

Expressions

Newsletter of the HKU Faculty of Dentistry
2016, Issue 2



Faculty Members Excel in
Teaching, Research and Knowledge Exchange

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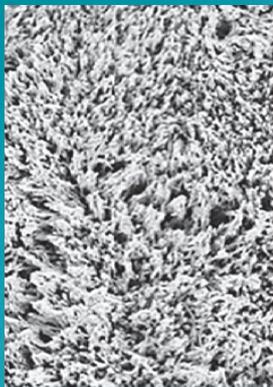


Faculty of Dentistry
The University of Hong Kong

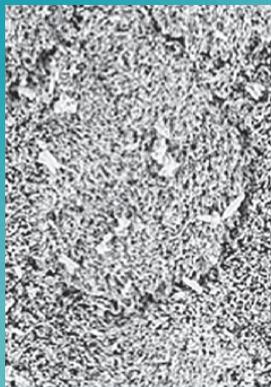
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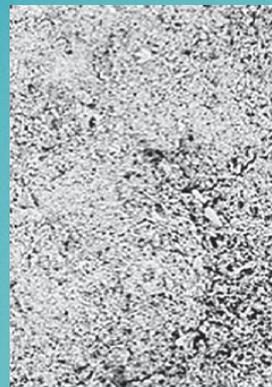
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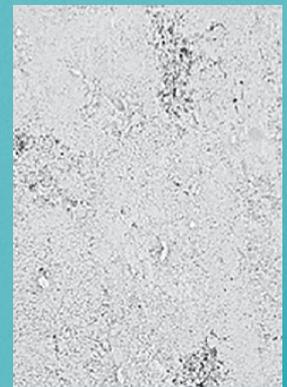
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ENAMEL AFTER
5 APPLICATIONS



ENAMEL AFTER
10 APPLICATIONS



ENAMEL AFTER
15 APPLICATIONS



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*Demonstration of Colgate® Enamel Health™ mode of action. Images were captured using an electron microscope.

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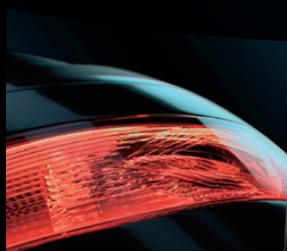
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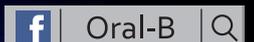
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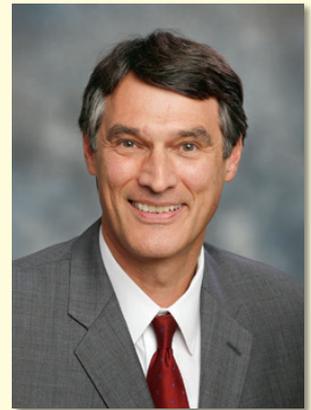
Unprecedented growth

This year, the Faculty has admitted 76 students for the Bachelor of Dental Surgery programme, which the largest number of undergraduate students ever being admitted and an increase by almost 40% compared to the previous years. Over the next six years, the total number of students enrolled in the BDS programme will grow from currently 320 to 438 in the year 2021.

In preparation for the larger student cohorts, the Faculty underwent an organisational development, recruited new staff, and created a master plan for the reconfiguration of the Hospital from the ground floor up. The Faculty has adopted a matrix structure with seven clinical and two core science disciplines that are closely linked with each other. The new structure enhances the integration of educational programmes and facilitates interdisciplinary collaboration and research. We have recruited Clinical Professors with a strong clinical background and excellent research track record in Periodontology and Oral and Maxillofacial Radiology, well-trained Clinical Assistant Professors in Orthodontics, Operative Dentistry, Prosthodontics, and Endodontology and up-and-coming Research Assistant Professors for our Research Groups in Biomedical and Tissue Engineering, Infection and Immunity, and Public Health and Healthy Ageing. We are in the process of building two large comprehensive dental care clinics, an expanded simulation laboratory with state-of-the art equipment, seminar and conference

rooms with audio-visual capabilities, additional offices for our staff, and flex rooms to accommodate various projects. To further enhance experiential learning for our students and strengthen our international research collaborations, we have expanded our network of partner Dental Schools in Asia, Europe, and the Americas. The unprecedented growth our Faculty is experiencing provides a great opportunity to bring us to the next level.

While all of this is happening, our staff continues to excel in teaching, research, service, and knowledge exchange. In this issue of the Expressions, you will learn about some of the many exciting projects of our staff and students.



Professor Thomas F. Flemmig
Dean, The Faculty of Dentistry
The University of Hong Kong

Faculty members excel in Teaching, Research and Knowledge Exchange

On May 9, several members of the Faculty were presented awards at the Award Presentation Ceremony for Excellence in Teaching, Research & Knowledge Exchange 2015 conducted by The University of Hong Kong. In this issue, Expressions interviews the awardees on their award winning projects or outstanding teaching performances.

KE Excellence Award – Dr Gloria Wong

In 2011, The University of Hong Kong introduced the Faculty Knowledge Exchange (KE) Awards to recognize each Faculty's outstanding KE accomplishment that has made a demonstrable economic, social or cultural impact which benefits the community, business/industry, or partner organizations. And in 2015/16, the best of the best will be selected to win the KE Excellence Award.

Receiving the KE Excellence Award and Faculty KE Award this year is the team led by Dr Gloria Wong. The team consists of five PhDs and four undergraduate students - Dr Jayakumar Jayaraman, Dr Lingwei Li, Dr Tao Pei, Dr Ling Sun, Dr Yifeng Wen, Ms Pui-Ying Lam, Ms Ka-Yan Cheung, Mr Kit Lee and Mr Ka-Fai Wong. The award project is "Dental Development: An Aid to Give Identities and to Inform General Health" which promotes birth registration in India and mainland China, accurate methods of age estimation, and oral health.

Dr Wong said, "Children lacking legal identity may face difficulty accessing age-related services from their society. They are also vulnerable to exploitation through child labour, early marriage and child prostitution." In order



to provide an accurate "age" for unregistered children, the project team promoted a realistic, valid and reliable method of age estimation based on clearly defined criteria of tooth development stages and mathematical techniques.

The timing of all stages of tooth development follows a sequential and organised pattern, from the initial calcification of enamel until complete rot formation, thus the developing dentition can be used as a maturity indicator from which an individual's age can be assessed. The team applied the knowledge and method to the communities within and outside Hong Kong in several directions:

- 1) Launching two student KE projects. The first project "Giving an identity to undocumented children in

Chennai, India” was carried out in villages of southern India with the distribution of leaflets in various Indian languages. Educational public shows were also staged for around 500 families to promote the importance of birth registration. In addition, oral health examination and education was provided to 200 underprivileged children in Chennai, India. Dental age assessments were conducted for 50 undocumented children and age certificates were issued to them.

The second project “Aiding age estimation for orphans in Guangxi, Mainland China”, apart from promoting oral health and estimating age, also advanced the ideas of respecting lives, since serious gender discrimination in rural areas in China leads to many female orphans.

- 2) Providing personalized oral and general health instructions to less privileged families in Hong Kong under the WAY Fund Project “Oral health service and education for young people in Southern District of Hong Kong”. A sustainable mode of health and education for the community has been developed.
- 3) Establishing the world’s first charity, the “D.O.B. (Date of Birth) Foundation” (www.dob-foundation.org) to promote accurate birth records.

The team, aside from engaging the community, also transferred the knowledge to academic institutions and dental professionals. The method has been incorporated into undergraduate or postgraduate teachings in dental schools in Hong Kong, London and Perth. It has contributed to the international population database of the Dental Age Research London Information Group which can be used by researchers and related authorities in civil, legal, criminal and forensic applications. Workshops on “Age Assessment in Dentistry” have been held to train more than 200 forensic practitioners and dentists in India and Hong Kong.

Delighted at winning the KE Excellence Award, Dr Wong and the team are even more pleased for the process of

engaging the community and applying the knowledge to enhance human well-being. Undergraduate students, through the project “Aiding age estimation for orphans in Guangxi, Mainland China”, not just gained more in dental knowledge and professional skills, but also advanced their ability to tackle challenges and enhanced their sense of social responsibility.



During the trip, BDS 5 students Ka-Yan Cheung, Kit Lee, Kai-Fai Wong and Pui-Ying Lam found it is difficult to find full equipment in China, so they smartly improvised by aligning desks to form a dental chair for check-ups, changed torches to headlights for examinations, and placed cotton rolls into children’s mouths to absorb saliva. After the trip, they felt grateful to have had the opportunity to help the children in need. Lee mentioned that they imparted the knowledge to care takers and teachers so to enhance their ability to maintain good oral hygiene. Lam said, “After this trip, I am motivated to advance myself in knowledge. I want to see more child patients and improve their lives.”

“In the beginning, we thought we would provide knowledge and service to less privileged people, I actually realized that we gain more from them. This experience and knowledge cannot be learned in the classroom,” said Dr Wong.

Research Output Prize – Professor CH Chu, Professor Edward Lo, Professor Quanli Li, Dr Lei Mei and Dr Ying Cao

Enamel, a tooth crown's hard outer layer, is the hardest tissue in the human body to protect our teeth from daily use such as chewing, biting, crunching and grinding. Although it is a hard protector of teeth, it can crack and chip. It can also be worn away by attrition, abrasion and erosion. Since there are no living cells in enamel, our body neither can repair nor replenish the lost enamel. As a result, the tooth is prone to have surface tissue loss and develop cavities.

The existing treatment of enamel loss is usually placement of artificial dental materials onto the surface through bonding or covering the tooth with a crown so as to protect the tooth and improve cosmetic appearance. In order to improve enamel loss treatment methods, a research team formed by Professor Edward Lo, Professor CH Chu, Professor Quanli Li (Anhui University), Dr Lei Mei and Dr Ying Cao spent nearly three years in laboratory studies to develop a method so that enamel-like mineralized tissue can be regenerated and used to repair enamel loss. A scientific article on the research "Agarose Hydrogel Biomimetic Mineralization Model for the Regeneration of Enamel Prismlike Tissue" won a Research Output Prize of the HKU.

In view of the trend in regenerative medicine, the research team approached the regeneration of mineralized tissue and sought to find a treatment for enamel loss. The team was dedicated to improve the study results by optimizing the experimental conditions such as the ratio and combination of mineral components, pH value, concentration, temperature, environment and duration. After countless trials, the approach finally showed promise. Dr Lei Mei, Postdoctoral Fellow in Biomedical and Tissue Engineering, said, "We demonstrated that an enamel prism-like structure can be regenerated by an agarose hydrogel biomimetic mineralization model under physiological conditions using agarose without using cell and/or enamel protein, which potentially can be used to repair enamel loss caused by erosion, attrition or abrasion."



Professor Edward Lo, Chair of Dental Public Health, agreed that the award of the Research Output Prize is recognition of the team's hard work and an encouragement to further studies. "We are committed to maintain a high quality of research," he said. Dr Lei Mei added, "We will keep working in this field and hope we will find a novel and practical method to regenerate tooth tissue and benefit numerous people in the future."

The next step for the team is to turn this research finding into clinical applications. Professor CH Chu, Clinical Professor in Community and Family Dentistry, stated that the research demonstrated that it is possible to regenerate enamel-like tissue on a human tooth. With further studies, he hopes patients with damaged or lost enamel will be managed by "re-growth" of the tissue.

Reference

Cao Y, Mei L, Li QL, Lo ECM, and Chu CH. Agarose Hydrogel Biomimetic Mineralization Model for the Regeneration of Enamel Prismlike Tissue. *ACS Appl. Mater. Interfaces*, 2014, 6 (1), pp 410–420

Teaching Innovation Award – Dr Michael Botelho

Technology is changing the way we are able to present and consume educational information but we are only just beginning to understand what works well and what is valued.

In order to help the learning of technologically-savvy youth both within and outside the classroom, Dr Botelho, Clinical Associate Professor in Oral Rehabilitation, has developed a new approach to advancing students' knowledge using video recorded teaching moments in response to students' questions and problems. These communal consultation videos allows one-on-one question and answer teaching moments with individual students to be shared with the whole cohort of students and even beyond. This year, the communal consultation videos won the first Teaching Innovation Award.

When a student presents a teacher's room with a question or problem, there is usually a dialogue after which the student leaves with an answer to his or her problem. However that teaching moment is lost to the rest of the class. Very often, the question is one that many students have, meaning identical questions are being repeatedly answered. Originally using video cameras but now his mobile phone, Dr Botelho has created a library of video resources for students to use outside of the classroom to answer questions they may have when they journey from the didactic simulation laboratory course to clinics where they provide care for their patients. These video resources bridge the gap between the theoretical environment of the teaching laboratory to the authentic, challenging environment of actual patient care.

The videos are classified and categorized according to their complexity (simple, advanced, complex), type of bridge, tooth location and key words. This allows students to find specific cases and solutions to their problems in patient care.

Students found this creative idea very useful in their learning. Melissa Fok (BDS 5) said, "The series of communal consultation videos that Dr Botelho has innovated readily connect formal, informal and collaborative learning. It is on-demand, stress-free, flexible and caters well to when and where I am ready to learn. This readily accessible database of videos has tremendously assisted me in preparation for



my written and clinical practical examinations throughout my final years in the BDS curriculum."

Apart from solving students' problems directly, Dr Botelho also states question(s) on the video so to encourage students to think and to find the answer at their own time and pace. "I find the course videos very useful and new to me. I can try to guess the answer when my colleagues start to present the case in the video. It is quite fun because I will not be afraid of answering it wrongly. Also, there is no one voicing out the answer beside me so I can spend time thinking about the case," said Cheuk-Sze Lee (BDS 5).

Without any stress or timeline given, the video arouses students' curiosity and involvement in searching answers or materials by themselves and eventually stimulates their critical thinking.

Dr Botelho described the award as a nice recognition, "It leads me to think what I can do next to further help the student's learning." Right now, he is improving another set of videos where he has recorded groups of students' answers based on worksheet questions. Using timestamps in the video, these will correspond to the question on the worksheet. This will thereby allow students to find and listen to a particular part by one click rather than going through the whole recording.

Dr Botelho is hoping to expand the use of video learning for students in other parts of the curriculum. On the horizon, he and other staff are exploring ways to develop more online resources for clinical skills such as diagnosis, decision making and treatment planning.

Faculty Outstanding Teaching Award – Dr Yanqi Yang



The Chinese proverb “Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime” is perhaps the best description for the teaching philosophy of Dr Yanqi Yang, Clinical Assistant

Professor in Orthodontics.

Being the Faculty Outstanding Teaching Awardee 2015, Dr Yang believes that a good teacher does not just give students the knowledge, but also equips them with the ability to obtain knowledge. Inspired by her mother, a high school teacher, Dr Yang followed her mother’s path to pass knowledge to younger generations. “Teaching is to teach students how to get the knowledge. In other words, it’s to teach students how to learn. It is important for both undergraduate and postgraduate students,” she said.

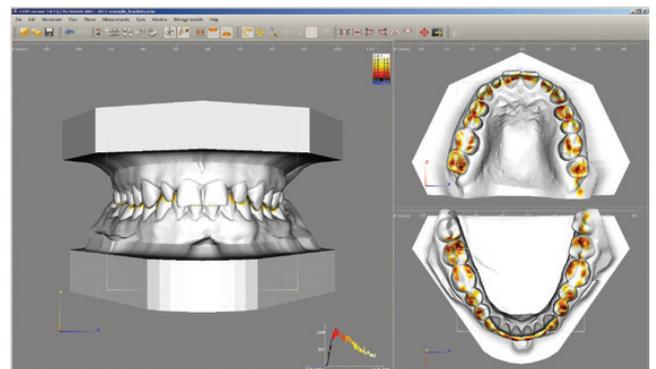
Dr Kwan-Lok Tse (BDS 2015) attended Dr Yang’s class in his BDS year five and enjoyed her teaching style. He said: “She uses lucid explanations of profound theories, giving us the essential facts we needed.” Dr Yang applies inquiry-based learning to undergraduate teaching. Undergraduate students do not have much exposure to orthodontic patient treatment; hence it is not easy for students to understand the theories or to master the skills in the area. To tackle this challenge, Dr Yang gives real cases with full records for students to discuss during small group seminar sessions. At the end of the class, she gives questions for students to think about, analyze and apply the knowledge they have learnt. Dr Tsz said after each class, Dr Yang would give students “take home messages” which aided the students to remember the important points of what they had been taught, as well as to stimulate their critical thinking.

Dr Ka-Wai Wong (BDS 2006, MDS 2016) quoted Benjamin Franklin’s saying to describe Dr Yang’s teaching: “Tell me and I forget, teach me and I may remember, involve me and I learn.” He said Dr Yang always invites students to participate rather than simply giving lectures. Students are encouraged to do some study and research before having discussion or presentations in the class.

Dr Yang said “A teacher is not just teaching but also facilitating and guiding the students.” Inquiry-based learning is one of her teaching approaches: “To let students think how to get the knowledge and how to apply the knowledge they have acquired is very important,” she continued. As a facilitator, Dr Yang does not simply apply a “laissez-faire” approach to students. Some guidance is still needed. “It is essential to give a summary (after each class) to students and let them understand how deep and how wide they should learn,” she said.

Dr Ren Chong (PhD student) said, “Dr Yang is good at teaching. Instead of giving us a way directly, she always cultivates our thinking.” After each research seminar, Dr Yang provides hints on students’ current research problems.

Dr Yang also actively improves teaching methods. Supported by a Teaching Development Grant, she virtualizes learning materials; for example, digitalization of photos, radiographs and case records, as well as 3D-scanning of plaster models. The e-materials are then uploaded on an e-platform so that students can access them anytime and anywhere. One week before a small group lecture class, students are invited to view the case studies through the e-platform.



Excited and grateful to win the award, Dr Yang said she is thankful for the support of the Faculty, colleagues and students. Meanwhile, it is also an opportunity for her to reflect on her past teaching methods and to look forward to exploring more teaching skills to motivate the students to learn better.

Dr Yang enjoys being a teacher. When she receives emails from graduates choosing orthodontics as their specialty field or postgraduates having great success in their careers, she is gratified. This sense of satisfaction is one of the motivations driving her to teach from her heart.

Honoured by IADR Awards

Faculty members attended the 94th International Association for Dental Research (IADR) General Session and Exhibition held from June 22 to 25 in Seoul, Republic of Korea. Among those presented with IADR awards, Professor Edward Lo received the 2016 IADR Distinguished Scientist Award in Geriatric Oral Research, Dr Chengfei Zhang won the IADR/AADR William J. Gies Award in Biomaterials and Bioengineering Research, and

Dr Ivy C Wei (PhD student) was presented with the IADR Heraeus Kulzer Travel Award.

In addition, the team formed by Professor Edward Lo, Professor CH Chu, Dr Marcus Fung, Dr Duangporn Doangthip and Dr May Chun-Mei Wong received the IADR Cariology Research Group Science Award. The awardees shared their happy moments with Expressions.

IADR Distinguished Scientist Award



Professor Edward Lo, Chair Professor of Dental Public Health, received the 2016 IADR Distinguished Scientist Award in Geriatric Oral Research, one of the highest honors bestowed by the

IADR which is the largest international association of dental researchers. He was recognized at the Opening Ceremonies of the 94th IADR General Session and Exhibition on June 22. The award is designed to stimulate, encourage and recognize outstanding research accomplishments in the field of geriatric oral research.

Interested in oral epidemiology, oral health care delivery and preventive dentistry, Professor Lo has conducted major research projects that have included epidemiological studies on oral diseases in various population groups, including geriatric populations in China and Hong Kong, the oral health-related quality of life of the Chinese elderly, and innovative preventive and treatment methods for dental caries. One of his latest investigations has been the application of silver diamine fluoride solution on exposed tooth root surfaces. "This new non-invasive method can reduce and stop root decay, thus providing an alternative to tooth-filling treatment and controlling further decay of the tooth," he said.

He is a visionary who foresaw the rising oral health problem in the aging population 20 years ago. He also realized that there was not much geriatric oral research internationally. In view of this, he stepped up his work in promoting

oral health in the elderly community. He endeavored to find new methods and materials in the prevention and treatment of tooth decay.

"It is not easy for the elderly, especially those who live in institutions or are home-bound, to receive dental care in conventional dental clinics because of their health conditions or lack of social support," commented Professor Lo. He has contributed significantly to the development of outreach dental care services for the institutionalized elderly in Hong Kong in which dentists and dental assistants bring portable dental equipment to homes and provide essential dental care to the residents on site. Apart from conducting scientific studies, Professor Lo often leads his dental students and other dental care personnel to homes and centres for the elderly to provide oral health check-up talks. They also provide oral health talks and workshops for the family members and care-takers of older people on how to maintain oral health. He said, "Oral health problems of old people are usually quite complex, such as having advanced tooth decay, periodontal diseases and defective dentures. Many of them also have systemic health problems. Thus, we have to give them extra care and individualized advice."

Professor Lo's many original and important investigations in basic, clinical and epidemiological sciences associated with geriatric oral research, as well as his continuous contributions to dental research, publications, education and community engagement activities over the past 20 years led him to win the prestigious award.

"Being awarded with this internationally recognized prize, the honour is not just to me but goes to all members of my research teams. This also shows that the research in the Faculty of Dentistry at HKU is at the highest international

standard,” said Professor Lo. He will continue to strengthen the research in geriatric oral health. “Our understanding of oral disease prevention and treatment amongst the elderly is limited. Often, we rely on the evidence generated from studies conducted on young adults, adolescents and children, and applying the dental care methods to the older populations. However, we need further clinical and laboratory studies to prove that the methods are also effective on the elderly,” continued Professor Lo. He also

wishes to cooperate further with other researchers and health care practitioners to promote interdisciplinary health care services to the community.

Professor Lo is an engaged IADR member and has served as the treasurer of the Association and as the president of the IADR Asian-Pacific Region. In 2012, he won the IADR Colgate Community-Based Research Award for Caries Prevention.

The IADR Cariology Research Group Science Award



The Cariology Research Group of IADR has established the Cariology Research Group Science Award to promote the quality of science of researchers working in the field of cariology, erosion and related subjects. This

year, the winner is the team led by Professor CH Chu, Clinical Professor in Community and Family Dentistry. The four members are Professor Edward Lo, Chair of Dental Public Health; Professor May CM Wong, Professor in Dental Public Health, Dr Duangthip Duangporn, Postdoctoral Fellow in Oral Diagnosis and Polyclinics, and Dr Marcus Fung (PhD 2014). The team received the plaque on June 23.

In Hong Kong, tooth decay in young children is prevalent with approximately half (51%) of preschool children suffering from dental caries and more than 90% of decayed teeth left untreated. The conventional restorative approach requires sophisticated dental equipment and well-trained health personnel which is often costly.

Clinical studies demonstrated that the use of 38% silver-diamine-fluoride (SDF) is not just effective in preventing and arresting caries, but also affordable, simple in application and causes no pain. The research team hence investigated the effectiveness of annual/biannual applications of different concentrations of SDF in arresting caries in young children. Dr Fung conducted the oral examination and collected the data from over 800 children in 37 kindergartens.

The results of the awarded study “Caries arresting effect using silver-diamine-fluoride with different concentration and periodicity” indicated SDF is more effective in arresting dentin caries in the primary teeth of preschool children

at 38% concentration than 12% concentration and when applied biannually rather than annually.

Professor CH Chu said, “The results of this clinical trial can be used by clinicians and dental public health professionals when deciding which concentrations and frequency of application of SDF solution should be adopted for arresting dentine caries.” The team hopes the information could lead to more appropriate therapeutic decisions for caries control in young children or those who lack access to affordable conventional dental care.

Dr Duangporn expressed her feelings about receiving the award. “We are honored to receive this award. I am grateful to my supervisors Professors Lo and Chu who propose, perform and commit to the highest standard of research. In addition, the advice on statistics provided by Professor Wong is invaluable.”

The team is also thankful to Ms. Samantha KY Li for her technical assistance in statistical analysis, the children, parents and teachers of the kindergartens where the clinical trials were carried out, and the staff and colleagues in the Faculty.

The awarded study is supported by the Food and Health Bureau Health, Health Service Research Fund and the Research Grant Council General Research Fund. The full text can be downloaded free at <http://jct.sagepub.com/content/1/2/143>.

Reference

Fung HTM, Duangthip D, Wong MCM, Lo ECM & Chu CH. Arresting Dentine Caries with Different Concentration and Periodicity of Silver Diamine Fluoride. *JDR Clinical & Translational Research* 2016;1:143-152.

IADR/AADR William J. Gies Award

The paper "Scaffold-free Prevascularized Microtissue Spheroids for Pulp Regeneration" conducted by the team of Dr Waruna L Dissanayaka, Lifang Zhu, Professor Ken M. Hargreaves, Professor LJ Jin and Dr Chengfei Zhang won the 2016 IADR/AADR William J.Gies Award in the Biomaterials and Bioengineering Research Category. This award is presented for the best paper published in the Journal of Dental Research during the preceding year.

One of the major difficulties in dental pulp regeneration is to create an optimal microenvironment that mimics the extracellular matrix (ECM) of natural pulp and securing an adequate blood supply for the survival of cell transplants. In view of the failure of current available scaffolds to mimic essential functions of natural ECM, the team for the first time investigated an approach involving the use of scaffold-free microtissue spheroids of dental pulp stem cells prevascularized by human umbilical vein endothelial cells in pulp regeneration. In contrast to scaffold-based approach, cell-cell interactions dominate in scaffold-free 3D microtissues, in which the cells themselves create specific environments, including ECM.

The study result was encouraging with the findings demonstrated that prevascularized, scaffold-free, microtissue spheroids can successfully regenerate

vascular dental pulp-like tissue and also highlighted the significance of the microtissue microenvironment as an optimal environment for successful pulp-regeneration strategies.

On behalf of the team, Dr Zhang said they are happy to be awarded. "Most important is that if we could regenerate new, functional pulp/dentin tissues as a new treatment protocol in clinical endodontics, the formerly necrosed teeth following pulp/dentin complex regeneration can survive as long as teeth with normal pulp tissue. This could lead to novel treatment strategies for better clinical management of patients."

The team will dedicate to further study in this field and look forward to applying the techniques in clinical practice.

Reference

Dissanayaka WL, Zhu L, Hargreaves KM, Jin L, Zhang C. Scaffold-free Prevascularized Microtissue Spheroids for Pulp Regeneration. *Journal of Dental Ressearch*. 2014 Dec; 93(12): 1296–1303

IADR Heraeus Kulzer Travel Award



On June 23, Dr Ivy C Wei was presented with the IADR Heraeus Kulzer Travel Award which aims to encourage young investigators to undertake research in new or innovative testing methods of

dental materials, as well as new ideas and approaches to improve and develop dental materials.

Dr Wei's research is about identification and characterization of salivary pellicle proteins on different restorative materials surfaces. In the study, she adapts proteomic

and bioinformatics methods to study the salivary pellicle proteins. The study result is that there are noteworthy variations among acquired pellicles' protein quantity and, in a subtle fashion, quality on various restorative material surfaces, which may affect the subsequent biofilm formation on them.

"The Heaeus Kulzer Travel Award is a confirmation of my work. I feel extremely honored and motivated. The award further encourages me to continue my research and carry on the Faculty's core value," said Dr Wei. She is also very thankful for the guidance of her supervisors, including Professor WK Leung, Clinical Professor in Periodontology, and Dr Michael Botelho, Clinical Associate Professor in Oral Rehabilitation, as well as the assistance of Faculty technicians.

Reception at IADR Event

During the IADR General Session and Exhibition, the HKU Faculty of Dentistry hosted a reception on June 24 to cement friendship with industrial professions and to celebrate the Faculty being ranked as the best dental school in the world this year.

Professor Thomas Flemmig, Dean of the Faculty welcomed the guests. Other faculty members who attended the event included Professor Lakshman Samaranayake, Former Dean of the Faculty; Professor Edward Lo, Chair Professor of Dental Public Health; Professor CH Chu, Clinical Professor in Family Dentistry;

Professor LJ Jin, Clinical Professor in Periodontology; Professor WK Leung, Clinical Professor in Periodontology; Professor JP Matinlinna, Professor in Dental Materials Science; Professor CM Wong, Professor in Dental Public Health Science; Dr Duangthip Duangporn, Post-doctoral Fellow in Public Health and Healthy Ageing; Dr Mei Lei, Post-doctoral Fellow in Biomedical and Tissue Engineering and more.



High Prevalence of Proximal Contact Loss among Patients with Implant-Supported Dentures

A study by a team of HKU Faculty of Dentistry researchers has found that the prevalence of proximal contact loss among patients who had received either implant-supported fixed partial denture (FPD) or implant-supported single crown (SC) in the posterior region was high. This is the first ever study published on proximal contact loss, a prosthetic complication following dental implant surgery, which aims to investigate the issue and to identify potential causes.

The study showed that 43 out of 66 prostheses had exhibited proximal contact loss that allowed more than one matrix band to pass through. Frequent food packing was reported in 40% of the prostheses. The mean interproximal space was 167 (SD=125) μm , and it was positively correlated with the age of patients and time since delivery of the prostheses. The problem of contact loss was more acute in the FPD group than in the SC group, with a significantly larger interproximal space, probably due to the dissipation of forces with the screw joint which is susceptible to deformation under loading.

also found that prostheses may show loss of contact as early as six months after delivery, and those of more than five years after delivery had significantly larger interproximal space than those up to or less than five years. According to Dr Edmond Pow, Associate Professor in Oral Rehabilitation, the causes of proximal contact loss are yet to be determined. "The problem might be partly explained by the natural migrating of the teeth towards mid-line of the mouth. It could possibly be due to the wearing of the teeth and the prosthesis, or some other unwanted movement of teeth," he said.

While a patient's age was found to be associated with the size of the interproximal space, Dr Katherine Leung, Associate Professor in Oral Rehabilitation, one of the co-investigators in the research team, advised patients who wore prostheses to visit the dentist for regular review after delivery of the prostheses.



What is worth attention is the extent of contact loss, in which the mean number of matrix bands was 4.4, that

is, 167 μm and in one case, the interproximal space was as large as 16 matrix bands, that is 608 μm . The study

Reference

Wong ATY, Wat PYP, Pow EHN, Leung KCM. Proximal contact loss between implant-supported prostheses and adjacent natural teeth: a retrospective study. *Clinical Oral Implants Research* 2015;26:e68-71.

What Provokes Fears in Visiting a Dentist?

Is there a better word than fear when describing the experience of visiting a dentist? One could not help but feel vulnerable when getting into the reclining chair with the mouth wide opened, the jaw stiffened as the sound of the scaler drew near, the legs quivered with each drill into the cavity. What actually contributed to dental phobia? Was it something clinical, environmental or psychological that provoked anxiety in dental patients?

A team of dental researchers at HKU had conducted a study to identify the underlying factor structure of the Dental Anxiety Provoking Scale. A total of 460 participants were recruited to rate 73 items in a questionnaire that covered seven factors encompassing a wide range of situations and stimuli that are perceived to provoke a person's anxiety.

The seven factors are, dental check-up, injection, scale and drill, surgery, empathy, perceived lack of control and clinic environment. The findings showed that the perception of injection and surgical treatment provoked the highest anxiety in a dental setting.

The study also revealed that male and female respondents perceived the stimuli of anxiety differently. Female respondents tended to show a relatively high anxiety toward injection, surgery, scale and drill and environment; while male respondents showed a relatively higher anxiety towards perceived lack of control, empathy and dental check up.

Dr Gloria Wong, Clinical Associate Professor in Paediatric Dentistry, one of the team's investigators, said while perceived fear is often related to the patient's own



"Relax, Mr Frobisher."

traumatic experiences, the dentist's behavior and the environment may also have an impact on the expression and development of dental fear. "How patients feel about safety and control during treatment is closely associated with factors like empathy and the relationship between the dentist and the patient," she said.

Dentists should be well aware of the concerns and anxiety preoccupations of the patients when providing treatment, in a way to alleviate to a certain extent their fears and anxiety.

Reference

Wong HM, Mak CM, To WM. Development of a Dental Anxiety Provoking Scale: A Pilot Study in Hong Kong. *Journal of Dental Science* 2015;10:240-247.

Novel Use of Nylon Fibers as Dental Files in Root Canal Treatment

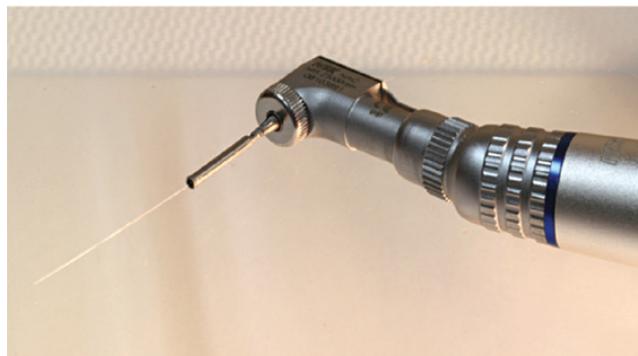
HKU researchers have conducted a study into polymer fibers as a novel type of dental files for root canal cleaning, in a way to overcome some safety issues present in the use of traditional metal-based dental files for such purposes, such as NiTi.

Root canal preparation is the most essential part in root canal treatment, as it aims to clean all inflamed tissues, disinfect the root canal system and provide a regular-shaped canal that can be sealed from bacteria by using appropriate filling materials.

However, the use of conventional stainless steel instruments posed potential risks of iatrogenic damages during root canal preparation, resulting in effects like zip, elbow, ledging, perforation, outer widening damage of the apical foramen and blockage of the root canal system.

Polymer fibers are adopted in the experiment as an alternative to NiTi files as the former are soft, fabricable and disposable. Fiber-based materials find many applications in contemporary dentistry, such as the use of nylon as a canal brush in endodontics.

In the study, nylon fibers with two respective average diameters (206.9 μ m and 156.4 μ m) are used as dental files and mounted onto either a reciprocating or a low-speed rotary hand-piece. A laboratory-based simulated root canal model was used and cleaned by the fiber files. Then, three parts of the simulated models – apical third, medium third, and coronal third, were chosen to assess the cleaning efficiency (CE) of each specimen by calculating the ratio of the cross-sectional area changes, before and after cleansing, using micro-Computer Tomography (CT).



Micro-CT results revealed that the nylon fibers files could achieve an average of CE of 82.11% \pm 9.68% for the medium third part, which is statistically higher ($p < 0.01$) than the coronal third and apical third, that has shown the lowest CE.

To conclude, the nylon fiber files demonstrated to have good elasticity and flexibility with a certain CE without causing any damage to the simulated root, but not the same efficiency as NiTi file. It further suggested micro-CT method as a viable method to access the CE of the simulated root canal by dental files.

Reference

Gao SQ, Tsoi JKH, Cheung GSP, Matinlinna JP. An *in vitro* Evaluation on a Novel Root Canal Cleansing Method by Using Nylon Fibers. *Fibers* 2015;3:197-205.

Giving Age To Undocumented Children

Dr Jayakumar Jayaraman (MDS 2010, PhD 2014) tells the story of setting up “Date of Birth Foundation” under a knowledge exchange project and his journey in identifying undocumented children’s ages along with the provision of dental care in India.



“It was in mid-May 2013. During one of my regular trips to Chennai, India, I had an opportunity to visit a child care centre. It is a place where abandoned children and orphans are

hosted and provided with shelter and education. It is a usual practice among affluent people to celebrate their birthday with the kids in the centre, sponsor a meal and share the joy with them. I got to visit the centre soon after one such event and was surprised to see a young child crying. What the care giver told me left me stunned. She said, “The kid is crying because she doesn’t know her birth date and she couldn’t cut a cake and blow out a candle.”

This conversation had a deep impact and made me think seriously. At that time, I was half way through my PhD programme at the Faculty of Dentistry of the University of Hong Kong and my study was in ‘Dental Age Estimation’. A brief search in the literature indicated that only half of the children below five years of age in the world are registered at birth. Date of birth is an important piece of information in any identity document. Without birth records, children are subjected to huge difficulties that range from enrolling in a school to seeking social benefits. This thought prompted me to start ‘Date of Birth (DOB) Foundation’, the world’s first charity organization to promote accurate birth records that is registered in both

India and Hong Kong. This organization aims to identify children without birth records and accord them an age through scientifically accepted methods. In addition, it also educates the public on the importance of birth registration.



Our team won the student Knowledge Exchange Award from the University of Hong Kong. The first project of Date of Birth Foundation was conducted in conjunction with the India Lutheran Development and Relief Agency and the Faculty of Dental Sciences, Sri Ramachandra University, both based in Chennai. We identified abandoned children living under the protection of a children’s home in rural Chennai, India. Dental check-ups were conducted on 300 children and toothbrushes and toothpastes were distributed. We identified 50 children without authentic birth documents and having poor oral health that needed full X-ray examination and treatment.

The children were then brought to the dental school where they had comprehensive dental check-ups and preventive dental treatment. Dental radiographs taken for diagnostic purposes were re-used and dental age estimation was conducted using the skills obtained during my training at the Faculty. Accordingly, age certificates were distributed to the caretakers at the child care centre. A local campaign on the importance of birth registration and oral health was conducted for the local rural population through street puppet shows. Education pamphlets emphasizing the need for birth registration and oral hygiene were also distributed.



In addition, a continuing professional development course was given to around 50 volunteer dental and forensic practitioners who conduct age assessment in this project from now on. The entire project was widely reported in the local press. As a sequel to this, a similar age

estimation project was recently conducted in Guangxi, China. We are committed to serve more needy children across the world.”

Date of Birth Foundation: www.dob-foundation.org



Establishment of Hong Kong's First Ever Infection Control Teaching Suite

Professor Gary Cheung, Associate Dean in Undergraduate Education comments on the newly set up facility - Infection Control Teaching Suit (ICTS) as well as the paramount importance of practicing the principles of infection control during dental school training, before becoming the dentists that serve the community of Hong Kong

“**C**urrently ranked number one by Quacquarelli Symonds Universities World Rankings for the subject of Dentistry, the University of Hong Kong have decided to uphold its standards as the leading dental school by the set-up of ICTS which is located on the 6th floor of the Prince Philip Dental Hospital, and in recognition of the donors and sponsors that have contributed to its successful establishment, a plaque unveiling ceremony has been held in their honor earlier this February.



This is the first of its kind, housing decontamination and sterilization units which consists of the following: a twin instrument cleaning sink, a handpiece cleaner/lubricator, a thermal washer disinfectant and two vacuum-type Class B autoclaves. This new facility and its adjoining classroom provide a safe environment for teaching purposes, while offering real and practical learning experience for our students.

The whole concept of establishing the ICTS is to allow students to obtain a 'hands-on' experience of the cleaning, disinfection and sterilization procedures that are typically carried out by the dental surgery assistants. In comparison to traditional methods of teaching by demonstration and observation, the ICTS allows for a more inquiry-based learning approach, giving students the opportunity to be the operator and be the one who actively operates the machinery.

Students should also expect multiple overseas speakers during the year that will be arranged to deliver lectures

regarding the principles of infection control and/or any updates on the guidelines of this aspect of dentistry. These lectures will be open to all students of the BDS program, dental hygienist students as well as general dentists who wish to attend for Continuing Dental Education purposes. The ICTS will be of particular relevance to the Year 1 and Year 6 students; as the first year students will have been to the ICTS twice before being promoted to Year 2 and subsequently seeing patients. These sessions will take place around the same time as the introduction to the Central Sterilisation and Supplies Unit towards the end of Year 1 program. It is also planned to have Year 6 students attend most of the infection control courses to be held at the teaching suite before their graduation, so that they are updated of any changes in the infection control guidelines for practicing dentists.

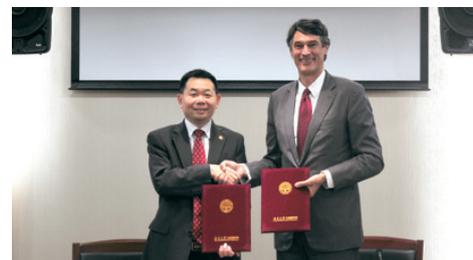
It is also speculated that the ICTS may even be incorporated into HKU's Summer Institute Program in the near future, depending on the number of participants and time constraints, to allow aspiring dental students to gain better insight and understanding as to what the BDS program offers.”

Partnership

In order to share academic interests and to develop collaboration in fields of common expertise and endeavour, the Faculty agreed to renew Memoranda of Understanding (MoU) on cooperation and reciprocity to achieve mutual benefit with two universities.



Professor Thomas Flemmig, Dean of the Faculty, signed MoUs with Professor Guofang Shen, Dean of College of Stomatology of Shanghai Jiao Tong University (Top Photo), and with Professor Chuanbin Guo, Dean of College of Stomatology of Peking University (First Right Photo) on July 25 and 26 irrespectively.



On July 11, Professor Thomas Flemmig and Professor Xuedong Zhou, Dean of the West China School of Stomatology of Sichuan University renewed an MoU (Second Right Photo).



During the IADR General Session and Exhibition at Seoul, Professor Thomas Flemmig signed a MoU on June 23 with Professor Keun-Woo Lee, Dean of the College of Dentistry, Yonsei University (Third Right Photo).

Reunion with Donors

To thank donors for their continuous support to the Faculty, a HKU reunion buffet lunch at the races, in the Jockey Club Box, Sha Tin Racecourse was hosted on June 5.

Present at the lunch were Dr Wah-Ching Tam, Honorary University Fellow and Mrs Shirley Tam; Professor Ray Williams, Adjunct Professor of UNC School of Dentistry; Dr Joseph Chow; Dr Eugenie Leung, Acting Dean of Student Affairs of CEDARS of HKU; Dr Patrick Chee; Dr CH Leong; Mr Eric Tsui; Dr Raymond Lee, Chairman of Hong Kong Dental Council and Mrs Lee, as well as Dr Richard Lee. Professor Thomas Flemmig, Dean and Professor LJ Jin, Clinical Professor of the Faculty welcomed the donors and guests.



Share a Smile

Charisse Yeung, daughter of Charles Yeung (AdvDipOrth 2015) and Karen Lau, turned one year old on July 11. We wish little Charisse a happy and healthy future!



Awards and Achievements



Professor Edward Lo Chin Man won the 2016 IADR Distinguished Scientist Award in Geriatric Oral Research.



Dr Dissanayaka, Waruna Lakmal; Zhu Lifang; Dr Hargreaves, Kenneth; Professor Jin Lijian and Dr Zhang Chengfei received the 2016 IADR/AADR William J.Gies Award in the Biomaterials and Bioengineering Research Category for the paper "Scaffold-free Prevascularized Microtissue Spheroids for Pulp Regeneration".



Professor Chu Chun Hung and team members – **Professor Edward Lo Chin Man; Professor May Wong Chun Mei; Dr Duangthip, Duangporn and Dr Marcus Fung Ho Tak** have won the IADR Cariology Research Group Science Award with the study "Caries arresting effect using silver-diamine-fluoride with different concentration and periodicity" published in JDR Clinical & Translational Research 2016;1:143-152.



Dr Michael Botelho was presented with the Teaching Innovation Award 2015.



Dr Yang Yanqi received the Faculty Outstanding Teaching Award 2015.



Dr Gloria Wong Hai Ming and team members **Dr Jayakumar, Jayaraman; Ms Li Lingwei; Mr Pei Tao; Ms Sun Ling; Mr Wen Yifeng; Ms Phoebe Lam Pui Ying; Ms Cheung Ka Yan; Mr Lee Kit and Mr Wong Ka Fai** won both the Knowledge Exchange Excellence Award and the Faculty Knowledge Exchange Award 2015 for the KE project "Dental Development: An Aid to Give Identities and to Inform General Health".



Dr May Mei Lei, Dr Cao Ying, Professor Li Quanli, Professor Edward Lo Chin Man and Professor Chu Chun Hung received the Research Output Prize 2015 for the study "Agarose Hydrogel Biomimetic Mineralization Model for the Regeneration of Enamel Prismlike Tissue".



Dr Ivy Wei Chen Xuan was presented with the IADR Heraeus Kulzer Travel Award



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†Forms a protective layer over the sensitive area of the teeth. Brush twice a day for lasting sensitivity protection. *vs. Previously marketed formulation. **With twice-daily brushing.

References: 1.Greenspan DC et al. J Clin Dent 2010; 21: 61-65. 2.La Torre G and Greenspan DC. J Clin Dent 2010; 21(3): 72-76. 3.Earl JS et al. J Clin Dent 2011; 22(3): 62-67. 4.Parkinson CR et al. J Clin Dent 2011; 22(3): 74-81. 5.GSK Data on File, ML498. 6.GSK Data on File, ML584. 7.GSK Data on File, ML589. 8.GSK Data on File, RH01422. 9.GSK Data on File, RH01897.

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