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INTERVIEW

ACFF Chairman Prof. Nigel Pitts about the global burden of caries and the social and economic value of a cavity-free future.

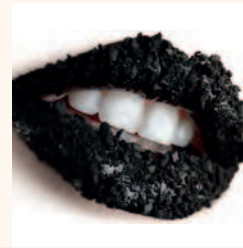
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CAMPAIGN

Oral-B and the European Federation of Periodontology are running a joint campaign to raise awareness of oral health during pregnancy.

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COSMETIC TRIBUNE

In November, the ninth Dental Facial Cosmetic Conference and Exhibition is being held. Read all about the event in our specialty section.

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Dental caries not genetic

By DTI

MELBOURNE, Australia: In the first large-scale study to look at the oral microbiome, researchers from Murdoch Children's Research Institute (MCRI) have determined that an individual's genes are not associated with the presence of bacteria responsible for dental caries. Rather, this is more greatly influenced by environmental factors like diet and oral hygiene habits.

To understand exactly the role of genetics in the make-up of the oral microbiome, the research team conducted a twin study. They profiled the supragingival plaque microbiome of 205 pairs of genetically identical twins and 280 sets of non-identical twins between 5 and 11 years old based on mouth swabs. From this, they concluded that, while certain components of oral microbiome composition are influenced by genetic background, these inherited bacteria are not linked to dental caries.



The presence of bacteria in the oral microbiome associated with dental caries is influenced more by environmental factors than genetic ones, the results of a new study have suggested.

"There may be a perception in the community that bad teeth are inherited," said study co-author Dr Jeff Craig, an associate professor at MCRI. "But this research is an important message because it means parents and children themselves can take control. We're not doomed to genetics in tooth decay."

The researchers also found that the level of inherited bacteria tended to decrease over time, whereas the bacteria associated with environmental factors increased. In light of these findings, Craig reiterated that limiting children's intake of sugary foods and drinks, combined with a con-

sistent oral hygiene routine, is the best way to prevent caries.

The study, titled "Host genetic control of the oral microbiome in health and disease", was published online on 13 September in the *Cell Host & Microbe* journal.

Prevention first

BRISBANE, Australia: A recent article, published in the *British Dental Journal*, has recommended a maximum interception approach involving all members of the healthcare team and promoting evidence-based self-care, taking into account salivary, plaque and lifestyle risk factors.

According to article author Prof. Laurence James Walsh, from the University of Queensland, dental professionals must be prepared for the sheer number of older patients, retaining their natural teeth for longer. "A central tenet of modern preventive dentistry is to avoid intervening before prevention has been given a chance to work," emphasised Walsh. "Protocols for oral care must be tailored to the patient's needs and be realistic given the limitations in time, finance and energy which can be expended." Particular problems include root surface caries in patients with a strong history of coronal caries and those who suddenly develop salivary hypofunction. Furthermore, elderly patients suffer from more chronic diseases.



The first-ever robot-led dental surgery was conducted in Xi'an in China in September. In the 1-hour procedure, the robot independently placed two 3-D-printed implants into the patient's mouth. ► NEWS Page 02

Sydney to host FDI 2021

The Australian Dental Association (ADA) has announced that the FDI World Dental Congress will be held in Sydney in September 2021. "It is proof that Australia occupies an enviable place at the forefront of world dentistry and that this has, once again, been recognised by leading figures in the world of dentistry," ADA President Dr Hugo Sachs said.

Tweaking study results

Researchers from Australia have found that more than a quarter of biomedical scientific papers may utilise practices that distort the interpretation of results or mislead readers—a practice known as "spin". The highest, but also greatest, variability in the prevalence of spin was present in the clinical trials included in the review.

School bullying

Verbal bullying at school can negatively impact an adolescent's mental health, causing distress and anxiety. A Brazilian case-control study has now shown that this stress may be reflected in oral health too and possibly result in nocturnal bruxism. The cases were composed of 103 school pupils between the ages of 13 and 15 with possible sleep bruxism (i.e. self- or parent-reported) and the controls of 206 adolescents without possible sleep bruxism.

Among the participants, 134 (43.3 per cent) reported involvement in verbal school bullying episodes as a victim, perpetrator or both. The vast majority (90.3 per cent) of them were males. Overall, these teenagers were found to be four times as likely to suffer from sleep bruxism (65 per cent) compared with those who were not involved in verbal school bullying (17 per cent).



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First-ever robot-led dental surgery performed in China

By DTI

XI'AN, China: For the first time ever, a robot has independently placed two 3-D-printed implants into a patient's mouth without human involvement. The successful procedure raises hopes of lessening Asia's dentist shortage, especially prevalent in metropolises such as Hong Kong and Singapore, and of avoiding risks posed by poor-quality surgeries performed by unqualified dentists.



Combining dentists' expertise and the benefits of technology, medical robots might be the future of dentistry.

After taking a CT scan to acquire data on the female patient's skull and jaw, the medical staff fitted position orientation equipment to the woman and determined the movements, angle and depth needed to fit the implants in her mouth so that the robot could be programmed to move into the correct position to carry out the operation. According to Prof. Zhao Yimin, a surgeon from the Fourth Military Medical University (FMMU) in

Xi'an, the procedure went very smoothly and the implants were placed with high precision.

Although human staff were present at all times during the 1-hour surgery, they did not play an active role. The robot, which was jointly developed by the Beihang University in Beijing in China and

FMMU's Stomatological Hospital over the last four years, is designed to follow a set of preprogrammed commands, but is able to make adjustments during surgery, the *South China Morning Post* reported.

According to a recent survey, about 400 million patients are in need of dental implants in China.

However, the number of qualified dentists in the country is insufficient to meet the increasing demand. Through a continuing implementation of robot technology, this shortage may be eased.

In the future, robot-assisted and -led technology could increasingly facilitate dental surgeons' work, experts have predicted. Robotic technology has already been introduced in recent years to assist in dental procedures such as root canal therapy, orthodontic operations and implant placement. In March this year, a pioneering robotic guidance system, YOMI, received clearance from the U.S. Food and Drug Administration. The computerised navigational system delivers physical guidance through the use of haptic robotic technology, which provides sensory feedback and constrains the drill in position, orientation and depth, the device's manufacturer, Neocis, stated.

Inaugural IDEC impresses with strong international presence

By DTI

JAKARTA, Indonesia: With 229 exhibiting brands and businesses and more than 4,000 visitors, the inaugural event of the Indonesia Dental Exhibition and Conference (IDEC) proved an all-round success. In addition to a high-quality scientific programme, the industry show especially was fruitful in

presenting international companies with the unique opportunity to gain a foothold in the emerging Indonesian dental market.

"By leveraging on Koelnmesse's extensive sales network in over 100 countries around the world and by working together with our counterparts in Indonesia, we've turned IDEC into a plat-

form for both international and local companies to come together and explore new business partnerships," explained Mathias Kuepper, Managing Director of Koelnmesse Pte Ltd in Singapore.

Of the 229 exhibitors, 81 per cent were from overseas, according to the organisers. Furthermore, featuring five national pavilions

(Germany, Italy, South Korea, Switzerland and China), the exhibition was one of the first dental trade fairs in Indonesia to achieve such a strong international presence.

"IDEC 2017 has been successful in gaining the full support from the government as well as key stakeholders in the industry and we hope to continue this momentum into IDEC 2019," commented Bambang Setiawan, President Director of Traya Eksibisi Internasional. "We see a great opportunity for IDEC to become the central dental event for dental professionals in Indonesia."

IDEC 2017 was held from 15 to 17 September under the theme "Modern science and technology for the future of Indonesian dentistry". According to event chairperson Dr Diono Susilo, the scientific programme was designed to cover as many aspects of dentistry as possible and aimed at inspiring attendees to provide patients with a better standard of dental care.

The event, which was jointly organised by the Indonesian dental association (Persatuan Dokter Gigi Indonesia), Koelnmesse Pte Ltd and Traya Eksibisi Internasional, will return to Jakarta in 2019, alternating with IDEM Singapore. Further information can be obtained at www.indonesiadentalexpo.com.



The first Indonesia Dental Exhibition and Congress proved to be a successful event for exhibitors and visitors alike.

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Newly created protein may be promising for anti-caries vaccine



By DTI

WUHAN, China: Researchers from the Wuhan Institute of Virology at the Chinese Academy of Sciences have created a fusion protein (formed through the joining of genes that originally coded for separate proteins) that might be the key to developing a vaccine against dental caries. According to the research team, their second-generation fusion protein provides high protective efficacy against caries, but with lower side-effects than with previously created proteins.

The research, which was supported by grants from the National Natural Science Foundation of China and the German Research Foundation, is an advancement on previous studies on the fusion protein KF-rPac. While KF-rPac provided prophylactic and therapeutic efficiency against caries, it also demonstrated possible side-effects, such as high antigenicity and potential inflammatory injury, that restricted its clinical usage.

Aiming to avoid these drawbacks, the researchers created KFD2-rPac, which induced fewer systemic inflammatory responses in animal trials, among other effects. Although there is still a long way to go until a vaccine for use in humans will be available, the characteristics of KFD2-rPac make the protein a promising vaccine candidate against dental caries, the researchers concluded.

The results were published in a paper titled "Second-generation flagellin-rPac fusion protein, KFD2-rPac, shows high protective efficacy against dental caries with low potential side effects" on 11 September in the *Scientific Reports* journal.



Chinese researchers have created a fusion protein that could be key for developing an anti-caries vaccine in the future.

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