

ASIA-PACIFIC CONFERENCE in FUKUOKA 2017

International Symposium on Oral Education and Research in Kitakyushu



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Asia-Pacific Conference in Fukuoka 2017

International Symposium on Oral Education and Research in Kitakyushu

Kyushu Dental University, Kitakyushu, Japan
May 11th, 2017

Organizing Committee:

Tatsuji Nishihara, President
Shin-ichi Masumi
Katsumi Hidaka
Kazuhiro Tominaga
Tetsuro Konoo
Kenshi Maki
Chiaki Kitamura
Keisuke Nakashima
Naoki Kakudate
Yukiko Takahashi

Organized by Kyushu Dental University

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Welcome message



Tatsuji Nishihara, D.D.S., Ph.D.
Chairman and President
Kyushu Dental University

Welcome to Asia-Pacific Conference in Fukuoka 2017. It is our great honor and pleasure to organize the International Symposium on Oral Education and Research in Kitakyushu. I am inviting you to participate in this exciting conference that successfully started four years ago to obtain valuable information on Oral Education and Research of foreign countries.

We are delighted to announce the special lectures in this conference. Present state of dental education in Myanmar will be introduced by the invited distinguished speakers, Prof. Shwe Toe, Rector of University of Dental Medicine, Yangon, Prof. Sun Sun Win, Rector of University of Dental Medicine, Mandalay and Dr. Khin Maung, Ministry of Health and Sports, Myanmar. We are very happy to hear on dental education and oral health projects in Myanmar.

We are planning to have a session for poster presentation and invigorating discussion about the achievement of education and scientific research in the distinguished collaboration between dentistry, medicine and biotechnology in Kitakyushu, and international exchange program among Asian countries. It is our wish to flash an innovative idea into your mind to build true worldwide partnership.

We thank you in advance for your interest and active participation, and look forward to welcoming you to the Asia-Pacific Conference in Fukuoka 2017.

Program

12:30 Registration

12:45 Welcome Address and Opening Remarks

Prof. Tatsuji Nishihara (Chairman and President of Kyushu Dental University)
“Innovative Dental Education in Kyushu Dental University”

13:05 - 15:45 International Symposium

**“Dental Education for Comprehensive and Public Health Dental Care
in Asian Countries”**

Chair: Dr. Ryo Hasegawa, Prof. Naoki Kakudate

Dr. Khin Maung (Ministry of Health and Sports, Myanmar)

**“The importance of the support of Japan
in the Oral Cancer and the oral care of Myanmar”**

Prof. Sun Sun Win (University of Dental Medicine, Mandalay, Myanmar)

**“Caries Experience and Preventive Measures Among Myanmar children,
Attending the Department of Paediatric Dentistry, UDM”**

Prof. Shwe Toe (University of Dental Medicine, Yangon, Myanmar)

“Fibrosarcoma of the Maxilla: A Diagnostic Dilemma”

Prof. Toshihiro Ansai (Kyushu Dental University, Japan)

“Current Oral Health Status in Myanmar and Future Perspectives”

Coffee Break

15:55-16:50 Poster Sessions

15:55- 16:40 Young Investigator Award Competition

16:50-17:00 Award Ceremony

17:00- Closing Remarks

Prof. Katsumi Hidaka (Vice-President of Kyushu Dental University)

18:00 Banquet

Special Lecture



Innovative Dental Education in Kyushu Dental University

Tatsuji Nishihara, D.D.S., Ph.D.
Chairman and President
Kyushu Dental University

It is our great honor and pleasure to organize the International Symposium in Kitakyushu that successfully started four years ago to exchange valuable information on Oral Education and Research of foreign countries.

Recently, it was reported that periodontopathic bacteria in biofilm can act as reservoirs for medically important pathogens that cause systemic disorders. Unknown virulence factors of periodontopathic bacteria may induce not only periodontal diseases but also general disorders, such as cardiovascular diseases, respiratory diseases, diabetes mellitus, adverse pregnancy outcomes, and osteoporosis. Increased knowledge of the virulence factors of periodontopathic bacteria may provide insights into the mechanisms by which they cause systemic disorders. Further, current findings on dental research would create a new environment for the development of dental education.

In the opening remark, I would like to talk about an innovative method concerning outcome based education in our university to cultivate new talents in dental medicine through dental-engineering collaborative investigation in Kitakyushu.

Brief CV

Professor Tatsuji Nishihara

EDUCATION

1975-1981 School of Dentistry, Kyushu Dental College, Kitakyushu, Japan.
Received D.D.S.

1982-1986 Graduate School, School of Dentistry, Tokyo Medical and Dental University,
Tokyo, Japan. Received Ph.D.

EMPLOYMENT

1986-1990 Researcher, Department of Dental Research, National Institute of Health,
Tokyo

1990-1992 Senior Researcher, Department of Dental Research, National Institute of
Health, Japan

1990-1992 Postdoctoral fellow at the Department of Medicine, Division of Endocrinology
and Metabolism, The University of Texas Health Science Center at San
Antonio, Texas, USA

1993-1997 Laboratory Chief, Laboratory of Periodontology, Department of Oral Science,
National Institute of Health, Tokyo

1997-1999 Laboratory Chief, Laboratory of Periodontology, Department of Oral Science,
National Institute of Infectious Diseases, Tokyo

1999-2004 Chairman and Professor, Department of Oral Microbiology, Kyushu Dental
College

2004-present Chairman and Professor, Department of Health Promotion, Division of
Infections and Molecular Biology, Kyushu Dental College

2006-2012 Dean, School of Dentistry, Kyushu Dental College

2012-2013 Chairman and President, Kyushu Dental College

2012-present Chairman and President, Kyushu Dental University

International Symposium



The importance of the support of Japan in the Oral Cancer and the oral care of Myanmar

Dr. Khin Maung
B.D.S, Dip.D.Sc, M.D.Sc,
Department of Medical Services,
Ministry of Health and Sports, Myanmar

Nowadays, Cancer causes almost 1 in 6 death globally. Early diagnosis can greatly reduce this burden. Oral cancer is high incidence rate in Myanmar due to bad oral habits. With the culture backbone, smoking and non-smoking behaviours cause Leukoplakia, Lichen Planus, Oral submucous fibrosis which are like precancerous lesions and conditions. Concerning with early detection of Oral Cancer, we can see, feel and examine macroscopically and easily find out the pathology. The Competency and facilities of Myanmar in oral cancer management are shortage in every aspect and we need and hope a lot of supports from outside Myanmar especially from Japan. Japan is a leading academic and clinical oriented Source who sharing supporting and cooperating hands to developing countries.

Oral health care in Myanmar is well established with Japan back up and most of Myanmar dentists are trained in Japan. Thus why the importance of the supports from Japan in oral cancer and the oral care of Myanmar is essential for future develop of oral health care in Myanmar. Oral cancer management is based on multisectorial approach and we need to be evently and equally develop in all sectors.

Oral cancer stood at the 6th position in male and 10th in female. Seen to be increasing trend of oral cancer in Myanmar ,oral caner is within top 5 position now and it is very important issue for oral health care .

To give the good quality health care and to upgrade the knowledge of oral health care persons are essential for future development of Myanmar health care and all of these are totally depended upon good cooperation and partnership. Myanmar hopes Japan will support and fulfill the desires of peoples of Myanmar.

Brief CV

Dr. Khin Maung

QUALIFICATIONS

- 1993 B.D.S. (University of Dental Medicine, Yangon)
- 1998 Dip D.Sc. (University of Dental Medicine, Yangon)
- 2001 M.D.Sc. (University of Dental Medicine, Yangon)
- 2008 Training for dental public health in India
- 2009 Training for Oral and Maxillofacial Surgery in Japan
- 2009 Training for Oral and Maxillofacial Surgery in Germany

WORKING EXPERIENCE

- 1995-1997 Madaya Township Hospital
- 1997-2006 Mandalay General Hospital
- 2006-2015 Consultant of Dental Surgeon Nay Pyi Taw General Hospital
- 2015-Now Chief Dental Offices, Department of Medical Services, Ministry of Health and Sports

International Symposium



Caries Experience and Preventive Measures Among Myanmar children, Attending the Department of Paediatric Dentistry, UDM

Prof. Sun Sun Win
B.D.S, M.D.Sc, Dr.D.Sc, Dip in Med, Ed
Rector, University of Dental Medicine, Mandalay
Myanmar

Caries is still common oral disease in Myanmar children and its prevalence is also high including Early Childhood Caries (ECC). Although the etiology of caries is multifactorial in nature, the detrimental traditional habit is also considered as common cause of dental caries in Myanmar. The nocturnal breast feeding was also found to be significantly associated with ECC in one of my departmental research. The complications from untreated caries were frequently found in my department. It can deteriorate the quality of life of children. To provide dental health education, usage of fissure sealants and fluoride will be discussed as caries preventive measures.

Brief CV

Professor Sun Sun Win

EDUCATIONAL BACKGROUND

B.D.S (Yangon), M.D.Sc (Yangon), Dr. D.Sc (Paediatric Dentistry), Dip in Med,Ed

CURRENT POSITION

Rector, University of Dental Medicine, Mandalay

WORKING EXPERIENCE

1988-1991 Dental Officer, Department of Maxillo-facial surgery, Yangon General Hospital

1992-1996 Demonstrator, University of Dental Medicine (Yangon)

1996-1998 Assistant Lecturer

1998-2002 Lecturer

2002-2004 Post-graduate lecturer, University of Dental Medicine (Mandalay)

2004-2008 Professor/ Head, Department of Pediatric Dentistry , University of Dental
Medicine (UDM), Mandalay

2008-2015 Professor/ Head, Department of Pediatric Dentistry , University of Dental
Medicine (UDM), Yangon

2015-Present Rector, University of Dental Medicine, Mandalay

International Symposium



Fibrosarcoma of the Maxilla: A Diagnostic Dilemma

Prof. Shwe Toe

B.D.S ., M.D.Sc ., Dr.D.Sc ., F.I.C.D., Dip.Med.Edu
Rector, University of Dental Medicine, Yangon
Myanmar

Fibrosarcoma is a malignant mesenchymal neoplasm of fibroblasts that rarely affects the oral cavity and can cause local recurrences or metastasis. In this case, fibrosarcoma in anterior area of maxilla in a 13 year- old boy is described. Clinical examination revealed a growth on left maxillary canine and first premolar region extending on the buccal and palatal side. The pedunculated mass was 3.5 x 2 cm in diameter on buccal side and 1 x 2 cm in diameter on palatal side. The lobulated mass on palatal side was detected. There was no pulsation and no ulceration on surface of mass. Clinically, adjacent teeth around the growth had no mobility but severe halitosis was observed. An Orthopantomograph(OPG) revealed widening of periodontal ligament space at left maxillary lateral incisor and canine. There was no remarkable bone and root resorption. These findings led to the provisional diagnosis of pyogenic granuloma or fibrous epulis. To determine the nature of oral mass, incisional biopsy was done under profound local anaesthesia and biopsy was sent to laboratory for histopathological diagnosis. Microscopically, oral epithelium showed hyperchromatic nuclei, an increased nuclear cytoplasmic ratio and discontinuation in some areas. The connective tissue stroma was invaded by sheets of neoplastic spindle-shaped fibroblasts in the form of herringbone pattern, characteristic of a fibrosarcoma. Based on these findings, the histopathological diagnosis of a fibrosarcoma was made.

Brief CV

Professor Shwe Toe

CURRENT POSITION

Rector, University of Dental Medicine, Mandalay

QUALIFICATION

B.D.S ., M.D.Sc ., Dr.D.Sc ., F.I.C.D., Dip.Med.Edu ., Cert. in Advanced Training in Oral Pathology (TMDU)., F.I.C.C.D.E

CURRENT POSITION

Rector, University of Dental Medicine, Yangon, Myanmar

EMPLOYMENT

1988-1992 Civil Dental Surgeon, 300-bedded General Hospital, Mawlamyaing, Mon State

1992-1995 Clinical demonstrator, UDM (Yangon)

1995-1998 Assistant Lecturer, UDM (Yangon)

1998-2001 Lecturer, UDM (Yangon)

2001-2004 Postgraduate Lecturer/Head, UDM (Mandalay)

2004-2013 Professor/Head, UDM (Mandalay)

2013 January-2015 February-Rector (UDM- Mandalay)

2015 February to present -Rector, UDM (Yangon)

FIELD OF INTEREST

Oral cancer

SPECIAL STUDIED

Immunohistochemistry

MEMBERSHIP OF ACADEMIC SOCIETIES

President, IADR (Myanmar Section)

President, JDAM (Japan Dental Alumni Myanmar)

Member (Myanmar Dental Association)

Member (Myanmar Academy of Medical Science)

International Symposium



Current Oral Health Status in Myanmar and Future Perspectives

Toshihiro Ansai,
D.D.S., Ph. D.

Professor, Kyushu Dental University
Japan

Since 2016, we have been working in collaboration with the Myanmar Ministry of Health and Sports, as well as the University of Dental Medicine, with locations in Mandalay and Yangon, to promote oral health in the younger generation. In August 2016, with the assistance of Drs. Hasegawa and Tosaka, ADVJ members, a preliminary oral survey of children aged 3 to 13 years old was performed at 10 elementary schools (including kindergartens) in the Naypyidaw area, with oral health data eventually obtained from 548 subjects. Our findings revealed higher dft scores of 5 or more in children aged 3 to 6 years, which was thought to be similar to those in Japan in the 1980s. Furthermore, oral health care instruction including toothbrush use was given to these children, as well as toothbrush and toothpaste as gifts, in collaboration with Dr. Khin Maung, chief director of the Ministry of Health and Sports, Myanmar, and hospital staff including community dentists.

Our findings from this survey indicate that the oral health status and oral health behavior such as a daily toothbrush habit are poor in Myanmar children. For example, a kindergarten girl aged 5 years old brought a toothbrush with her, but when asked if it is her own toothbrush, she stated that it was shared among her family members. As for the causes of the current situation, differences in socio-economic status among local communities will need to be considered. On the other hand, we think that noticeable improvements will be seen in the near future, as there seems to be a strong passion held by children and school teachers, as well as others including officials for oral health promotion in their country.

With this presentation, we would like to show the present situation in Myanmar with several photos and a video, and also explain some of the problems to be faced in regard to oral health there. Furthermore, we will discuss the strategies our team will employ for oral health promotion.

Brief CV

Professor Toshihiro Ansai

EDUCATION

1982-1988 Kyushu Dental College, Japan

1988-1992 Graduate School of Dentistry, Kyushu Dental College

1992- Ph.D., Kyushu Dental College, Japan

EMPLOYMENT

1992-1998 Assistant Professor, Dept. of Preventive Dentistry, Kyushu Dental College

1995-1996 Visiting Professor, Dept. of Biochemistry and Molecular Biology, College of
Medicine, University of South Alabama, USA

1998-2007 Associate Professor, Dept. of Preventive Dentistry, Kyushu Dental College

2007-2010 Associate Professor, Division of Community Oral Health Science

2011-present Professor, Division of Community Oral Health Development, Kyushu
Dental University

AWARDS

1998- Unilever Travel Award (IADR Hatton Award Nominees)

2001- Research Award (The Japanese Society for Dental Health)

2006- LION Award (The Japanese Society for Dental Health)

Poster Presentations

*Young Investigator Award Competition

#1*

Maldevelopment of the submandibular gland in the Apert syndrome mouse model

Kojiro Yamaji, Jumpei Morita, Kaori Gunjigake, Momotoshi Shiga and Tatsuo Kawamoto

Division of Orofacial Functions Orthodontics, Kyushu Dental University

Background: Apert syndrome is characterized by craniosynostosis and severe bony syndactyly of the hands and feet. The cause of Apert syndrome is a single nucleotide substitution mutation (S252W or P253R) in fibroblast growth factor receptor 2 (FGFR2). Clinical experience suggests increased production of saliva by Apert syndrome patients, but this has not been formally investigated. It is also known that FGFR2 signaling regulates branching morphogenesis of the submandibular glands (SMGs). The Apert syndrome mouse model (Ap mouse) used in this study carries the gain-of-function mutation in FGFR2 (S252W) found in 3/4 of Apert syndrome patients. Using this model, we investigated the role of FGFR2 in SMGs and analyzed the SMG pathology of Apert syndrome.

Methods: Ap mice, produced by mating *ACTB-Cre*^{+/+} mice with *Fgfr2*^{+/*Neo-S252W*} mice, were used as an experimental group and *ACTB-Cre*^{+/-} littermates were used as a control group. On day 1 after birth, mice were sacrificed and heads were embedded in paraffin. Sagittal sections were then cut, hematoxylin & eosin stained, and the SMGs observed. The number, the total area, and average area of lobules, and the proportion of parenchyma per unit area of SMGs (parenchyma occupancy rate) were measured using image analysis software (Image J). Statistical analysis was conducted with the Mann-Whitney U test and a P value of <0.05 was considered statistically significant.

Results: In Ap mice, the number of lobules was small and the average area of lobules and the parenchyma occupancy rate were large compared with controls. No significant difference between groups was observed in the total area of lobules.

Conclusions: Ap mice showed morphological changes in the SMGs, which are likely to be caused by gain-of-function of FGFR2, suggesting the possibility that epithelial cell proliferation is enhanced.

#2*

Identification of the binding region of NF- κ B-p65 on Smad4

Mariko Urata^{1,2}, Takuma Matsubara¹, Shoichiro Kokabu¹, Chihiro Nakatomi¹,
Min Zhang³, Shizu Hirata-Tsuchiya⁴, Chiaki Kitamura² and Eijiro Jimi¹

1Division of Molecular Signaling & Biochemistry, Kyushu Dental University,

2Division of Endodontics and Restorative Dentistry, Kyushu Dental University,

3Division of Oral Pathology, Kyushu Dental University,

4Department of Biological Endodontics Institute of Biomedical & Health Sciences, Hiroshima University

Bone morphogenetic proteins (BMPs) induce ectopic bone formation and osteoblast differentiation. Therefore, BMPs have been thought to be useful for local bone regeneration. However, the clinical application of BMPs has been limited because inflammation reduces the osteoinductive effect of BMPs, et cetera.

We recently reported that TNF α , produced during inflammation, reduces the effect of BMP and the main subunit of NF- κ B, p65 inhibits BMP signaling by blocking the DNA binding of Smad complex via an interaction with Smad4. Here, we determined the binding region of p65 on Smad4 to develop the peptide that enhances BMP-induced osteoblastogenesis by competitively blocking the binding of p65 on Smad4.

We firstly confirmed that p65-TA2 domain directly binds to Smad4 MH1 domain by GST-pull down assay using GST-tagged p65-TA2 (GST-TA2) and His-tagged Smad4-MH1 (His-MH1 (19-138)) proteins. To decide the exact binding region of p65 on Smad4 we synthesized the series of His-tagged Smad4-MH1 mutant proteins, His-MH1 (19-105) and His-MH1 (1-68). GST pull down assay revealed that GST-TA2 binds to His-MH1 (1-138) and His-MH1 (1-105), but not His-MH1 (1-68), indicating that p65 directly binds 37 amino-acid sequence of Smad4 from 69 to 105.

Inhibition of NF- κ B signaling is considered to be beneficial for bone formation. However, mice deficient in p65 are embryonic lethal, suggesting that the whole inhibition of the NF- κ B may result in life-threatening side effects. Thus, if we develop the inhibitor for the targeting of the interaction of p65 with Smad4, it would be helpful for BMP-induced bone formation without any serious side effects.

#3*

The role of BMP signaling in EMT of malignant melanoma

Masahiro Ogawa^{1,2}, Shoichiro Kokabu¹, Chihiro Nakatomi¹,
Takuma Matsubara¹, Seiji Watanabe² and Eijiro Jimi¹

1 Division of Molecular Signaling and Biochemistry, Kyushu Dental University

2 Division of Dental Anesthesiology, Kyushu Dental University

Malignant melanoma (MM), one of the most aggressive neoplasms, which can arise at oral mucosa, invades surrounding tissue and develops distant metastasis at an early stage. Epithelial-mesenchymal transition (EMT) is the process by which cells lose epithelial characteristics and acquire mesenchymal phenotypes, associated with the invasion and metastasis of many kinds of carcinoma including MM. Bone morphogenetic proteins (BMPs) are multifunctional cytokines, originally discovered as factors inducing ectopic bone formation, that regulate essential cellular events such as proliferation, differentiation, and apoptosis. BMPs are also known to be involved in EMT and are one of the autocrine factors in MM. Thus, in this study, we examined the role of BMPs in EMT of mouse MM cell line, B16 cells. BMP2 or BMP4 treatment induced the morphological change of B16 cells into mesenchymal-like shapes in a dose dependent manner. The overexpression of constitutively active form of BMP receptor type IA also induced these morphological changes. In contrast, pretreatment with LDN-193189, a type I BMP receptor inhibitor, prevented BMP-induced morphological changes. B16 cells treated with BMP2 showed increased mRNA levels of mesenchymal marker genes such as N-cadherin and Vimentin and decreased expression of epithelial marker genes such as E-cadherin. We next examined the effect of BMP2 on cell invasion and migration. B16 cells were plated in the upper chamber and BMP2 or control vehicle was placed in the lower chamber. BMP2 increased the cell number migrated to the lower surface. Furthermore, production and activity of the major gelatinase, MMP-9, increased in B16 cells treated with BMP2. Taken together, BMP signaling induces EMT of B16 MM cells and in the results, the cells acquired a migration capacity and increased the production of MMP9, which are important processes in the invasion and metastasis of carcinogenesis.

#4*

Promoter analysis for mouse T1R1 amino acids (umami) receptor gene in C2C12 cells

Yuki Hirata¹, Takashi Toyono², Ryuji Hosokawa¹ and Yuji Seta²

1 Department of Oral Reconstruction and Rehabilitation, Kyushu Dental University

2 Division of Anatomy, Kyushu Dental University

The heterodimer of T1R1 and T1R3 have a role in the detection of amino acids (umami) in taste tissue. These receptors were also expressed throughout diverse organ systems, including digestive organs, muscle tissues, etc. and inferred to detect extracellular amino acids. Previously, we identified the two cis-regulatory elements (CRE1 and CRE2) in the upstream region of mouse T1R1 gene. However, what kinds of the transcription factors bind to these sequences and involved in the transcriptional regulation of mouse T1R1 gene have not been elucidated. In this study, we examined the transcription factors bind to these cis-regulatory sequences by the improved DNA affinity precipitation assay (DAPA) and MALDI-TOF MS (matrix assisted laser desorption ionization-time of flight mass spectrometer). DAPAs were performed using the biotinylated double stranded DNAs corresponding to these cis-regulatory sequences. Each DNA was incubated with nuclear extract from 3 days differentiated C2C12 cells. DNA-protein complexes were recovered with Tamavidin-2 REV magnetic beads. DNA-protein complexes were eluted competitively using 2mM biotin solution. These eluted proteins were denatured and analyzed by SDS-PAGE. The two specific proteins were detected as 30- and 60-kDa bands by use of the CRE2 DNA. MALDI-TOF MS analysis identified the 30- and 60-kDa proteins as fructose-bisphosphate aldolase A and T-box transcription factor Tbx3, respectively. Chromatin immunoprecipitation assays confirmed that Tbx3 binds to the CRE2 region in C2C12 cells. These results show that Tbx3 may play a role in the transcriptional regulation of T1R1 gene.

#5*

Zoledronic acid regulates M1 macrophage polarization induced by lipopolysaccharides

Junya Kaneko^{1,3}, Hisako Hikiji², Toshinori Okinaga³, Wataru Ariyoshi³, Daigo Yoshiga¹,
Manabu Habu¹, Masaaki Sasaguri¹, Junpei Tanaka⁴, Osamu Sakaguchi⁴, Hiroki Tsurushima⁴,
Izumi Yoshioka⁴, Tatsuji Nishihara³ and Kazuhiro Tominaga¹

1 Division of Oral Maxillofacial Surgery, Kyushu Dental University

2 School of Oral Health Science, Kyushu Dental University

3 Division of Infections and Molecular Biology, Kyushu Dental University

4 Division of Oral Medicine, Kyushu Dental University

Objective: Zoledronic acid, one of bisphosphonate, is frequently utilized for the treatment of osteoporosis and bone metastasis in malignant tumors. However, the onset of medication-related osteonecrosis of the jaw (MRONJ) in the dental treatments has become the serious issues nowadays. We have reported that osteonecrosis can be induced by Zoledronic acid and lipopolysaccharide (LPS) in vivo, suggesting the involvement of Zoledronic acid with inflammation. Macrophages are divided into M1/M2 macrophages. It is well known that M1 macrophages are involved in the induction and exacerbation of inflammation. The purpose of this study is to investigate the effects of Zoledronic acid on M1-polarized THP-1 cells induced by LPS in vitro .

Material and Methods: Human monocyte-like THP-1 cells were differentiated into macrophage-like cells by phorbol 12-myristate 13-acetate , and then polarized to M1 macrophages by LPS. Cell viability was examined using WST-8 assay. The surface antigen of macrophage cells was confirmed by Flow cytometry. The gene expression was confirmed by real-time RT-PCR. The protein expression was detected by Western blotting and ELISA.

Results: The gene expression of IL-1 β was upregulated in LPS-treated THP-1 cell, and Zoledronic acid enhanced the expression of this molecule. Furthermore, we confirmed that Zoledronic acid enhanced the expression and secretion of mature IL-1 β in LPS-treated THP-1 cells by Western blotting and ELISA.

Conclusions: These results indicated that Zoledronic acid upregulated the expression of M1 macrophage marker induced by LPS, suggesting that Zoledronic acid have influence on inflammatory response.

#6*

Oral ulcerative mucositis induces pain via endothelin receptors

Tomotaka Nodai^{1,2}, Suzuro Hitomi², Chihiro Masaki¹, Misa Ito³,
Ryuji Hosokawa¹, Kentaro Ono² and Kiyotoshi Inenaga²

1 Division of Oral Reconstruction and Rehabilitation, Kyushu Dental University

2 Division of Physiology, Kyushu Dental University

3 Division of Orofacial Functions and Orthodontics, Kyushu Dental University

Objectives: Oral ulcerative mucositis (OUM)-induced pain disturbs eating, speaking and tooth brushing. However, pain mechanism underlying OUM has not been well understood. Endothelin-1 (ET-1) is involved in pain, but little study has examined effect of endothelin on orofacial pain. In the present study, we investigated whether ET-1 is involved in OUM-induced pain using various experimental methods.

Methods: Experimental OUM was developed on day 2 after topical treatment with 50% acetic acid in the labial fornix region of the inferior incisors in rats. The number of bacterial colony forming-units (CFUs) in the oral ulcer region was manually counted. ET-1-immunohistochemical staining was performed in oral mucosal section. Inflammatory mediators and ET-1 content were evaluated by ELISA assay. Pain related behaviors were evaluated in naive and OUM model. Bosentan, a nonselective ET receptor antagonist were administered into the tail vein. BQ-123, a ETA antagonist, and BQ-788, a ETB antagonist were also applied to the ulcer region with cotton swab.

Results: In OUM model, IL-1 β and bradykinin were up-regulated from day 1. Prostaglandin E2 and the bacterial loading were up-regulated from day 2 without significant changes on day 1. ET-1-immunoreactivity was enhanced around the ulceration and the ET-1 level was increased compared with day 0. ET-1 injection into the whisker pad skin induced evoked and mechanical pain in naive rats. In OUM model, spontaneous pain and mechanical allodynia were induced from day 2 and inhibited by bosentan. Furthermore, the spontaneous pain was inhibited by BQ-788 and the mechanical allodynia was inhibited by BQ-123 and BQ-788.

Conclusion: These results suggest that increment of ET-1 in oral ulcer region is involved in the induction of pain; spontaneous pain via ETB and mechanical allodynia via ETA and ETB. ET receptors are new target for pain relief of drug treatments in OUM.

#7*

Dexamethasone treatment affects fluid secretion from perfused mouse submandibular gland

Yuichiro Kusuda, Yusuke Kondo, Takashi Munemasa, Yuta Miyagi, Shintaro Tsuka, Taro Mukaibo, Chihiro Masaki and Ryuji Hosokawa

Division of Oral Reconstruction and Rehabilitation, Kyushu Dental University

It is known that dexamethasone induces dry mouth as a side effect, however, detailed mechanism is unknown. The purpose of this study was to evaluate the effect of dexamethasone on mouse submandibular gland (SMG) function. In this study, we used C57/B16J mice. In experimental group, mice were pre-treated with dexamethasone via drinking water (8 mg/L) for 3 or 6 weeks, while distilled water was fed control group. To assess salivary gland function, saliva secretion in response to muscarinic agonist carbachol (CCh: 0.3 μ M) with perfused SMG were evaluated. Expression of membrane proteins, Na⁺-K⁺-2Cl⁻ cotransporter (NKCC1), Transmembrane member 16A (TMEM16A), and Aquaporin5 (AQP5) were evaluated by immunohistochemistry. Intracellular Ca²⁺ levels were analyzed in fura2-loaded acinar cells. As a result, salivary secretion was significantly greater in the 3-week dexamethasone treatment group (167.0 μ L/10 min) than control (147.6 μ L/10 min). In contrast, salivation diminished in the 6-week dexamethasone treatment group (127.9 μ L/10 min) compared to the control (154.8 μ L/10 min). The expression of, NKCC1, TMEM16A, and AQP5 were confirmed in the control and 6-week dexamethasone treatment group. CCh-induced [Ca²⁺]_i was significantly less in the 3 and 6-week dexamethasone treatment group than control. In conclusion, although salivary secretion was affected by dexamethasone treatment, the effects were different between the treatment period. 3 week-treatment increased salivary secretion and 6 week-treatment decreased salivary secretion. It was suggested that decreased gland weight and diminished [Ca²⁺]_i increase might cause decreased saliva secretion in 6 week-treatment group.

#8*

Activin-A promotes RANKL-induced osteoclast differentiation

Tomonari Kajita^{1,2}, Wataru Ariyoshi¹, Toshinori Okinaga¹,
Sho Mitsugi², Kazuhiro Tominaga² and Tatsuji Nishihara¹

1 Division of Infections and Molecular Biology, Kyushu Dental University

2 Division of Oral and Maxillofacial Surgery, Kyushu Dental University

Osteoclast differentiation is dependent on growth factors, cytokines and hormones. Activin-A, a member of the TGF- β family is expressed in bone tissue. Although, involvement of the TGF- β family in osteoclastogenesis has been reported, the mechanism by which activin-A regulates osteoclastogenesis has not been fully elucidated. The aim of this study is to investigate the effects of activin-A on osteoclast differentiation in vitro. Bone marrow cells (BMCs), which were isolated from femurs and tibiae of 6-week-old male ddY mice were cultured with M-CSF (20 ng/ml) and RANKL (40 ng/ml) in the presence or absence of activin-A. For evaluation of osteoclast differentiation, cultured BMCs were fixed and stained with TRAP using a leukocyte acid phosphatase kit, and TRAP positive multinucleated cells were counted as an indicator of osteoclast number. To determine the assessment of mature osteoclast differentiation, we visualized the actin cytoskeleton of differentiated BMCs by rhodamin-phalloidin staining. To further substantiate the effect of activin-A on osteoclastogenesis. The expression level of mRNA encoding osteoclast-related genes (MMP9, TRAP, Oc-STAMP, NFATc1 and Cathepsin-K) were examined using real time RT-PCR. Activin-A significantly increased the differentiation of BMCs into osteoclast-like cells mediated by M-CSF and RANKL. Activin-A also significantly increased the number of well defined actin sealing ring formation and up-regulated their intensity. Consistent with these findings, the expression profiles revealed that osteoclast associated genes, including MMP9, TRAP, Oc-STAMP, NFATc1, and Cathepsin-K induced by M-CSF and RANKL, were significantly increased by activin-A. These results indicate that activin-A may promote osteoclast differentiation in BMCs. Further elucidation of the molecular mechanisms of activin-A in osteoclast formation and function will provide additional knowledge for preventing excessive bone resorption in both physiological and inflammatory conditions.

#9*

An attitude survey of dental hygienist students in Taiwan and Japan

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Hisako Hikiji¹, Sumio Akifusa¹ and Katsumi Hidaka¹

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Kyushu Dental University (KDU) and Kaohsiung Medical University (KMU) have been establishing agreements for students in 2013. In order to advance the global-minded dental education, it is important to understand the difference of dental situation in each country. One of the differences between the two countries is that Taiwan does not yet have a national dental hygienist system in place.

The aim of this study was to compare the attitudes of dental hygiene students in Japan and Taiwan to the dental hygienists and the student exchange program.

A total of 200 students from the School of Oral Sciences of KDU and the School of Oral Hygiene of KMU participated in a questionnaire survey from November 2016 to January 2017.

Although many KDU and KMU students thought that the student exchange program was necessary, KMU students were more active in participating in it. A significantly lower proportion of KDU students than KMU students were interested in working overseas in the future. A significantly higher proportion of KDU students than KMU students wanted to take advantage of knowledge learned at university and obtain a clinical dental-related job in the future. Many KDU and KMU students thought that Taiwan needs to establish a national license for dental hygienists.

KMU students seem to exhibit a global perspective as they were more active in the student exchange program and many wanted to work overseas in the future. One explanation for the significantly lower proportion of KMU students interested in a future dental-related clinical job may be the currently limited role of dental hygienists in clinical settings in Taiwan. Taiwan should establish a national license for dental hygienists to help them make full use of the knowledge learned at university and to advance dental care in Taiwan.

#10*

In vitro and in vivo effects of newly developed bioactive glass cements as a direct pulp capping agent

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Purpose: Recently, we developed new bioactive glass cements, NSY-222-N and NSY-222-S, a short setting time model, for pulp capping. In the present study, in vitro and in vivo effects of bioactive glass cements on dental pulp were analyzed.

Methods: In vitro, rat odontoblast-like cell line (KN-3) was cultured with the cement discs (NSY-222-N, NSY-222-S, Dycal[®], ProRoot[®] MTA (MTA)), and effects of cements on cell viability and ALP activity were examined. In vivo, the animal model of direct pulp capping was applied in upper first molar of Wistar rats. Exposed pulps were capped with each material. For histologic analysis, samples were dissected and fixed, decalcified, then serial paraffin sections were prepared. Sections were stained with Hematoxylin-eosin for histopathological observation.

Results and Discussion: In vitro, NSY-222-N, NSY-222-S, and MTA showed no significant differences of the cell viability and ALP activity in comparison with the control, whereas Dycal significantly suppressed the viability of the cell. These results indicate that NSY-222-N and NSY-222-S did not inhibit cell viability and differentiation. In vivo, all materials induced reparative dentin formation 4 days after pulp capping, and 14 days after the surgery, exposed site of dental pulp was covered with induced hard tissues, which was not bone but dentin-like. Vascularization, induction of odontoblast-like cells, and slight inflammation were also observed in all groups. These in vitro and in vivo results indicate that NSY-222-N and NSY-222-S did not have any toxic effects on the pulp tissue.

Conclusion: Present results suggest that the newly developed bioactive glass cements have biocompatibility as direct pulp capping agent.

#11

Evaluation of the Compliance and Sleep Quality of Oral Appliances Fabricated by Different Materials for Four Patients with OSAS: A Pilot Study

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Objective: The purpose of this study was to improve oral appliances (OA) to achieve high-level compliance in patients with OSAS.

Materials & Methods: Two types of OAs were fabricated based on the same therapeutic jaw position for four patients. Patient responses regarding sensation and sleeping conditions when each appliance was fitted were compared.

Results: Discomfort was greater for the soft-type appliance than for the hard-type appliance in the following patient-assessed variables: Ill-fitting; Difficulty closing lips; and Difficulty sleeping. Conversely, discomfort was greater for the hard-type appliance in the following variables: Difficulty wearing; and Teeth pain. Only one patient exhibited a complete match between results of sleep data and the type of OA that the patient wanted to continue using.

Conclusions: This study was conducted on a small population of four patients, so future research needs to target more patients and to collect sleep data prior to fitting the OA in order to clarify the properties of each of these two types of experimental OAs.

#12

Kyushu Dental University Global Scholarly Exchange program 2016 student report in Taiwan

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Kyushu Dental University (KDU) has established international student-exchange agreements on fostering global-minded human resources with educational institutions of dentistry, particularly in Asia. Based on this agreement, the Kyushu Dental University Global Scholarly Exchange (KDU-GSE) program has been conducted from 2015.

We participated in the KDU-GSE program on Kaohsiung Medical University, School of Oral Health Sciences, Taiwan, in September 17th to 23th, 2016. We had two main purposes to participate in this program, in order to recognize the difference in dental circumstances between Japan and Taiwan, and, know about work of dental hygienist in Taiwan.

We visited KMU Chung-Ho Memorial Hospital, and private dental office in Kaohsiung City. Since coverage of public insurance for the dental practice is quite small, it might be hard for some Taiwanese to receive general dental practice, such as periodontal treatment.

In dental office, we observed that the dental hygienists just assisted in dental examinations and treatments, but did not practice preventive care. The restriction of dental hygienist work seemed to cause burden of dentists. These lines of our observations lead our curiosity to know dental circumstances in other countries.

Participation in KDU-GSE for Taiwan made expand our field of view and draw our future images as dental hygienist.

#13

Application of neutral electrolyzed water to denture cleaning for the aged living in long-term care health facilities

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Several types of electrolyzed water have been widely used in clinical dentistry because of their high bactericidal activities and low running cost. We reported that they showed sufficient bactericidal efficacies for disinfection of dental instruments, impression and denture. It was also reported that neutral type is the most appropriate for use in dental practice from the point of no decalcification of enamel and no or little metallic corrosion unlike strong acid type. In the present study, usefulness of neutral electrolyzed water for the improvement in oral environment of denture wearers living in long-term care health facilities was examined in terms of disinfection effect on denture.

Neutral electrolyzed water (NW) was prepared using tap water containing 5% sodium chloride by an electrolysis apparatus. Before and after the ultrasonic cleaning in NW, numbers of surviving bacteria on the surface of dentures were examined for 36 dentures out of 20 subjects by ATP tester. This clinical experiment was conducted by the approval of the Research Ethical Review Committee of Kyushu Dental University.

Only 2-min treatment in NW removed $66\pm 28\%$ of the surviving bacteria from the surface of dentures. This large variation was due to individual differences in daily denture cleaning by subjects themselves and/or their careworkers. After treatment, 9 dentures out of 36 were removed more than 90% of the surviving bacteria, especially one denture was removed almost completely. On the other hand, 4 dentures were removed less than 30%. However, more than 95% of the bacteria were also removed from these dentures with severe accumulation of plaque and residue of foods by brushing and once or twice additional ultrasonic cleaning in fresh NW.

It was suggested that the denture cleaning with neutral electrolyzed water under appropriate condition were effective for the oral environmental improvement of the aged requiring long-term care.

#14

Super Global High School (SGH) program at Meiji Gakuen High School

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The Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT) initiated its Super Global High School (SGH) program in 2014. This program aims to help senior high school students acquire communication abilities and international acculturation, in addition to social awareness and a more in-depth education. The program ultimately aims to enable students to become global leaders in a rapidly globalizing future. As a part of this effort, Kyushu Dental University has provided a dental epidemiology course for senior high school students at Meiji Gakuen High School.

In the last academic year, 2016, six second grade students took this elective course. The students' purpose was to consider the difference in consciousness concerning oral health between Japanese and American high school students. First, they created questionnaire item based on their own hypothesis, and conducted the questionnaire survey for Japanese and American high school students. Then, they performed data analyses and international comparisons. This process enhanced not only the students' global perspectives, but also their logical and critical thinking abilities.

#15

Periodontal pocket healing after scaling and root planing associated with the initial decrease ratio of interleukin-1 β in gingival crevicular fluid

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There are few reports comprehensively analyzing inflammatory cytokines in gingival crevicular fluid (GCF) from chronic periodontitis patients before and after scaling and root planing (SRP). The present study investigated the effect of SRP on the expression of inflammatory cytokines in GCF from patients with chronic periodontitis, in relation to clinical parameters.

Twenty patients were enrolled in the present study. Probing pocket depth (PPD) was examined at the first visit, and before and after SRP. Total PPD (TPPD) was calculated as the sum of PPDs at six sites per tooth. GCF samples were also collected before and after SRP. The levels of 40 inflammatory cytokines in GCF were measured with antibody array. The correlation of change in the expression of these cytokines with the change in PPD and TPPD after SRP were assessed by single and multiple regression analyses.

SRP improved PPD and TPPD, while there were no significant differences in the levels of inflammatory cytokines in GCF before (PreSRP) and 7 days after SRP (PostSRP). Log (PostSRP/PreSRP) for IL-1 significantly correlated with the change in TPPD (correlation coefficient = -0.529 , $p=0.004$). A good fit model was generated for the change in TPPD by multiple linear regression. Log (PostSRP/PreSRP) for IL-1 significantly affected the change in TPPD in this model ($R^2=0.416$, adjusted $R^2=0.326$, $p=0.030$).

SRP does not affect the expression of inflammatory cytokines in GCF from patients with chronic periodontitis. However, the present study indicates that a lower PostSRP/PreSRP ratio for IL-1 in GCF leads to a greater decrease in TPPD.

#16

Effect of alumina air-abrasion and priming agents on adhesive bonding for Ag-Pd-Cu-Au alloy

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An alumina air-abrasion is generally used to improve a bond strength of dental alloys such as Ag-Pd-Cu-Au alloy to adhesive resin. However, there have been few reports on a relationship between surface states of alumina air-abraded Ag-Pd-Cu-Au alloy and their bond strength. The aim of this study is to clarify surface states of alumina air-abraded Ag-Pd-Cu-Au alloy. Furthermore, the effect of priming agents on adhesive bonding for the alloy was examined. Ag-Cu-Pd-Au alloy was formed into a disc shape with 11 mm diameter by means of a conventional casting method. The casted alloys were subjected to an air-abrasion by using alumina particles (mean diameter of 50—70 μm) for 10 s with injection pressure of 0.2—0.6 MPa. The surface areas of the air-abraded alloys were measured by means of a laser microscope. The sample surfaces were observed by means of a scanning electron microscope (SEM) equipped with energy dispersive X-ray spectroscopy (EDX). In order to prepare specimens for a shear-bond strength test, the polished Ag-Cu-Pd-Au alloys were applied by each kind of priming agents and adhered to MMA-TBB resin cements. After keeping 30 minutes at room temperature, the specimens were immersed in distilled water at 37°C for 24 hours. Shear-bond strength tests were performed by using a universal testing machine. The result of the surface area measurements indicated that surface area of the sample treated by the air-abrasion was two times larger than that of non-abraded sample. The SEM observations and EDX analysis suggested that alumina particles existed on the alumina air-abraded surface. It is considered that the alumina particles may react with the alloy surface or stick onto the alloy surface. For the results of the shear-bond strength tests, there was no difference among the bond strength for the specimens using different priming agents.

#17

NF- κ B regulates the differentiation of skeletal muscle stem cells

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Skeletal muscle atrophy is characterized by a regenerative impairment and/or decreased muscle protein that contributes to physical incapacitation. Satellite cells are skeletal muscle stem cells that provide regenerative capacity for skeletal muscle. The transcription factor nuclear factor κ B (NF- κ B) is involved in immune and inflammatory responses, cell survival and proliferation responses. NF- κ B signaling has also been shown to be involved in skeletal muscle atrophy. For example, the reduction of NF- κ B signaling by administration of selective NF- κ B inhibitor, overexpression of dominant negative form of I κ B α ; counteracts muscle decrease induced by cancer cachexia, disuse or denervation. However, the role of NF- κ B on the regenerative capacity of satellite cells during the muscle atrophy process still remains unknown. Furthermore, with regard to medical interventions, focus should be placed on "muscle regeneration" rather than "muscle decrease". Here, we report that NF- κ B signaling regulates the differentiation of satellite cells. NF- κ B signaling in satellite cells is increased in a model of denervation-induced skeletal muscle atrophy performed by removal of the sciatic nerve of 8-week old male NF- κ B reporter mice. We also show that stimulation of NF- κ B signaling in satellite cells by the addition of TNF α or overexpression of the main subunit of NF- κ B, p65, results in reduction of the protein levels of myoblast differentiation maker genes such as myogenin, muscle creatine kinase (MCK) or myosin heavy chain (MHC). Luciferase assay revealed that p65 repressed myoblast differentiation of satellite cells via the repression of MyoD transactivation. The repressive effect of p65 on MyoD required the TA2 domain of p65. Moreover, treatment of TNF α increased the number of satellite cells, suggesting that NF- κ B may regulate both cell proliferation and differentiation of satellite cells in atrophied muscle tissue.

#18

**TLE3 regulates myogenic differentiation of muscle stem cells
by repressing the transcriptional activity of MyoD**

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Sarcopenia is characterized by an age-related loss of skeletal muscle mass and decline in muscle strength. In addition to impair motor function sarcopenia is one of the major cause of eating disability and dysphagi. The prevalence of sarcopenia is approximately 10% among adults aged sixty or older. Thus, there is an unmet and urgent need for strategies that will improve skeletal muscle mass and/or function in aging adults. Satellite cells are skeletal muscle stem cells that provide myonuclei for postnatal muscle growth, maintenance and repair/regeneration in adults. Normally, satellite cells are mitotically quiescent but are activated in response to muscle injury, proliferate extensively and up-regulate expression of MyoD. MyoD is a master regulator of myogenesis that forms a heterodimer with E proteins through their basic helix-loop-helix (bHLH) domain, binds to E boxes in genome and consequently activates transcription at muscle-specific promoters. Here, we identified Transducing-like enhancer of split 3 (TLE3) one of the Groucho/TLE family members, as a novel regulator of MyoD function during myogenesis. TLE3 was expressed in activated and proliferative satellite cells where increasing its levels suppressed myogenic differentiation and, conversely, reducing its levels promoted myogenesis with a concomitant increase in proliferation. We found that, through its Q and SP domains, TLE3 interferes with the function of MyoD by disrupting the association between the bHLH domain of MyoD and E proteins. Our findings indicate that TLE3 participates in skeletal muscle homeostasis through dampening satellite cell differentiation by controlling MyoD activity. Thus, TLE3 may play an important role in satellite cells physiology. This raises the possibility that TLE3 could be a potential target for stem-cell-based therapies for muscle-wasting diseases such as Duchenne muscular dystrophy and age-related sarcopenia.

#19

A p130Cas binding protein Bif-1 is involved in osteoclastic bone resorption

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Osteoclasts are multinuclear cells that resorb bone matrix. A tyrosine kinase c-Src- and its adaptor protein p130Cas-deficient mice revealed osteopetrosis due to dysfunction of osteoclasts, suggesting that c-Src and p130Cas play important roles for osteoclastic bone resorption. However, the molecular mechanisms by which c-Src and p130Cas regulate osteoclastic bone resorption are still unclear. To identify the downstream molecules of p130Cas, we examined the p130Cas binding molecules by immunoprecipitation and mass spectrum. Among several molecules, we focused Bif-1 because of the novelty, primary structure that can be involved in regulation of cytoskeleton. We first examined the expression levels of Bif-1 during osteoclast differentiation from mouse bone marrow cells treated with M-CSF and RANKL. Western blotting analysis and quantitative real-time PCR analysis showed that the expression level of Bif-1 increased during osteoclastic differentiation. To examine the role of Bif-1 in osteoclast function, the knockdown of Bif-1 using shRNA disrupted actin ring formation that was important actin structure for osteoclastic bone resorption regulated by c-Src and p130Cas. Furthermore, bone mineral density of femurs isolated from Bif-1-deficient mice was higher than that of wildtype femurs using μ CT and pQCT analysis. The histomorphometric analysis showed that numerous osteoclasts were present in Bif-1 deficient mice.. These results suggest that Bif-1 is one of the candidate proteins to regulate osteoclastic bone resorption as a downstream molecule of c-Src and p130Cas axis.

#20

Relationship between the curative effects by carbamazepine administration and the neurovascular compression of the trigeminal nerve on MRI

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Objectives: To elucidate the relationship between the extent of pain and neurovascular compression (NVC) volume, measured by magnetic resonance (MR) cisternography, in patients with trigeminal neuralgia. In addition, we aimed to evaluate the relationship between NVC volume and the efficacy of carbamazepine administration in patients with trigeminal neuralgia.

Methods: MR cisternography was performed on patients with clinical signs and symptoms that suggested trigeminal neuralgia retrospectively. The extent of their pain was evaluated using the visual analogue scale. Next, only carbamazepine was administered as the initial treatment. For the patients with NVC detectable on MR cisternography, the relationship between the extent or nature of the pain and the neurovascular volume was analyzed. In addition, the correlation between the efficacy of carbamazepine treatment and the NVC volume was evaluated retrospectively.

Results: Of the patients evaluated, about 70 % were deemed to have NVC. In these patients, a significant difference was found between the NVC volume and the curative effects of 100 mg/day carbamazepine. However, no significant correlation was found between the extent of pain by visual analogue score or between the daily dosage of carbamazepine and the NVC volume measured by MR cisternography.

Conclusions: Three-dimensional MR cisternography is very useful for detecting the site of NVC in patients with trigeminal neuralgia. NVC measured by this technique may indicate the prognosis after initial treatment. The present results suggest that the evaluation of NVC volume by MR cisternography would be useful in choosing the initial treatment for patients with trigeminal neuralgia.

#21

Kyushu Dental University Global Scholarly Exchange 2016 Short-Term Visiting Program Report-Srinakharinwirot University, Thailand

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We joined the Kyushu Dental University (KDU) global scholarly exchange short-term visiting program to visit Srinakharinwirot University (SWU), Thailand from September 3 to 10, 2016. The aim of the program is to broaden our way of global thinking by learning dental treatment and education in Thailand.

First, we visited the faculty of dentistry to observe a technical training. The students of SWU seriously engaged in a practical training, and learned on their bended knees to respect their lecturers. Faculty staff took us to treatment rooms for conservative dentistry, prosthodontics, oral medicine, oral surgery and dental radiology. Their clinical training starts from the second term of fourth grade to surprise us with earlier start than KDU.

We gave a presentation in English to SWU fifth grade students about KDU, Japanese culture and ourselves. The students also gave us a similar presentation. They spoke English very fluently to impress us deeply. They have many opportunities to study dentistry with English books and to visit foreign countries to learn English during summer vacation. An associate dean in the faculty of dentistry, Dr. Nirada, gave a lecture about dental education, health insurance system and public health in Thailand.

As a community dental service, staff from SWU dental hospital provided dental treatments including scaling, filling and tooth extraction without charge to the patients who could not pay. We helped staff in the treatments for patients and taught children how to brush teeth using dolls.

We found that there were big differences in dental curriculum and cultural backgrounds between Japan and Thailand through this program. These precious experiences indicate needs for improvement of our global communication skills in English and reconsideration of our school life.

#22

A novel c-Src binding protein PPP1r18 regulates actin ring in osteoclasts

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Bone metabolic disorders like osteoporosis or periodontitis will be taken in case of accentuation of osteoclast activity. Thus, to understand the mechanism of osteoclastic bone resorption is important and will expand therapeutic approach to bone metabolic disorders, fractures and surgery for implantation, orthodontic treatment, and so on. Osteoclasts are differentiated from hematopoietic stem cells, attached to bone matrix, and then resorb bone. Osteoclasts in tyrosine kinase c-Src deficient mice that show osteopetrosis hardly resorb bone matrix subsequent to disable to attachment to bone matrix. c-Src organizes actin accumulation and regulates actin ring formation for attachment. However, molecular mechanisms how c-Src regulates actin ring formation in osteoclasts are not fully understood. We identified an actin binding protein PPP1r18 as c-Src binding protein by mass spectrum analysis. PPP1r18 was expressed and localized in actin ring with c-Src of osteoclasts. Moreover localization of PPP1r18 in c-Src deficient osteoclast was changed from general cytosol to actin ring constructed by c-Src overexpression with adenovirus system. These results suggest that PPP1r18 bind to c-Src and involved in actin ring formation. Downregulation of PPP1r18 expression by shRNA promoted actin ring formation, while overexpression of PPP1r18 inhibited actin ring formation and bone resorption. Mutation of protein phosphatase 1 (PP1) binding domain of PPP1r18 canceled inhibition of actin ring formation by PPP1r18. These results suggest that PPP1r18 negatively regulates actin ring formation and bone resorption.

#23

Management of intrusion by trauma in primary teeth: a case report

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During the growth and development period, pediatric dental trauma requires special attention. In primary dentition, treatment must consider effects on not only the traumatic primary teeth but also permanent successors, so procedures for permanent dentition are necessary.

Tooth intrusion is the most common trauma during infancy. It has been controversial in the Pediatric Dental field whether repositioning and fixation for the intrusion of primary tooth should be or not.

In this case, we describe 1-year-4month-old girl who had intruded #51,52,61,62. We examined the teeth clinically and radiographically, the teeth were displaced away from the permanent tooth germs, so we decided to wait for spontaneous re-eruption without any surgical treatments. At 13days after the injury, partial re-eruption occurred. At 3 months after the injury, re-eruption was observed. At 2 years after the injury, there were not particular findings.

Developmental and mineralization defects were found in about 40% of the permanent successors of the children who had been injured in the primary dentition. So, long-term observations of the traumatic injuries teeth are necessary for the eruption of the permanent successors and normal root development.

#24

Influence of social anxiety on pathologic subjective halitosis

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Pathologic subjective halitosis is known as a halitosis complaint without objective confirmation of halitosis by others or by halitometer measurements; it has been reported to be associated with social anxiety disorder. Olfactory reference syndrome is a preoccupation with the false belief that one emits a foul and offensive body odor. Generally, patients with olfactory reference syndrome are concerned with multiple body parts. However, the mouth is known to be the most common source of body odor for those with olfactory reference syndrome, which could imply that the two conditions share similar features. Therefore, we investigated potential causal relationships among pathologic subjective halitosis, olfactory reference syndrome, social anxiety, and preoccupations with body part odors. A total of 1360 female students (mean age 19.6 ± 1.1 years) answered a self-administered questionnaire regarding pathologic subjective halitosis, olfactory reference syndrome, social anxiety, and preoccupation with odors of body parts such as mouth, body, armpits, and feet. The scale for pathologic subjective halitosis followed that developed by Tsunoda et al.; participants were divided into three groups based on their scores (i.e., levels of pathologic subjective halitosis). A Bayesian network was used to analyze causal relationships between pathologic subjective halitosis, olfactory reference syndrome, social anxiety, and preoccupations with body part odors. We found statistically significant differences in the results for olfactory reference syndrome and social anxiety among the various levels of pathologic subjective halitosis ($P < 0.001$). Residual analyses indicated that students with severe levels of pathologic subjective halitosis showed greater preoccupations with mouth and body odors ($P < 0.05$). Bayesian network analysis showed that social anxiety directly influenced pathologic subjective halitosis and olfactory reference syndrome. Preoccupations with mouth and body odors also influenced pathologic subjective halitosis. Social anxiety may be a causal factor of pathologic subjective halitosis and olfactory reference syndrome.

