Incheon), 2023.11.1~11.4.
- 22: Osteocyte inflammation causes osteolysis directly via MYD88 signaling in bacterial bone infection : Yoshimoto T., Kajiya M.: The 41th JSBMR(Tokyo), 2023.
- 23: Inflamed osteocytes directly induce inflammatory osteolysis through MYD88 signaling in bacterial bone infection. Yoshimoto T., Kajiya M.: The 33RD AUSTRALIAN AND NEW ZEALAND ANNUAL SCIENTIFIC MEETING (ANZBMS) (Australia, Newcastle), 2023.
- 24: Inhibition of osteocyte Toll-like receptor-MyD88 signaling separates bone resorption and inflammation in periodontitis Yoshimoto T., Ando T., Yoshii H., Yoshino M., Mizuno N., Kajiya M: The 66th Japanese Society of Periodontology (Nagasaki), 2023.
- 25: Blocking of osteocyte Toll-like receptor2-MyD88 signaling uncouples bone resorption from inflammation in periodontitis. Yoshimoto T., Ando T., Yoshii H., Yoshino M., Hayashi Y., Suzuki M., Kajiya M: The 65th Annual Meeting of Japanese Association for Oral Biology (Tokyo), 2023.
- 26: Development of a novel microfluidic device for investigating the impact of bone tissue on the blood-brain barrier. Yoshimoto T., Okada K., Mizuno K., Yamada S., Tabei T., Kuroki S.: Joint Research Center for Biomedical Engineering and Dental Engineering Report Meeting (Tokyo), 2023.
- 27: Varidation of stimulated saliva in different age groups from children to the elderly: Obayashi N., Sugita M., Shintani T., Ando T., Naito M., Kajiya M.: The 33th Annual Meeting of the Japanese Society of Oral Medicine (Tochigi, Hybrid), 2023.

F) Case presentations

- 1: A case of transformation from odontogenic keratocyst to SOKC/keratoameloblastoma during long-term follow-up: Yamasaki S., Shintani T., Hayashido Y., Ando T., Miyauchi M., Yanamoto S.: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023.
- 2: A case of a solitary fibrous tumor of the mouth floor: Oi H., Shimasue H., Ishida Y., Ando T., Ono S., Aikawa T.: The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023.
- 3: Mandibular cyst (Developmental odontogenic cyst with characteristic features of glandular odontogenic cyst and odontogenic keratocyst): Kataoka N., Ando T., Asada Y., Fukutani T., Tani R., Suei Y., Kakimoto N., Yanamoto S., Miyauchi M., Ogawa I., Kajiya M.: The 142nd Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Pathology (Hiroshima), 2023.
- 4: A case of ghost cell odontogenic carcinoma derived from a peripheral dentinogenic ghost cell tumor in the mandible.: Oi H., Shimasue H., Ishida Y., Ando T., Ono S., Aikawa T.: The 1st Exchange meeting for young oral surgeons (Osaka Web) , 2023.

G) Special lectures in academic meetings

- 1: Understanding oral cytology examination: A troubleshooting seminar for cytotechnologists” – Taking the first step toward improving diagnostic accuracy in oral cytology: Unehara R, Mori T, Mishima S, Ochi M, Ohue Y, Shimizu T, Kaneko Y, Ishida K, Ando T, Ogawa I, Aikawa T, Yanamoto S, Miyauchi M, Arihiro K: The 62th Annual Autumn Meeting of Japanese Society of Clinical Cytology (Hakata), 2023.

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

- 1: Grants-in-Aid for Scientific Research (B): Kajiya M.: Development of iPS Cell-derived jawbone/gingival organoids using clumps culture technique for the oral regenerative medicine. 22H03275, 17,290,000 yen
- 2: AMED Program for Accelerating the Realization of Regenerative Medicine, Cell Therapy, and Gene Therapy (Non-clinical PoC Acquisition Research Projects) : Kajiya M.: Development of promising periodontal regenerative therapy using 3D grafting tissue fabricated by a bio-3D printer. 23bm1223015h0001, 58,240,000 yen
- 3: Grants-in-Aid for Scientific Research (C): Shintani T.: Mechanism of induction of squamous cell differentiation by HBp17/FGFBP knockout. 22K10147, 900,000 yen
- 4: Foundation for Promotion of Cancer Research, subsidy for cancer research: Ando T.: Development of novel cancer therapy using peptide targeting AXL. 1,000,000 yen
- 5: The Hiroshima University Fund “Nozomi H Foundation” subsidy for the promotion of cancer treatment research: Ando T.: Exploring novel nuclear YAP-interacting molecule in cancer and application to the treatment. 1,000,000 yen (for 2 year)
- 6: Ministry of Education, Culture, Sports, Science and Technology (MEXT) “Strategic Professional Development Program for Young Researchers” World-Class Researcher Development Through Regional Collaboration, HIRAKU-Global Researcher (3rd Cohort): Ando T.: 2,000,000 yen (for start-up and travel fees)
- 7: Astellas Research Foundation: Yoshimoto T.: Chronic Inflammatory Mechanisms Affected by Osteocytes., 2,000,000 yen (for 2years)
- 8: The Naito Foundation: Yoshimoto T.: Elucidation of the mechanism of chronic inflammation by osteocytes., 3,000,000 yen (for 2years)
- 9: Collaboration with Research Center for Biomedical Engineering: Yoshimoto T: The Effects of bone tissue on astrocyte using microfluidic devices., 150,000 yen
- 10: Kaken (Grant-in-Aid for Research Activity Start-up): Yoshimoto T: Molecular Elucidation of Immune Regulation by Osteocytes Provides the Basis for a New Strategy for Periodontal Disease Treatment., 2,200,000 yen (for 2years)
- 11: Collaboration with Research Center for Biomedical Engineering: Yoshimoto T: The Effects of bone tissue on astrocyte using microfluidic devices., 300,000 yen

- 12: Grants-in-Aid for Early-Career Scientists: Obayashi N.: Elucidation the mechanism of taste alteration induced by irinotecan, an anticancer drug focusing on salty taste. 22K17207, 1,560,000 yen

(5) Academic Awards, etc.

- 1: Okamoto K. (PhD candidate from the department of oral oncology, supervised by Dr. Ando): Oral Presentation Award, The 68th Congress of the Japanese Society of Oral and Maxillofacial Surgeons (Osaka), 2023.
- 2: Kataoka N. (Dental resident, will be a Ph.D. candidate from April, 2024): Encouragement Award, The 142nd Academic Meeting of Chugoku-Shikoku Branch of the Japanese Society of Pathology (Hiroshima), 2023.
- 3: Yoshimoto T. Travel grant Award, Plenary poster award, The 33RD AUSTRALIAN AND NEW ZEALAND ANNUAL SCIENTIFIC MEETING (ANZBMS) , 2023.

(6) Patent

- 1: 2023-45232 Periodontal Tissue Regeneration Material : Kajiiya M, Yoshii H, Yoshino M, Maekawa T, Torii Y, Takai H : Hiroshima University/Cyfuse Biomedical K.K.

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Central Clinical Divisions

Dental Laboratory

(2) Staff and Students

Director of Dental Technicians Section : Hiroki Nikawa (Prof.)
 Assistant Chief Dental Technician : Ryoji Kato
 Dental Technician : Yoshihiro Ohtani, Shogo Iwaguro, Yukihiro Takayama,
 Mai Ohtaku, Momoyo Higo, Haruya Kawabata

(2) Main Research Activities

- 1: Management of the patient's information by the use of implanted devices in the denture.
- 2: Radioprotective prostheses for irradiation therapies
- 3: Clinical analysis of superstructure of implant.
- 4: Esthetic dentistry
- 5: Accuracy of castings
- 6: Information processing in the dental laboratory
- 7: Study on dental composite materials for esthetic

(3) Research Achievements

D) Original Papers (including Case Reports)

- 1 : An in vitro study of digital impressions and three-dimensional printed models of orbital defects using mobile devices and monoscopic photogrammetry : Kosei Tabira, Riho Kawaguchi, Yuichi Mine1, Shogo Iwaguro, Tzu-Yu Peng, Yumi Tsuchida, Yukihiro Takayama, Shota Okazaki, Tsuyoshi Taji, Takeshi Murayama : Journal of Oral Science, 65(2), 127-130, 2023.
- 2 : In vitro study of optimal removable partial denture clasp design made from novel high-performance polyetherketoneketone : P.-W. Peng, M.-S. Chen, T.-Y. Peng, P.-C. Huang, H. Nikawa, W.-F. Lee* : Journal of Prosthodontic Research (JPR), 2023, accept (2023/12/17).
- 3 : Comparative analysis of the retention force and deformation of PEEK and PEKK removable partial denture clasps with different thicknesses and undercut depths : W.-F. Lee, M.-S. Chen, T.-Y. Peng, P.-C. Huang, H. Nikawa, P.-W. Peng* : Journal of Prosthetic Dentistry (JPD), in press (2023/12/5).

E) Review

- 1 : Innovation from Dentistry: The Inside Story From Research to Patents, Licenses, and Royalty Income : Hiroki Nikawa, Tsuyoshi Taji, Yuichi Mine, Saiji Shimoe, Masato Kaku, Takeshi Murayama : J of Oral Tissue Engin, Accepted

C) Publications

- 1: Development of Etak, an ethoxysilane-based immobilized antibacterial and antiviral agent : Hiroki Nikawa and Takemasa Sakaguchi : Biomedical Engineering (in press)

D) Other Publications

E) Presentation at Scientific Meeting

F) Symposium and special lecture

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

(5) Academic Awards, etc.

(6) Patents

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Central Clinical Divisions

Dental Hygiene Section

(1) Staff and Students

Director of Dental Hygiene Section: Koji Oota

Section leader of Dental Hygiene Section: Miyuki Nakaoka

Section sub-leader of Dental Hygiene Section: Miho Okada

Chief Dental Hygienist: Kanako Yano (Till March), Maiko Kawagoe, Natsumi Ino

Dental Hygienists: Atsuko Wakita, Kanako Yano, Tomoko Tokikazu, Chika Kozono (Till January), Yuika Mizota (Till January), Kana Dainobu, Fumi Tokui (Till March), Mariko Nakamura (Till July), Haruka Yasuda, Hina Nitanda (Till March), Yasuko Yokoyama, Yuka Kurozumi (Till March), Kotone Tanabe, Kiho Naganuma, Fuki Matsuda, Ruri Miyano, Su chengyih, Honami Kitazaki (From April), Nayu Ishimaru (From April), Yuki Kuwabara (From April), Miho Sakai (From June), Otoha Kawahara (From October), Sari Nakamura (From November), Yurina Nakamura (From December)

Dental Assistants: Saori Nagamine, Ayako Masuda, Miyoshi Yudai (From October)

(2) Main Research Activities

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Relationship between CD4+ T-cell counts at baseline and initial periodontal treatment efficacy in patients undergoing treatment for HIV infection: A retrospective observational study: Shintani T., Okada M., Iwata T., Kawagoe M., Yamasaki N., Inoue T., Nakanishi J., Furutama D., Takeda K., Ando T., Nakaoka M., Mizuno N., Fujii T., Kajiya M., Shiba H. J Clin Periodontol, 50 (11): 1520-1529, 2023.

B) Review

C) Publications

D) Other Publications

E) Presentations at Scientific Meetings

- 1: Examination of the relationship between the number of CD4+ T cell in HIV-infected individuals and the effect of basic periodontal treatment: Okada M., Takeda K., Furutama D., Nakaoka M., Kajiya M., Shiba H.: The 66th Spring Meeting of the Japan Society of Periodontology (Kagawa), 2023.
- 2: Oral health management for patients with somatic symptom disorder and delusional disorder: Yano K., Doi M.: The 38th Meeting of the Japanese Society of Psychosomatic Dentistry (Koriyama), 2023.
- 3: Utilization of intraoral scanner to an oral hygiene state evaluation in the implant maintenance: Kawagoe M., Doi K., Munenaga C., Oue H., Umehara H., Kubo T.: The 53rd Annual Meeting of the Japanese Society of Oral Implantology In Sapporo (Sapporo), 2023.
- 4: Evaluation of oral function and oral environment in hemophilia patients taking anti-HIV drugs: Okada M., Shintani T., Kawagoe M., Iwata T., Yamazaki N., Fujii T., Shiba H.: The 37th Annual Meeting of the Japan AIDS Society (Kyoto), 2023.
- 5: The oral care during the perioperative period of tongue cancer under HDL treatment: Ino N., Tokikazu T., Naganuma K., So S., Nishi H., Konishi M., Kakimoto N., Nakaoka M., Kawaguchi H., Oota K.:

- The 18th Annual Meeting of the Japan Society for Dental Hygiene (Shizuoka), 2023.
- 6: Result of myofunctional treatment with orthodontic treatment for the patient with Noonan syndrome: Kazuyo A., Yuki A., Miho O., Sachiko Y., Sakura Y., Ayaka N., Kotaro T: The 21st Oral Myofunctional Treatment (MFT) Academic Conference (Tokyo), 2023.
 - 7: Evaluation of oral function and oral environment in hemophilia patients taking anti-HIV drugs: Okada M, Shintani T., Kawagoe M., Iwata T., Yamazaki N., Fujii T., Shiba Ha.: The 25th Annual Meeting of the Japan Society of HIV Dentistry (web), 2023.

F) Lecture

- 1: Oral health management in Disabled Dentistry: Tokikazu T.: Hiroshima prefecture regional medical care nursing comprehensive securing business Education at Hiroshima Oral Health Center Research function development project Hiroshima prefecture dental health service provision difficult person consultation physician training work shop (Hiroshima), 2023.
- 2: Oral health management in Special care Dentistry: Yano K.: Hiroshima prefecture regional medical care nursing comprehensive securing business Education at Hiroshima Oral Health Center Research function development project Hiroshima prefecture dental health service provision difficult person consultation physician training work shop (Hiroshima), 2023.
- 3: HIV Disease and Dentistry: Okada M.: AIDS practitioner Training Course for Nurses (Hiroshima), 2023.
- 4: HIV Disease and Dentistry: Kawagoe M.: AIDS practitioner Training Course for Nurses (Hiroshima), 2023.
- 5: Oral Care: Yano K.: Oral rehabilitation society Advance Course1(Busan, Korea), 2023.
- 6: Oral Care: Yano K.: Oral rehabilitation society Advance Course2(Busan, Korea), 2023.
- 7: The way of working to enjoy as dental hygienist, business of dental hygienist in university hospital: Ino N.: Symposium of Hiroshima university Center for Dental Hygienists Education and Training (Hiroshima), 2023.
- 8: Actual infection prevention measures in dental treatment: Nakaoka M.: 18th Hokkaido HIV/AIDS Dental Care Study Group (also) AIDS Prevention Foundation HIV Medical Seminar (Hokkaido), 2023.

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

(5) Academic Awards, etc.

(6) Patents

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Central Clinical Facilities

Division of Medical Informatics and Systems

(1) Staff and Students

Director : Yoshiyuki Okada(Co.)
Assistant Professor : Masahiko Ohtsuka (Co.), Takeshi Tanaka(Co.)
Technician : Tokue Yanagida (Co.)

(2) Main Research Activities

- 1: Research on development and management of healthcare and welfare information system.
- 2: Research on Medical Informatics.

(3) Research Achievements

A) Original Papers (including Case Reports)

- 1: Tanaka T et al.: A measurement of Japanese vocabulary and kanji difficulties on national and public university hospital websites: Japan Journal of Medical Informatics, 42 (Suppl.): 1411-1414, 2023.

B) Review

None.

C) Publications

None.

D) Other Publications

None.

E) Presentation at Scientific Meeting

- 1: Tanaka T et al: An attempt at ICF classification of in-hospital welfare consultation content: The 24th Meeting of Japan Society for Low-vision Research and Rehabilitation (Tokyo, Japan), 2023.
- 2: Fujita R, Tanaka T, Kiuchi Y, Narai A: Outcomes and user trends of intermediate type outreach at Hiroshima University Hospital Ophthalmology Department: The 31st Conference for Researches on Rehabilitation of Visually Impaired (Kanazawa, Japan), 2023.
- 3: Fujita R, Y, Kiuchi Y, Tanaka T, Ando H, Narai A: Building a clinical path for infant and small children referred to ophthalmology from infant health checkups The 23rd Annual Meeting of the Japan Society for Clinical Pathway (Saitama, Japan), 2023.
- 4: Tanaka T et al.: A measurement of Japanese vocabulary and kanji difficulties on national and public university hospital websites: The 43rd Joint Conference on Medical Informatics (Kobe, Japan), 2023.

F) Special lectures in academic meetings

None.

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

- 1: MEXT KAKENHI Grant-in-aid for Scientific Research(C), No. 21K12594. 400 thousand JPY.

(5) Academic Awards, etc.

None.

(6) Patents

None.

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