

ASIA-PACIFIC CONFERENCE in FUKUOKA 2016

International Symposium on Oral Education and Research in Kitakyushu



Date : 11 May 2016 (Wed)
Venue: Kyushu Dental University, Kitakyushu Japan

Asia-Pacific Conference in Fukuoka 2016

International Symposium on Oral Education and Research in Kitakyushu

Kyushu Dental University, Kitakyushu, Japan
May 11th, 2016

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
Co-sponsored by West Japan Industry and Trade Convention Association

Table of Contents

Welcome message 3

Program 4

Special Lecture 5

International Symposium 7

Poster Presentations 11

* Young Investigator Award Competition 11-22

Welcome message



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

Welcome to Asia-Pacific Conference in Fukuoka 2016. It is our great honor and pleasure to invite you to attend the International Symposium on Oral Education and Research in Kitakyushu, Japan, May 11th, 2016. I am inviting you to participate in this exciting education project that successfully started three years ago to obtain valuable information on Oral Education and Research of foreign countries.

In this conference, we are delighted to announce two special lectures. Present state of dental education in Myanmar and Taiwan will be introduced by the invited the distinguished speakers, Professor Thein Kyu, Retired Rector of University of Dental Medicine, Yangon, and Professor Hung-Huey Tsai, Dean of College of Oral Medicine, Taipei Medical University, Taiwan. We are expecting to have active discussion on a new style of dental education and clinical training for dentistry in Asian countries.

Moreover, 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. It is our wish to flash an innovative idea into your mind to build true partnership with other scientific groups.

We thank you in advance for your interest and active participation, and look forward to welcoming you to the Asia-Pacific Conference in Fukuoka 2016.

Program

12:30 Registration

12:55 Welcome Address and Opening Remarks

Prof. Tatsuji Nishihara (Chairman and President of Kyushu Dental University)

13:05 - 13:25 Special Lecture

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

Prof. Tatsuji Nishihara (Chairman and President of Kyushu Dental University)

“The Dental Education in Kyushu Dental University”

13:30 - 15:30 International Symposium

“The Dental Education and Clinical Training for Dentistry in Asian Countries”

Chair: Prof. Keisuke Nakashima, Prof. Naoki Kakudate

Prof. Thein Kyu (University of Dental Medicine, Yangon)

**“The Dental Education and Clinical Training for
Dentistry in Myanmar”**

Prof. Hung-Huey Tsai (College of Oral Medicine, Taipei Medical University)

**“The Dental Education and Clinical Training for
Dentistry in Taipei Medical University”**

Coffee Break

15:40-16:40 Poster Sessions

15:40- 16:30 Young Investigator Award Competition

16:45-16:55 Award Ceremony

16:55- Closing Remarks

Prof. Shin-ichi Masumi (Vice-President of Kyushu Dental University)

18:30 Banquet

Special Lecture



The Dental Education in Kyushu Dental University

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

Developments in molecular biology in the last decade of the 20th century further advanced dental research. With new detection methods using specific antibodies, synthesized oligoDNA probes, polymerase chain reaction, and specific substrates, researchers can find specific virulence factors with high sensitivity. It is possible to determine the number of certain periodontopathic bacteria as well as the properties of toxin and tissue degradation enzymes concerning periodontal diseases. Many periodontal researches believe that the methods based on bio-microsensing technology appear to be useful in a clinical examination for the diagnosis, treatment, and estimation of future risks.

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 systemic infectious diseases, 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 an environment conducive to the development of dental education.

In this special lecture, I would like to talk about innovative method concerning out-come 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 Dental Education and Clinical Training for Dentistry in Myanmar

Thein Kyu, M.D.Sc., Dr.D.Sc.

Retired Rector, University of Dental Medicine, Yangon,
Myanmar

Myanmar was formerly known as Burma or Biruma. Biruma no Tategoto, a famous classic movie featured in 1956 introduced Myanmar to most of Japanese people in those days. Myanmar has only two national dental universities, Yangon and Mandalay which conferred B.D.S (Bachelor of Dental Surgery) degrees to four thousand graduates already. The dentist population ratio of that amount to 51 million is still skeptical. The aim of dental education is to produce dental practitioners who are socially conscious, community oriented, professionally skillful and technically competent. However it is pertinent for the curriculum to reflect the country's need and to keep the education standard abreast with neighboring ASEAN countries. The view over past, present and future would be presented.

Brief CV

Professor Thein Kyu

EDUCATIONAL BACKGROUND

- 2004-2007 Dr.D.Sc. (Doctor of Dental Science)
University of Dental Medicine, Yangon
- 1995-1996 Certificate in Advanced Prosthodontics and Geriatric Dentistry
Tokyo Medical and Dental University
- 1991-1994 M.D.Sc. (Master of Dental Science)
University of Dental Medicine, Yangon

CURRENT POSITION

- Retired Rector, University of Dental Medicine, Yangon
- External Examiner, UDM Yangon and Mandalay
- Special Visiting Professor, Kyushu Dental University 2014
- Visiting Professor, Faculty of Dentistry, Hiroshima University 2015
- Dental Practitioner, Moe Dental Clinic, Yangon

ACADEMIC ACTIVITIES

- Executive Committee member, Myanmar Dental Council
- President, International Association for Dental Research IADR- South East Asia Division-Myanmar Section (2012-2014)
- President and country representative, South East Asia Association for Dental Education, Myanmar Section (2009-2014)
- Patron, Myanmar Dental Association (Mandalay Branch) (2009-2012)
- Life member, Myanmar Dental Association (Central)
- Executive Committee member, Secretary Social Committee, Academic Committee, Myanmar Dental Association (1982 – 1991)

SOCIAL, INTERNATIONAL RELATION AND PROFESSIONAL DEVELOPMENT

- Member, Myanmar Association of Japan Alumni MAJA
- Fellow of International College of Dentistry (USA) (2000)
- President, Japan Alumni Dental Myanmar

International Symposium



The Dental Education and Clinical Training for Dentistry in Taipei Medical University

Hung-Huey Tsai, D.D.S., Ph.D.

Dean of College of Oral Medicine,
Taipei Medical University,
TAIWAN

School of Dentistry (SOD) and Taipei Medical College (TMC) were founded at the same time in 1960. TMC Hospital has been set up on campus in 1976, Dental Clinic Division (DCD) started service. In 1992, SOD founded Graduate Institute of Oral Rehabilitation (GIOR) and started its MS degree program under accreditation. SOD invested considerable educational research instruments in the program and many PhD alumni from Japan, US, and Europe came back to join the faculty. A research environment has fostered at SOD and its graduate programs. School of Oral Hygiene (SOH), Graduate Institute of Oral Science (GIOS) featuring biomedical and basic sciences research, and Graduate Institute of Biomedical Materials (GIBM) were established under SOD one by one. In 2000, TMC was upgraded to Taipei Medical University therefore SOD was advanced to College of Oral Medicine (COM).

In 2002, the faculty composition is being restructured and improved to encourage promotions. This enhances the integration of clinical practice and basic sciences. The third TMU affiliated hospital-Shuang Ho Hospital was founded in 2008 followed School of Dental Technology in 2007. In 2012, three years' course SOH changed to 4 years' program.

Recently, SOD launched new “DDS + PhD” and “MS + PhD” programs which invite interested and promising students to directly pursue PhD degree and prepare them to be researchers with competencies.

Our goal is nothing less than to improve the nature of dental and oral education and practice in order to best serve our students, our patients and our communities. To fulfill this goal, the course curriculum places emphasis on humanity, clinical skills, and international vision.

Brief CV

Professor Hung-Huey Tsai

EDUCATIONAL BACKGROUND

1985-1989 Ph.D.

Department of Pediatric Dentistry, Tokyo Medical and Dental University

1977-1983 D.D.S.

School of Dentistry, Chung Shan Medical University, Taiwan

CURRENT POSITION

Dean (2015.8-)

College of Oral Medicine, Taipei Medical University

Professor

School of Oral Hygiene, College of Oral Medicine, Taipei Medical University

PROFESSIONAL MEMBERSHIP

Taiwan Academy of Pediatric Dentistry

Taiwan Association of Disabilities and Oral Health

Association for Dental Sciences of the Republic of China

Taiwan Association of Oral Hygiene Science

Xylitol Preventive Dentistry Society

Fellow, International College of Dentistry, FICD

Editorial Board Members, Pediatric Dental Journal

PROFESSIONAL QUALIFICATION

Founding Diplomat, Taiwan Academy of Pediatric Dentistry

Founding Diplomat, Taiwan Association of Disabilities and Oral Health

Poster Presentations

*Young Investigator Award Competition

P-1 A new preclinical pain model of orthodontic wire appliance-induced oral ulcer

Misa Ito^{1,2}, Kentaro Ono¹, Suzuro Hitomi¹, Kiichiro Yamaguchi¹, Tomotaka Nodai¹,
Kaori Gunjigake², Kayoko Kuroishi², Tatsuo Kawamoto² and Kiyotoshi Inenaga¹

1 Division of Physiology, 2 Division of Orofacial Functions Orthodontics, Kyushu Dental University

Abstract: Orthodontic appliances frequently cause oral mucosal lesions, resulting severe pain induction. However, little study has reported about the mechanisms underlying oral ulceration and subsequent pain induction in the orthodontic appliances. In the present study, we developed a new preclinical rat model for oral ulcer pain following an orthodontic wire appliance and evaluated ulceration in the oral mucosa and pain-related behaviors. Under pentobarbital anesthesia, 8 week-old Wistar rats were installed with an arched orthodontic thick wire of 10 mm length between inferior incisors, soldered to a ligature wire. The sharp tip of the thick wire directly touched the labial fornix region of the oral mucosa. As control, a shorter thick wire (4 mm) was installed similarly without any contacts of the tip on the oral mucosa. Next day (day 1), severe oral ulcer was caused in the model rats and the wire was removed. The wire-induced oral ulcer was cured completely until day 5 after the procedure. In control group, there was no mucosal lesion. Using our recently-developed assay system for intraoral pain in conscious rats, spontaneous pain and mechanical allodynia were evaluated from spontaneous mouth rubbing time and head-withdrawal threshold to mechanical stimulation to the mucosal area, respectively. Compared with control group, spontaneous pain was induced in the model on day 1. The mechanical allodynia was induced on days 1-3. Antibacterial pretreatment did not affect the inductions of spontaneous pain and mechanical allodynia. The COX inhibitor Indomethacin pretreatment largely suppressed the spontaneous pain, but not the mechanical allodynia. These results suggest that spontaneous pain is mainly mediated by injury-associated COX-dependent inflammation and mechanical allodynia is independent on infectious inflammation in the model. The new preclinical animal model for orthodontic wire-induced oral ulcer pain can be utilized in evaluations of newdrug treatments for oral ulcer pain in dental practices.

P-2 Oral cancer screening system by detection of aberrant methylation in hTERT gene

Kazuya Haraguchi¹, Shinobu Sato², Manabu Habu¹, Naomi Yada³, Mana Hayakawa¹,
Masataka Uehara¹, Masaaki Sasaguri¹, Kou Matsuo³, Izumi Yoshioka⁴,
Shigeori Takenaka² and Kazuhiro Tominaga¹

1 Division of Oral and Maxillofacial Surgery, Department of Science of Physical Functions, Kyushu Dental University, Kitakyushu, Japan

2 Department of Applied Chemistry, Research Center for Bio-microsensing Technology, Kyushu Institute of Technology, Kitakyushu, Japan

3 Division of Oral Pathology, Department of Health Promotion, Kyushu Dental University, Kitakyushu, Japan

4 Division of Oral Medicine, Department of Science of Physical Functions, Kyushu Dental University, Kitakyushu, Japan

Abstract: Objectives: Telomerase is the ribonucleoprotein complex enzyme that adds telomere(TTAGGG) repeats at the ends of chromosomes. Its activity has been detected in the vast majority of human cancers, but not in normal somatic cells. In human tissues, telomerase activity is tightly regulated by the expression of the human telomerase reverse transcriptase(hTERT) gene. Epigenetic hypermethylation in the CpG rich sequences in the promoter regions of hTERT gene plays an important role in the regulation of hTERT gene expression. So, the aim of this study was to investigate the methylation pattern of hTERT in oral squamous cell carcinoma(OSCC), oral leukoplakia(OL) and normal oral mucosa(NOM) by Ferrocenylnaphthalene Diimide(FND)-Based Electrochemical Detection and leads to early detection of OSCC. Additionally, we examined the expression of hTERT protein by immunohistochemistry(IHC). The methylation pattern of hTERT gene was analyzed statistically to evaluate the possible influence of the expression of hTERT protein. **Materials and Methods:** Samples were obtained from OSCC patients, OL patients and healthy volunteers after informed consent. Clinical samples were exfoliated oral cells from entire oral cavity(OSCC n=21, OL n=20, NOM n=29), exfoliated oral cells from a lesion(OSCC n=22, OL n=24, NOM n=23) and tissue(OSCC n=35, OL n=25, NOM n=34). After sulfite treatment, they were amplified with PCR using methylation specific primers. Then, FND based electrochemical hybridization assay(EHA) was carried out and detection of aberrant methylation in hTERT gene. **Results:** The promoter region of hTERT in OSCC was more methylated than in OL and NOM. Frequency of aberrant methylation in the promoter region of hTERT in OL was lower than OSCC but higher than NOM. These results may indicate that the methylation level of hTERT promoter was high during oral carcinogenesis. Additionally, hTERT protein expression showed a correlation with hTERT promoter methylation. **Conclusion:** Frequency of aberrant methylation in hTERT gene may be suggested that it can be useful for oral cancer screening system.

P-3 Tumor-specific drug delivery system using receptor-targeted microbubbles and ultrasound

Fumika Hirabayashi^{1,2}, Kenjiro Iwanaga², Toshinori Okinaga¹, Wataru Ariyoshi¹,
Kazuhiro Tominaga² and Tatsuji Nishihara¹

1, Division of Infections and Molecular Biology, Department of Health Promotion, Kyushu Dental University

2, Division of Oral and Maxillofacial Surgery, Department of Science of Physical Functions, Kyushu Dental University

Abstract : Purpose: Ultrasound creates transient permeability of cell membranes in the presence of microbubbles (MBs), and followed by the foreign molecules to enter cells, which is known as ‘sonoporation’. In our previous study, we investigated the growth inhibitory effect of therapeutic agents delivered using sonoporation in vitro and in vivo. And then, we collaborated with Faculty of Pharma-sciences, Teikyo University, and developed anti-Epithelial Growth Factor Receptor (EGFR) antibody conjugated MBs (EGFR-MB). In the present study, we examined the effect of EGFR-MB against squamous cell carcinoma. Materials & Methods: Ca9-22, a human gingival carcinoma cell line, was used in this study. EGFR is reported to be overexpressed in this cells. 528 hybridomas were cultured and then the anti-EGFR antibody was purified from its culture supernatant. MBs were conjugated with an anti-EGFR antibody, and were entrapped ultrasound contrast gas. Ca9-22 cells were exposed to ultrasound in the presence of pVIVO1-GFP/LacZ plasmid or anticancer drug, bleomycin (BLM) and EGFR-MB. We analyzed the transformation efficiency using X-gal staining. We elucidated the cell viability using WST-8 assay and detected apoptotic cells using Hoechst staining and flow cytometry analysis. Results: EGFR-MB treatment significantly improved transformation efficiency of plasmid into Ca9-22 cells. The exposure of EGFR-MB and ultrasound decreased the proliferation ratio on Ca9-22 cells at the low dose of BLM in vitro. In addition, a low dose BLM remarkably increased the population of apoptotic cells under the condition of sonoporation with EGFR-MB. Conclusion: Treatment with EGFR-MB and ultrasound make it possible to administer drugs into the cells more efficiently and specifically by novel mechanism, suggesting a novel application for chemotherapy treatment for oral squamous cell carcinoma.

P-4 The effect of omega-3 fatty acids on the macrophage-polarization

Aki Kawano^{1,2}, Hisako Hikiji¹, Toshinori Okinaga², Wataru Ariyoshi², and Tatsuji Nishihara²

1 School of Oral Health Sciences, Kyushu Dental University, Kitakyushu, Fukuoka, Japan

2 Division of Infections and Molecular Biology, Department of Health Promotion, Kyushu Dental University, Kitakyushu, Fukuoka, Japan

Abstract: Objective: Macrophages act as phagocytic as well as antigen-presenting cells. Macrophages are divided into at least two main phenotypes known as M1 (classically activated macrophage) and M2 (alternatively activated macrophage). M2 macrophages play roles in anti-inflammatory reactions and tissue remodeling. Omega-3 polyunsaturated fatty acids (PUFAs) are essential fatty acids which cannot be synthesized by human cells and must be supplied by the diet. DHA is one of PUFAs. It is reported recently that Omega-3 fatty acids, such as DHA have the anti-inflammatory activities. However, the mechanism regulating anti-inflammatory activities of macrophages by DHA is unknown. In this study, we investigated the effect of DHA on differentiation of macrophages. Methods: U937 cells and THP-1 cells were seeded into 6-well culture plates with RPMI1640 containing 5% FBS and 100 ng/ml phorbol 12-myristate 13-acetate (PMA). The cells were cultured overnight, and then washed by phosphate-buffered saline (PBS) to remove all PMA and incubated with IL-4 (50 ng/ml) or DHA (50 μ M) for the indicated times. The expression of M2 marker was examined by real-time reverse-transcription polymerase chain reaction (RT-PCR), western blot analysis, and flow cytometry analysis. Result: DHA increased mRNA expression of CD206 gene in U937 cells and PMA-treated THP-1 cells. DHA increased protein expression of CD206 in U937 and THP-1 cells. DHA increased expression of CD206 surface antigen in U937 cells and THP-1 cells. Conclusion: DHA promotes M2-polarization in U937 and THP-1 cells. DHA may have the anti-inflammatory activities through M2-polarization.

P-5 Effect of ameloblastin on the expression of proinflammatory cytokine in human macrophage cells

Mai Otsuka^{1,2}, Toshinori Okinaga¹, Wataru Ariyoshi¹, Chiaki Kitamura² and Tatsuji Nishihara¹

1 Division of Infections and Molecular Biology, Kyushu Dental University

2 Division of Endodontics and Restorative Dentistry, Kyushu Dental University

Abstract: Ameloblastin, the enamel matrix protein, is known to be important for the tooth development. Recently, some researchers reported that ameloblastin had other various biological functions such as osteogenesis, pulp healing and reparative dentin formation in physiological conditions. In the present study, we examined the involvement of ameloblastin in the expression of proinflammatory cytokines in human macrophages in inflammatory conditions. Human monocyte cell line, U937 was used in this study. After U937 cells were pretreated with phorbol-12-myristate-13-acetate (PMA), the cells were treated with lipopolysaccharide (LPS) derived from *Escherichia coli* and recombinant human ameloblastin (rhAMBN). The gene expression was confirmed by Real Time RT-PCR and the protein expression was detected by Western blotting and ELISA. The gene expression of IL-1 β was upregulated in LPS-treated U937 cells, and rhAMBN enhanced LPS-induced IL-1 β gene expression. The protein expression of IL-1 β precursor was detected in LPS-treated U937 cells. ATP pretreatment upregulated the expression of mature IL-1 β . Interestingly, rhAMBN also upregulated the expression of mature IL-1 β especially for 12 h treatment. Western blotting analysis revealed that ATP and rhAMBN upregulated the protein expression of caspase-1 p10 prodomain. Furthermore, we confirmed that rhAMBN significantly increased the secretion of IL-1 β in LPS-treated U937 cells by ELISA. Treatment with a caspase-1 inhibitor downregulated the expression of IL-1 β protein induced by LPS in rhAMBN treated U937 cells. These results indicated that rhAMBN enhanced the expression of IL-1 β in LPS-treated U937 cells through caspase-1 activation.

P-6 NF- κ B alternative pathway regulates the endochondral ossification

Chihiro Nakatomi¹, Shoichiro Kokabu¹, Takuma matsubara¹,
Mitsushiro Nakatomi² and Eijiro Jimi¹

1 Division of Molecular Signaling and Biochemistry, Department of Health Promotion, Kyushu Dental University

2 Division of Anatomy, Department of Health Promotion, Kyushu Dental University

Abstract: The vertebrate long bone is formed by the endochondral ossification. This process is regulated spatiotemporally by many transcription factors and the defect of these factors lead the bone malformation such as dwarfism. Mammalian NF- κ B, a group of transcription factors, has two distinct NF- κ B activation pathways, known as classical and alternative NF- κ B signaling pathways. Mice lacking the C-terminal region of NF- κ B2 p100 (Δ p100 mice), in which NF- κ B alternative pathway is constitutively activated, exhibit retarded growth and shortened long bones, suggesting that NF- κ B alternative pathway involves in bone formation and growth through endochondral ossification. The purpose of this study is to clarify the roles of NF- κ B alternative pathway in endochondral ossification and bone growth. We observed that fewer numbers of proliferative chondrocytes and narrower hypertrophic zone in the growth plate of the Δ p100 mice and these defects were seen after 7-day-old. In addition, the expression of type-X collagen (Col X), a marker of hypertrophic chondrocytes, was markedly reduced. To further examine how NF- κ B alternative pathway regulates chondrocyte differentiation, we examined the differentiation process of chondrocytes in vitro using pellet cultures of primary chondrocytes prepared from wild-type and Δ p100 mice. After 7 days culture, we analyzed the differentiation of the chondrocyte pellets histologically. As a result, the expression of Col X was decreased in the pellets derived from Δ p100 mice. In addition, the expression level of Col X mRNA was reduced in the pellets from Δ p100 mice. These data suggest that NF- κ B alternative pathway is involved in the regulation of hypertrophy of chondrocytes during postnatal growth and control the elongation of long bones.

P-7 Kyushu Dental University Global Scholarly Exchange (KDU-GSE) 2015 Program Report

Ayaka Isobe¹, Yukiko Takahashi², Yasuo Shono³ Sumio Akifusa¹ and Katsumi Hidaka¹

1 Department of Oral Health Management, 2 Department of Oral Functional Management, Kyushu Dental University,
3 Shono Dental Office

Abstract: Kyushu Dental University (KDU) has established agreements about the exchange of human resources and research with educational institutions of dentistry in other countries, particularly, Asia. This is the Kyushu Dental University Global Scholarly Exchange (KDU-GSE) program. To cooperate with Kaohsiung Medical University (KMU), one of the partner universities overseas, in Taiwan, KDU sent undergraduate dental hygiene students and graduate student to KMU from 14th to 20st, September, 2015, as a part of the KDU-GSE program. In this program, undergraduate students of School of Oral Hygiene of KMU were asked to answer the questionnaire survey, for the purpose of understanding their consciousness for dentistry and the existing state of dental care in Taiwan. Our group are now studying on social plan for dental health in Japan. In order to understanding the state of dental care in oversea areas, graduate student was dispatched to KMU teaching hospital and private dental clinic under the support of KDU-GSE. From the results of the research survey, it showed that the students in Taiwan are interesting in oral health science and have a high motivation to select the School of Oral Hygiene, and to work as dental hygienist in dental clinic. However Taiwan do not have the national license for dental hygienist, most of undergraduate students think that a license for dental hygienist is necessary. The KDU-GSE program provided a good opportunity for students to recognize the consciousness of oversea students and expanding their view in the world wide scale. As further work, it is necessary to investigate the same consciousness survey to KDU students.

P-8 Analysis of different actions of NSAIDs on osteoblastic differentiation of the cells

Atsushi Matsuyama^{1,2}, Sen Higashi², Tomoko Ohsumi², Chiaki Kitamura¹ and Hiroshi Takeuchi²

1 Division of Endodontics and Restorative Dentistry,

2 Division of Applied Pharmacology, Kyushu Dental University

Abstract: Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed drugs in dental practice to managing pain and swelling. The mechanism of action is primarily inhibiting cyclooxygenase (COX), and therefore suppressing prostaglandin synthesis. Recently, it is widely accepted that some of NSAIDs has more role other than pain control, such as suppressing tumor cell growth, independent of COX-inhibiting activity. Thus, in order to identify a novel target of NSAIDs, we examined the effect of several NSAIDs in differentiation of osteoblast. Mouse myoblast cell line C2C12 cells were maintained in DMEM containing 10% calf serum. A pre-osteoblast cell line MC3T3-E1 cells were grown in alpha-MEM supplemented with 10% fetal bovine serum and induced osteoblastic differentiation by incubating in the growing medium containing ascorbic acid and beta-glycerophosphate in the presence or absence of a series of NSAIDs for 7 days. Osteoblastic differentiation of the cells was assessed by measuring alkaline-phosphatase activity. Phosphorylation of signaling molecule was detected by western blotting using phospho-specific antibodies against each protein. Only celecoxib and valdecoxib, but not other NSAIDs including diclofenac and etodolac, strongly inhibited osteoblastic differentiation of MC3T3-E1 cells. Moreover, 2,5-dimethyl (DM)-celecoxib, a celecoxib analogue that does not inhibit COX activity, also inhibited osteoblastic differentiation of the cells. On the other hand, both celecoxib and DM-celecoxib suppressed phosphorylation of smad 1/5 induced by BMP-2 in C2C12 cells. Although it is well known that COX activity has important roles in osteoblastic differentiation, the results suggest that some NSAIDs, such as celecoxib, have novel target other than COX to control phospho-dependent intracellular signaling through which modifies bone remodeling. Further studies are underway to identify non-COX target molecule for these drugs, as it leads to not only developing new therapeutic application such as cancer therapy, and also more effective usage by estimating the risk mediated through those new targets.

P-9 Diminished calcium release from endoplasmic reticulum induces salivary dysfunction in diabetic mouse model

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

Department of Oral Reconstruction and Rehabilitation, Kyushu Dental University

Abstract: Xerostomia is induced by some systematic disease and has been reported to be closely associated with diabetes mellitus. We have analyzed salivary gland function in a diabetic mouse model to explore how diabetes induces xerostomia.

In this study, we used the KK-Ay mouse as the diabetic model and the C57/Bl6J mouse as the control. To assess salivary gland function, we measured the amount of secreted saliva and ions (Na^+ and Cl^-) in response to carbachol (CCh: $0.3\ \mu\text{M}$) with mouse ex vivo perfusion technique. Acinar and duct cell areas were evaluated by histological analyses. Acinar and duct cell volume were calculated from gland weight and acinar and duct cell area. Intracellular Ca^{2+} increase was analysed in fura-2-loaded acinar cells.

The amount of saliva secreted in the KK-Ay mouse was significantly less than control mouse. The concentrations of Na^+ and Cl^- were also significantly less in the saliva from the KK-Ay mouse. Duct cell area of the submandibular gland in the KK-Ay mouse increased, whereas acinar cell volume remained the same in both mouse models because the gland weight increased in the KK-Ay mouse. CCh induced intracellular Ca^{2+} increase was significantly less in the KK-Ay mouse. Furthermore, however store-operated Ca^{2+} entry was comparable in KK-Ay and control mouse, calcium release from endoplasmic reticulum was decreased in KK-Ay mouse.

These results demonstrate that submandibular fluid secretion diminished in KK-Ay diabetic mouse because of diminished calcium release from endoplasmic reticulum. Duct cell volume increased in the KK-Ay mouse, possibly leading to increase of ion reabsorption and it result in a decreased concentrations of Na^+ and Cl^- in the secreted saliva.

P-10 **Lysophosphatidylethanolamine acyltransferase 1 is involved in neuronal differentiation**

Shirou Tabe^{1,2}, Hisako Hikiji³, Wataru Ariyoshi¹, Toshinori Okinaga¹,
Kazuhiro Tominaga² and Tatsuji Nishihara¹

1 Division of Infections and Molecular Biology, Department of Health Promotion, Kyushu Dental University

2 Division of Oral and Maxillofacial Surgery, Department of Science of Physical Functions, Kyushu Dental University

3 School of Oral Health Sciences, Kyushu Dental University

Abstract: Glycerophospholipids are main components of cellular membranes, which have functional and structural roles in cells. The composition of glycerophospholipids varies among different cell types and tissues. Glycerophospholipids are formed from glycerol-3-phosphate in the de novo pathway (Kennedy pathway) and then the composition of these molecules is changed in the remodeling pathway (Lands' cycle). In the Land's cycle, the concerted actions of phospholipase A2s and lysophospholipid acyltransferases (LPLATs) generate the asymmetry and the diversity of glycerophospholipids. LPLATs exhibit wide tissue distributions and show varying substrate preferences for acyl-CoA. Neuronal differentiation is characterized by neurite outgrowth, which requires biomembrane biosynthesis. However, the role of LPLATs in neuronal differentiation is still unknown. In this study, we examined whether LPLATs have roles in neuronal differentiation using all trans-retinoic acid (ATRA)-treated P19C6 cells. P19C6 cells, which are subclones of the pluripotent mouse embryonal carcinoma P19 cells, can differentiate into neuronal cells in the presence of ATRA. Gene expression and the enzymatic activity of LPLATs were analyzed by RT-PCR and liquid chromatography-tandem mass spectrometry (LC-MS/MS). The effects of LPLAT siRNA on neuronal differentiation were also investigated using RT-PCR, the LC-MS/MS, western blotting, immunohistofluorescence staining, and the measurement of intracellular calcium concentration. The mRNA levels of lysophosphatidylethanolamine acyltransferase (LPEAT) 1 and LPEAT activity were increased during neuronal differentiation of P19C6 cells. LPEAT1 knockdown inhibited neurite outgrowth and the expression of neuronal markers. LPEAT1 knockdown also suppressed voltage-dependent calcium channel activity. These results suggest that LPEAT1 is a key enzyme in neurite outgrowth and neuronal function.

P-11 The change of pain-associated mediators and genes in acetic acid-induced oral ulcerative mucositis model

Tomotaka Nodai^{1,2}, Kentaro Ono², Suzuro Hitomi², Misa Ito²,
Chihiro Masaki¹, Ryuji Hosokawa¹ and Kiyotoshi Inenaga²

1 Department of Oral reconstruction and rehabilitation, Kyushu Dental University

2 Division of Physiology, Kyushu Dental University

Abstract: Rat oral ulcerative mucositis models have been used to examine therapies for oral ulcer patients. However, relationships of patho-physiological changes of mediators and gene expression with pain induction are not well understood. In the present study, to clarify the mechanisms underlying oral ulcerative mucositis-induced pain, we examined daily changes of putative pain-associated mediators in the oral mucosa, with measurements of pain-related behaviors, and performed DNA microarray analysis for the trigeminal ganglion in the acetic acid-induced oral ulcerative mucositis models. On day 1 after acetic acid treatment, the treated oral mucosal area exhibited slight redness and swelling, but not ulceration and pain induction. On day 2, oral ulcer was obviously developed together inducing spontaneous and mechanical pain. In the treated mucosal area, the bacterial loading and prostaglandin E2 were up-regulated from day 2 without significant changes on day 1. DNA microarray analysis demonstrated 32 significant regulated genes (>1.5-fold changes of expressions). These genes had links to defense/wound/immune response pathways in gene ontology process. In quantitative RT-PCR, the up-regulations of top 3 genes, Hamp (hepcidin antimicrobial peptide), Reg3b (regenerating islet-derived 3 β) and Serpina3n (serine peptidase inhibitor A3N), were validated and significantly suppressed by pre-treatment of antibiotic drugs that exhibited pain relief. In the acetic acid-treated rat model, oral ulcerative mucositis-induced pain is caused by bacterial infection and followed prostanoid production through destruction of oral epithelial barrier. In the response to the infectious inflammation, innervated sensory neurons genetically produce anti-bacterial factors to cure the mucositis.

P-12 Modification of osteoclast differentiation by the complement factor

Fumiko Aonuma^{1,2}, Sen Higashi², Shintaro Tsuka¹, Tomoko Ohsumi²,
Ryuji Hosokawa¹ and Hiroshi Takeuchi²

1 Department of Oral Reconstruction and Rehabilitation

2 Division of Applied Pharmacology,
Kyushu Dental University

Abstract: Age-related bone loss and postmenopausal osteoporosis is a clinical problem with the treatment of oral implant. Recently, it was reported that the concentration of complement C1q in the mouse serum increases with aging, and the increased C1q delayed wound healing by modulating Wnt signaling. As it is widely accepted that Wnt signaling has an essential role in bone remodeling, we hypothesized that aging-dependent increase of C1q would affect bone remodeling through Wnt signaling. In this study, we examined the effect of C1q on osteoclastic differentiation in vitro. Bone marrow cells (BMCs) were isolated from the thighbones and the shinbones of 8-10 week-old male mice and were cultured in MEM α supplemented with 10% FBS, 100units/ml penicillin, 100 μ g/ml streptomycin, M-CSF (5000units/ml) and RANKL (100ng/ml) in 46-well plate for up to 7-days at 37°C. Osteoclastic differentiation was assessed by staining for TRAP activity of the cells. The cells were treated with C1q (0.1mg/ml), Wnt3a (100ng/ml), or LiCl (30mM), and the cell lysate was subjected to Western blot analysis for accumulation of β -catenin to assess canonical Wnt signaling activation. C1q inhibited the differentiation of BMCs to osteoclasts. This effect of C1q was abolished by heat-treatment of C1q, meaning that intactness of the structure of C1q was required for the effect. C1q-treatment of the BMCs for 24-hours resulted in accumulation of β -catenin as similar to the positive control, Wnt3a or LiCl-treatment. The results suggest that C1q is involved in bone remodeling possibly through Wnt signaling. Thus, it is necessary to examine the effect of C1q on osteoblast and also on systemic bone remodeling using living animal to clarify whether C1q is involved in aging-related bone loss.

P-13 Identification of experimental occlusal interference using fMRI

Masafumi Oda, Taturou Tanaka, Shinji Kito, Shinobu Matsumoto-Takeda,
Shun Nishimura and Yasuhiro Morimoto

Division of Oral and Maxillofacial Radiology, Kyushu Dental University

Recent studies suggest that tonsilloliths should be clinically related to halitosis and tonsillar abscess. Based on our empirical knowledge, tonsilloliths are reported to be relative commonly encountered in daily clinical practice. It has been reported that the detection rate of tonsilloliths was under 15% based on previous reports, although experience suggests otherwise. The purpose of the study was to evaluate the prevalence and the characteristics of tonsilloliths using computed tomography (CT). 482 CT images were retrospectively assessed with respect to the presence and characteristics of tonsilloliths. The detection rate of tonsilloliths was 46.1% using CT scans, unlikely the previous reports. The characteristics of tonsillolith were dot-like figure with about 300~500 Hounsfields unit within the palatine tonsil under the soft palate. The most common length of tonsiloliths was about 3 or 4 mm. As the subjects aged, the detection rate increased gradually. A significant difference in the tonsillolith detection rate was found between the over and under 40-year-old groups ($p < 0.0001$). The present results suggest that tonsilloliths are relatively more common than previously suggested.

P-14 Study of the two types of endoscope systems for the root canal observation

Masataka Fujimoto¹, Shinji Yoshii¹, Satoshi Ikezawa², Toshitsugu Ueda² and Chiaki Kitamura¹

1 Division of Endodontics and Restorative Dentistry, Kyushu Dental University

2 Waseda University Graduate School of Information, Production and Systems

Abstract: The development of dental instruments such as a dental microscope and cone-beam Computed Tomography (CBCT) improve the precision of dental diagnosis and treatments. However, observation of fine structures inside the root canal and deep periodontal pockets is still difficult with using these instruments. In this study, to solve the aforementioned problems, we developed two type of dental endoscope system for diagnosis. One endoscope is external-irradiation system. The probe of the external-irradiation system is composed with an image fiber which has 600 μm diameter and Gradient-index lens (GRIN lens) 500 μm in diameter. Another endoscope is internal irradiation system. This probe has the image fiber, GRIN lens and optical fibers to capture the images and illuminate the observation area with a single probe. This system fabricated with 300 μm diameter image fiber, 250 μm diameter GRIN lens and five optical fibers which has the diameter in 65 μm . Using these endoscopes, we observed the resolution chart that have 10, 20, 50, 100 μm line and space. As a result, the line and space of 10-100 μm can be observed with both of the system. However, captured image of the internal-irradiation system was observed the deviation of the center axis between the image fiber and the GRIN lens. Therefore, we change the GRIN lens diameter same as the image fiber and fabricated the new endoscope probe. With the new internal-irradiation probe, captured image had the low deviation of the center axis comparing to previous one and the new probe allows more efficiently image caption. In the future, we would like to measure and evaluate our probe on the image resolution and the intensity of the illumination light.

P-15 The evaluation of treatment effects of oral appliance at different mandibular positions for obstructive sleep apnea

Eri Makihara, Toshihiro Kawano, Ryuichiro Miyajima, Shogo Tsuda,
Yoshito Shima, Takahumi Watanabe and Shin-ichi Masumi

Division of Occlusion & Maxillofacial Reconstruction, Kyushu Dental University

Abstract: Oral appliances (OAs) have become widely used for the management of obstructive sleep apnea (OSA). The aim of OAs is to advance the mandible slightly to enlarge the upper airway and prevent collapse during sleep. Larger mandibular protrusion will produce a larger decrease in OSA events, while some studies have shown a relationship with increased side effects such as occlusal changes including tooth pain, and increased protrusion. The purpose of this study was to evaluate the difference of treatment effects of OAs at the 50% and at 75% anterior mandibular positions. 31 OSA patients (17 male 14 female; 61.6 ± 11.82 years) were included in this study. All patients were randomly divided into two groups: OAs at 50% anterior mandibular position group (the 50% group) and at 75% anterior mandibular position group (the 75% group). Overnight polysomnography (PSG) tests were performed twice; before and after the OA treatment. There was no difference of AHI between two groups before and after treatment ($p=0.538$, $p=0.570$ respectively). There was a significant improvement of AHI in both the 50% group and the 75% group ($p=0.008$, $p=0.035$ respectively). These results suggested that the 50 anterior mandibular position is easy to accept while still offering some effects in OSA patients. There might be some OSA patients who can acquire treatment efficacy, even though their mandibular protrusion is not large.

P-16 Analysis of Volatile Organic Compounds from Human Saliva via Zeolite-Based Thin-Film Microextraction Coupled with Gas Chromatography-Mass Spectrometry

Hiroyo Shigeyama¹, Tao Wang³, Satoko Kakuta¹, Masanori Iwasaki¹, Inho Soh¹,
Shuji Awano², Seung-Woo Lee³ and Toshihiro Ansai¹

1 Division of Community Oral Health Development, Kyushu Dental University

2 Division of Comprehensive Education, Kyushu Dental University

3 Graduate School of Environmental Engineering, the University of Kitakyushu

Abstract: Cancer has been the most common cause of death in Japan for more than 30 years, and its early detection becomes a key factor for effective treatment of patients. Cancer is often diagnosed based on the serum and/or tissue levels of DNA and proteins. Recently, odorous molecules that are excreted from the body have attracted increasing interest, among which some molecules exhibit strong correlations with the pathology of certain conditions. Such compounds are referred to low-molecular-weight volatile organic compounds (VOCs). The VOCs produced during metabolism are excreted into urine, serum, saliva, and sweat. As pathological analyses based on VOCs are non-invasive and inexpensive, this method has attracted attention as a new diagnostic technique. Saliva includes proteins, peptides, hormones, and VOCs and is considered to reflect the health status of the whole body. In addition, it has certain advantages over blood and urine in terms of the biological information it can provide and can be collected easily, repeatedly, non-invasively and painlessly. Nevertheless, there have only been a few reports about salivary VOC levels. One of the reasons for this, is that until recently it has not been possible to detect trace amounts (less than 1/1000th of the levels seen in blood) of salivary components with high sensitivity. Currently, VOC levels are usually analyzed using solid-phase microextraction (SPME) and gas chromatography-mass spectrometry (GC-MS) in combination, i.e., the SPME-GC-MS technique. However, a small adsorption area within the SPME device and the deterioration of the adsorbent due to thermal desorption and repeated use were found to be problems with this technique. In this study, we developed a SPME device that is capable of detecting trace levels of VOC in saliva with high sensitivity based on GC-MS. In addition, we also discussed cancer diagnosis based on analyses of saliva samples.

P-17 Kyushu Dental University Global Scholarly Exchange (KDU-GSE) program 2015 student report in Taiwan

Natsuki Adachi and Moyo Honda

Third-year Student, School of Oral Health Sciences, Kyushu Dental University

Abstract: The Kyushu Dental University Global Scholarly Exchange(KDU-GSE) program on Kaohsiung Medical University (KMU), School of Oral Health Sciences, Taiwan performed in September 14th to 20th,2015. This program is prospect for students to establish the viewing on the global dental situation. A cooperative agreement of the international exchange between KDU and KMU has been in effect since2013. In this program, participants of this program visited KMU of School of Oral Health Sciences, outpatient dental clinic of Teaching Hospital and Kaohsiung Municipal Ta-Tung Hospital and The first Dental clinic in Kaohsiung city. And then, moved to Taipei city for attending The Academic Meeting of The 8th Asian Conference of Oral Health Promotion for School Children (ACOHPS). It was reviled that Taiwan has no dental hygienist license since graduated students of school of oral health sciences work as a dental assistant in dental clinic. Participants of this program strongly felt that co-dental staff play a very important role in dentistry in both of Taiwan and Japan and further more knowledge and clinical training should be done from now on. Also, these programs gave them good opportunity to consider about their future carrier as well as act globally as a dental hygienist. From the results, the KMU-GSE program is helpful to make students to expand their worldwide viewing and draw out their future images.

P-18 NF- κ B signaling and denervation-induced skeletal muscle atrophy

Shoichiro Kokabu, Chihiro Nakatomi, Takuma Matsubara and Eijiro Jimi

Division of Molecular Signaling and Biochemistry, Department of Health promotion, Kyushu Dental University

Abstract: Several human diseases can lead to skeletal muscle atrophy, a condition which correlates with increased mortality and morbidity rates. Clinically addressing muscle atrophy remains an unresolved medical need, and thus the development of preclinical tools to assist drug discovery and basic research is important for advancing towards this goal. The transcription factor nuclear factor κ B (NF- κ B) regulates the expression of a wide variety of genes involved in immune and inflammatory responses, cell survival and proliferation. NF- κ B signaling has also been shown to be involved in skeletal muscle atrophy. A reduction in NF- κ B signaling counteracts muscle atrophy induced by cancer cachexia, disuse or denervation. However, the co-regulators and target genes of NF- κ B during muscle atrophy remain unknown. In addition, the temporal and spatial dynamics of NF- κ B signaling during the muscle atrophy process are not clearly understood. Here, we report the *in vivo* dynamics of NF- κ B signaling during muscle atrophy and determine the “when” and “where” of NF- κ B activity. We generated transgenic reporter mice (TG1085), expressing a GFP-Luciferase fusion protein under the control of NF- κ B response element to detect the localization and intensity of NF- κ B signaling in real time *in vivo*. When mouse embryonic fibroblasts (MEF) from TG1085 were treated with TNF- α , GFP levels and luciferase activities were increased in dose-dependent manner. We next generated a model of denervation-induced skeletal muscle atrophy by removing the sciatic nerve from 8-wk-male TG1085 and observed NF- κ B signaling in anterior tibial muscle and gastrocnemius muscle. NF- κ B signaling was increased in both muscles with a maximum intensity observed on 5 day.

P-19 Dentistry Course at Meiji Gakuen High School

Kyoka Hashimoto¹, Mei Kotani¹, Jun Nakano¹, Yutaro Hashimoto¹, Takeshi Kawada¹,
Naoki Kakudate² and Tatsuji Nishihara²

1 Meiji Gakuen High School

2 Kyushu Dental University

Abstract: 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 dentistry course for senior high school students at Meiji Gakuen High School. In the last academic year, 2015, four second grade students selected this elective course. The students' purpose was to learn about dentistry and develop other students' interests in oral health. First, they started by dividing into two groups. One group studied the cause of dental caries and the other searched the strategies of caries prevention. Second, they considered precautions from three viewpoints; bacteria, host and matrix. Third, they examined the precautions which are suitable for senior high school students. Finally, the students conducted a presentation at the Meiji Gakuen High School. This process enhanced not only the problem-finding and problem-solving abilities of students, but also their logical and critical thinking ability.

P-20 A novel protein actin ring regulator PPP1r18 in osteoclasts

Takuma Matsubara, Chihiro Nakatomi, Mariko Urata, Masahiro Ogawa, Kenya Toyama, Hiroshi Kunihiro, Shoichiro Kokabu and Eijiro Jimi

Division of Molecular Signaling and Biochemistry, Department of Health Improvement, Kyushu Dental University

Abstract: Bone homeostasis is maintained by harmonized bone formation by osteoblasts and bone destruction by osteoclasts. 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 form sealing zone and ruffled border, a characteristic actin cytoskeletal structure and adhere to bone matrix strongly while bone resorption. Osteoclasts in c-Src deficient mice that shown osteopetrosis did not form sealing zone and ruffled border and they could little resorb bone. This shows the importance of sealing zone in osteoclasts in bone resorption. Sealing zone is consistent with dot-like actin structure named podosomes. Podosomes are cell periphery of osteoclast in vitro and involved in sealing zone formation. Constitutively activated c-Src (caSrc) made podosome formation in c-Src null fibroblasts (SYF cells). To reveal the actin regulatory molecule for caSrc-induced podosome formation, we analyzed the binding protein of c-Src in caSrc transfected SYF cells by mass spectrum analysis and identified an actin binding protein PPP1r18. PPP1r18 was expressed and strictly localized in podosome of osteoclast actin ring in vitro corresponding with sealing zone on bone surface. Moreover Localization of PPP1r18 was changed from cell periphery to caSrc induced podosomes in SYF cells. On the other hand, differentiation and actin ring formation were promoted when knock down of PPP1r18 by shRNA in RAW264.7 cells. In addition, actin ring formation was suppressed by over expression of PPP1r18 in osteoclasts. In vitro analysis revealed PPP1r18 was weakly bound to c-Src and was not phosphorylated by caSrc. These results suggest that PPP1r18 plays important role in sealing zone formation.

P-21 Development of educational effects scale of interdisciplinary education

Kanetaka Yamaguchi¹, Yuhei Matsuda^{1,2}, Junichi Karaki¹, Takahiro Nakahara^{1,3},
Sumio Akifusa^{2,4}, Katsumi Hidaka^{1,4} and Tatsuji Nishihara⁵

1 Educational Cooperation Center, 2 Department of Support for Senior Citizens, 3 Division of General Education, Department of Oral Function, 4 Department of Oral Health Management, 5 Division of Infections and Molecular Biology, Department of Health Promotion, Kyushu Dental University

Abstract: Since 2013, we, an educational cooperation center, had been promoting inter-university collaborative education program for post-graduate students from four different Japanese universities. We wanted to evaluate the effectiveness of our interdisciplinary educational program and to improve it based on its feedback; however, there is hardly any standard for the assessment of interdisciplinary educational achievement. Therefore, this study aimed to develop a new scale for assessing the educational effects of interdisciplinary education (EEIE).

We recruited 97 graduate students who attended our classes, and then classified them into three categories: dental and medical students (n = 10), biomaterial students (n = 39), and engineering students (n = 48). We investigated the students' satisfaction level regarding our interdisciplinary lectures using a free description questionnaire and interviews. Based on these results, we developed ten EEIE-related items. These items were assessed using a five-point Likert scale (1- "Disagree" to 5- "Strongly agree"). We subsequently conducted a survey to examine the validity and reliability of the scale. This survey was conducted for item selection, construct validity, and to examine internal consistency. Item selection was conducted by an item-total correlation analysis, construct validity was assessed by calculating factor analysis, and internal consistency was assessed by Cronbach's alpha coefficients. Nine items were selected by statistical analysis. The factor analysis showed three factors: "Understandability," "Innovation," and "Satisfaction." Cronbach's alpha coefficients of subscales ranged from 0.71 to 0.83. The EEIE is the first validated and reliable self-administered questionnaire specifically designed for evaluating the effects of interdisciplinary educational programs. Our study suggests that the EEIE may be a useful tool for evaluating the educational achievement of students who have their own specific educational background. Therefore, future research should work toward confirming its validity and reliability.

P-22 Kyushu Dental University Global Scholarly Exchange 2015 Short-Term Visiting Program Report -Srinakharinwirot University, Thailand-

Ryosuke Takahashi¹, Tomoe Tamai¹, Riku Otani² and Mie Kamate²

1 Fourth grade student, 2 Third grade student, School of Dentistry, Faculty of Dentistry, Kyushu Dental University

Abstract: We joined the Kyushu Dental University (KDU) Global Scholarly Exchange short-term visiting program to visit Srinakharinwirot University (SWU), Thailand from September 6th to 12th, 2015. The aim of the program was to provide us with an opportunity to understand dental systems in Thailand. We first visited SWU dental hospital building to observe dental trainings. Dental students used an electronic textbook in place of a paper textbook on a digital device such as iPad. The dental hospital had many departments specialized in different fields of dentistry, including pedodontics, preventive dentistry, oral medicine, oral surgery, dental radiology, general dentistry and prosthodontics. In the hospital, dental students also provided patients with treatments under the supervisors in the department of general dentistry. They asked patients detailed medical questions before starting treatments in Thai or in English. At an English class, we made a presentation about ourselves in English to fifth grade students of SWU. Fifth grade students also made a presentation about themselves in English without any notes. Dr. Nirada, an associate dean in the faculty of dentistry, gave us a lecture about dental education, health insurance system and public health in Thailand. We visited a community center at Ekkamai district in Bangkok on the next day to provide a community dental service. Staff from SWU dental hospital and we provided the patients who could not pay for dental treatments with scaling, filling and tooth extraction without a fee as a community dental service. We also taught children how to brush teeth in the rhythm of Japanese songs. We could fully understand social health problems and cultural backgrounds in Thailand. This program broadened our global mindset and enhanced our global communication skills in English.

P-23 Effect of osteocalcin on pancreatic alpha cells

Sen Higashi¹, Akiko Mizokami², Tomoko Ohsumi¹, Masato Hirata² and Hiroshi Takeuchi¹

1 Division Applied Pharmacology, Kyushu Dental University, 2 Laboratory Molecular and Cellular Biochemistry, Faculty Dental Science, Kyushu University

Abstract: Osteocalcin (OC), a bone-derived protein is involved in the regulation of energy metabolism in variety of target tissues. A G-protein coupled receptor, GPRC6A, has been identified as a putative receptor for OC, which mediates insulin and incretin secretion in pancreatic β -cells and intestinal endocrine cells, and increases expression of adiponectin in adipocytes. Recently, we noticed that GPRC6A expressed in not only β -cells, but also the peripheral cells in the pancreatic islets. Thus in the present study, we examined the effect of OC on expression of molecules related to systemic glucose homeostasis in the pancreas. We found that β -cells in the Langerhans islets showed high expression of GPRC6A while the peripheral cells surrounding β -cells in the islets were also positive to GPRC6A signals. We also found that the number of cells expressing GLP-1 in the peripheral area was increased by long-term administration of OC. When, α TC1-6, a cultured pancreatic α cells were treated with OC, gene expression of PC1/3, the enzyme involved in proglucagon conversion to GLP-1, was elevated. These results suggest that OC contributes to functional regulation of not only β -cells, but also α -cells in the pancreas.

P-24 A Case of Hypohidrotic Ectodermal Dysplasia with Partial Anodontia

Katsura Saeki¹, Toshihiro Kawano², Kenshi Maki¹

1 Division of Developmental Stomatognathic Function Science, Department of Health Promotion,

2 Division of Occlusion & Maxillofacial Reconstruction, Department of Oral Function, Kyushu Dental University

Ectodermal dysplasia (ED) represents a disorder group characterised by abnormal development of the ectodermal derivatives. ED is thought to occur in approximately 1:10,000 to 1:1,00,000 live births and is more frequent in males.

Hypohidrotic ectodermal dysplasia (HED) is an inherited disorder characterized mainly by hypotrichosis, hypohidrosis, a characteristic facial appearance, hypodontia/anodontia and malformed teeth.

We encountered a 4-year 6-month-old boy with partial anodontia associated with hypohidrotic ectodermal dysplasia. He had fine sparse hair on scalp and lack of hair on rest of the body, prominent forehead, saddle nose, everted lips. He had difficulty in mastication. He was missing congenitally 12 deciduous teeth and 23 permanent teeth.

1 month later, removable partial dentures were delivered, and after 1 day he was well adjusted to the dentures.

Removable partial dentures are most often the treatment of choice for young HED patients. Prosthetic intervention is of utmost importance in the management of HED patients, as it resolves problems associated with functional, aesthetic, and psychological issues, and improves a patient's quality of life.

