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Children in Germany among

The best globally in oral health

According to new research, nearly 80 per cent of 12-year-old children in Germany have caries-free permanent dentition, making Germany top internationally, alongside Denmark, in terms of dental health in this age group. For the study, regularly conducted by the Deutsche Arbeitsgemeinschaft für Jugendzahnpflege (DAJ), a German organisation dedicated to maintaining and promoting oral health of children and adolescents, more than 300,000 children in ten federal states of Germany underwent dental examinations in the 2015/2016 school year. The oral health status was determined for three age groups: 12-year-old pupils, first-graders and, for the first time, 3-year-old kindergarten children. The unit of measure used to assess oral health was the dmf/DMF index. The study found a DMF score of 0.44 for the 12-year-olds studied and 78.8 per cent of the children in this age group had a healthy dentition. Both values were the best ever achieved in Germany.

In the 6- to 7-year-old schoolchildren, however, still mainly having primary teeth, only 53.8 per cent had a healthy dentition. For the 3-year-olds it was found that 13.7 per cent already had dental caries, while 86.3 per cent had healthy teeth. These data underline suggestions of previous regional studies and clinical experience stating caries of the primary dentition to occur very early in some cases.

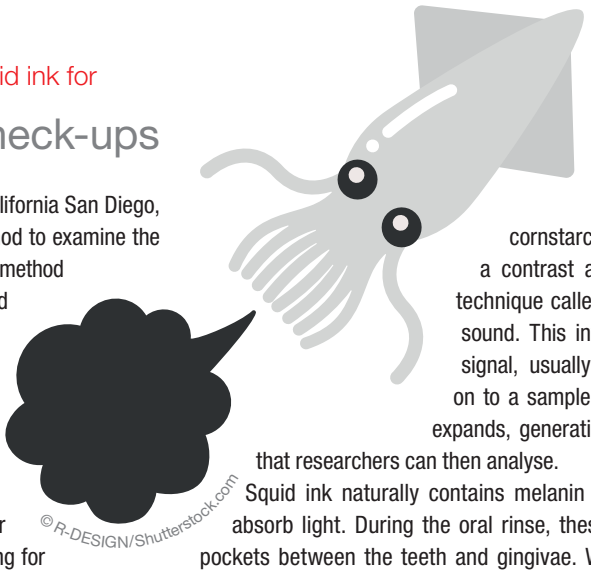
The findings show that the implementation of the DAJ recommendations published in 2016 for the prevention of early childhood caries for day care centres and parents was a step in the right direction and must be further extended.

Source: DTI

New laser-assisted method uses squid ink for

Periodontal disease check-ups

An engineer-lead team from the University of California San Diego, USA, has developed a new dental imaging method to examine the health of patients' gingivae and believe the new method could be less invasive, more comprehensive and more accurate than anything else available today. "The last time I was at the dentist, I realised that the tools that are currently being used to image teeth and gums could use significant updating," said Dr Jesse Jokerst, assistant professor at the Department of NanoEngineering at UC San Diego and senior author of the study, titled "Photoacoustic imaging for non-invasive periodontal probing depth measurements". The usual way of checking pocket depth for any signs of periodontal disease can be invasive and uncomfortable for patients, and measurements can vary greatly between dentists. For this new method, the mouth is first rinsed with a paste made of commercially available food-grade squid ink, water and cornstarch. The rinse serves as a contrast agent for an imaging technique called photoacoustic ultrasound. This involves shining a light signal, usually a short laser pulse, on to a sample, which heats up and expands, generating an acoustic signal that researchers can then analyse.



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Squid ink naturally contains melanin nanoparticles, which absorb light. During the oral rinse, these are trapped in the pockets between the teeth and gingivae. When lit with a laser, the paste heats and swells, creating pressure in the pockets that is detected with ultrasound. Thus a full map of the pocket depth around each tooth can be created.

Source: DTI

New classification of

Periodontal diseases and conditions

A new global classification system for periodontal health, diseases and conditions, as well as peri-implant diseases and conditions, has been announced at the EuroPerio9 congress in June 2018. The comprehensive classification was based upon the most contemporary evidence and includes a staging and grading system for periodontitis, indicating severity and extent of disease, accounting for lifetime disease experience and taking into account the patient's overall health status.



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The new classification is the outcome of a joint workshop held by the European Federation of Periodontology (EFP) and the American Academy of Periodontology (AAP) in Chicago, USA, in 2017. The workshop included over 100 experts from Europe, America, Australia and Asia who reviewed existing literature to create a global consensus that enables care to be standardised for patients around the world. In the new classification, clinical health is defined for the first time and periodontitis is described in four stages, ranging from "least severe" (Stage 1) to "most severe" (Stage 4). The risk and rate of disease progression has been categorised into three grades. The grading considers risk factors like smoking and the presence of concomitant diseases, such as diabetes.

"The new classification should provide a globally consistent approach to diagnosis and management and ultimately improve outcomes for our patients," said Prof Iain Chapple, EFP Secretary General.

Source: EFP

Application form

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Virtual reality achieves

Pain reduction and higher patient satisfaction

Though the use of virtual reality (VR) in dentistry is steadily growing, variation in its efficacy due to differing VR environments has rarely been measured. A new study, titled "The soothing sea: A virtual coastal walk can reduce experienced and recollected pain", conducted by a team from the universities of Plymouth, Exeter and Birmingham—in conjunction with Torrington Dental Practice in Devon—has found that dental patients enjoy an overall better experience when engaged in a VR walk in a coastal area than in a city.

Patients who agreed to the study were randomly assigned to three separate situations: conventionally performed procedures without VR, a walk around a virtual city or a walk along the coastline of Devon's Wembury Beach. Patients chosen for the last two groups were provided with a headset and handheld controls.

The study found that the group who virtually walked along the coastline experienced the least amount of pain and recollected their treatment as such. These findings were not evident in the group who engaged with the cityscape VR. "The use of virtual reality in healthcare settings is on the rise but we need more rigorous evidence of whether it actually improves patient experiences," said Dr Karin Tanja-Dijkstra, lead author of the study.

The researchers emphasised that the VR environment patients engage with is crucial to reducing their pain and anxiety when visiting the dentist. It should thus not only be distracting but also a welcoming and relaxing setting.

Source: DTI


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Examination of primary dentition might help in

Early autism diagnosis

With prevalence of the autism spectrum disorder reportedly increasing annually, the need for early detection is critical. In a new study, titled "Dynamical features in fetal and postnatal zinc-copper metabolic cycles predict the emergence of autism spectrum disorder", researchers have found that a close examination of primary dentition may help with early diagnosis and give an insight into the origin of the disorder using novel tooth-matrix biomarkers.

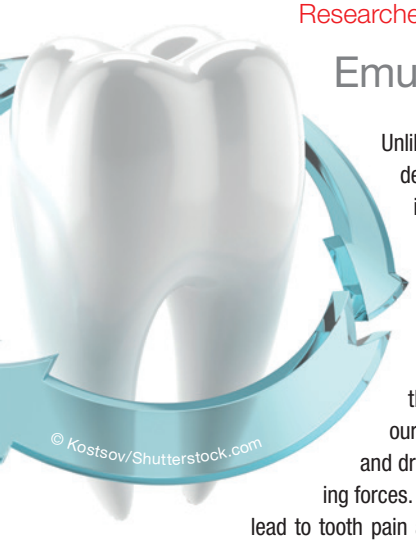
Senior author of the study Dr Manish Arora, Professor of Dentistry and of Environmental Medicine and Public Health at the Icahn School of Medicine at Mount Sinai, NY, USA, said: "We had undertaken a study in 2016 on twins living in Sweden and found that metal uptake was different in the sibling affected by autism spectrum disorder. The strongest signal was for zinc, which was lower in the affected twin […]." For the current study, the team set out to develop an algorithm through the replication of their findings from 2016 to help with early detection. Focusing on two populations in the USA and one in the UK, and cross-referencing them to the Swedish study, they found that it was not the concentration of metals that was the difference, but rather the rhythms of the cyclic processes underlying the metabolism of the metals. By employing two distinct classification models that used metal rhythmicity data, the researchers were able to achieve 90 per cent accuracy in classifying cases and controls, with sensitivity to autism spectrum disorder diagnosis ranging from 85 to 100 per cent and specificity from 90 to 100 per cent. Despite the positive results, Arora emphasised that further research is required before any concrete markers can be set.

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Source: DTI

Researchers develop material that could

Emulate dental enamel



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Unlike many other tissues in the human body, dental enamel does not regenerate itself once it is damaged. In what could potentially be a breakthrough for dentistry, researchers at Queen Mary University of London, UK, have developed a new method for growing mineralised materials that could regenerate dental enamel, bone and other hard tissue. As the hardest tissue in the body, enamel allows our teeth to withstand exposure to acidic foods and drinks, extreme temperatures, and frequent biting forces. Unfortunately, enamel's inability to renew can lead to tooth pain and tooth loss, conditions that affect a large proportion of the world's population.

By focusing on a specific protein material that can trigger and guide the growth of apatite nanocrystals, the researchers found that the microscopic prisms created by the material possessed similar physical properties to dental enamel. These structures can be grown over large uneven surfaces and native tissue, opening opportunities for hard-tissue repair. "For example, we could develop acid-resistant bandages that can infiltrate, mineralise, and shield exposed dentinal tubules of human teeth for the treatment of dentine hypersensitivity," stated Dr Sherif Elsharkawy, a dentist at Queen Mary's School of Engineering and Materials Science.

The study's lead researcher Prof. Alvaro Mata, from the same school, emphasised: "A major goal in materials science is to learn from nature to develop useful materials based on the precise control of molecular building-blocks. The key discovery has been the possibility to exploit disordered proteins […] with the capacity to tune their properties."

Source: DTI

E-cigarettes may modify

Genetic material in oral cells

Electronic cigarettes are viewed as a safer alternative to smoking, their effects are, however, relatively unknown. Researchers from the University of Minnesota Masonic Cancer Center in Minneapolis, USA, have outlined how e-cigarettes may modify the DNA of oral cells and increase cancer risks. "It's clear that more carcinogens arise from the combustion of tobacco in regular cigarettes than from the vapor of e-cigarettes," said the project's lead investigator, Dr Silvia Balbo. "However, we don't really know the impact of inhaling the combination of compounds produced by this device. […]"

To characterise chemical exposures during vaping (the inhaling and exhaling of e-cigarette vapor), the researchers recruited five e-cigarette users. They collected salivary samples before and after a 15-minute vaping session and analysed them for chemicals known to damage DNA. To evaluate the possible long-term effects, the team assessed DNA damage in the cells of the volunteers' mouths. Three DNA-damaging compounds were identified, formaldehyde, acrolein and methylglyoxal, whose levels all increased in the saliva after vaping. The danger is when the toxic chemicals react with DNA and cause damage. If the cell does not repair the damage so that normal DNA replication can take place, cancer could result. The scientists plan to follow up this preliminary study with more extensive research involving more e-cigarette users and controls.



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Source: DTI

Dentsply Sirona

FDA approval of new diode laser



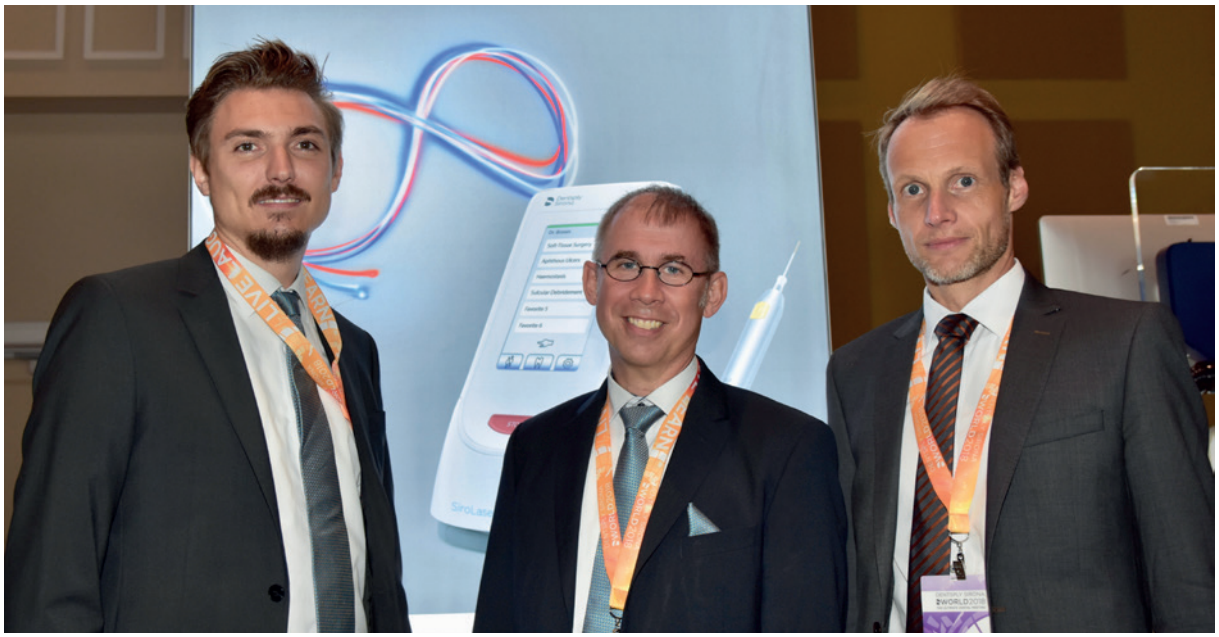
As announced at the Dentsply Sirona World 2018 in Orlando, USA, the SiroLaser Blue has just recently been FDA approved and is thus now also available for practitioners in the US. With diodes at three different wavelengths, this dental laser is a versatile laser therapy device. It is the first dental diode laser to feature blue, infrared and red wavelengths. The short wavelength of the blue 445 nm diode improves the results of surgery thanks to its high absorption while it requires less power. Moreover, after surgery there is often no need for sutures, usually allowing the wound to heal without scarring. In endodontics and periodontology, the infrared 970 nm diode helps to reduce germs already in the dentinal tubules, as well as in the periodontal pockets during adjuvant therapy. Another advantage is that it may be possible to dispense with antibiotics. Further the red 660 nm diode is especially beneficial for photo-biomodulation treatments. This light therapy combats inflammation that occurs in connection with oral mucosa diseases, supports wound healing after surgery and helps reduce postoperative pain.

The market leader in innovative dental products and technologies, Dentsply Sirona, will be present at this year's WFLD congress in Aachen, Germany, and will bring the SiroLaser Blue. Dentists from all over the world will thus be able to find out more about the quality of the treatment results for a range of indications at numerous specialist lectures, a workshop and a live treatment. As a Gold Sponsor at the 16th WFLD Congress from 1 to 3 October 2018 in Aachen, Germany, Dentsply Sirona will be supporting many different specialist lectures. The SiroLaser Blue can be used to treat more than 20 indications. Attendees will be able to learn about the advantages of laser applications in clinical settings.

Try out the SiroLaser Blue for yourself

Any dentists wanting to try out the SiroLaser Blue for themselves are warmly welcome to join the practical workshop—whether they would like to experience the clean, usually bloodless incision achieved in microsurgery, the procedure for treating mucous membrane alterations or adjuvant therapy following root canal preparation. After the presentation attendees can test out the many different applications of the dental laser under guidance on a porcine jaw, and see the excellent results first hand.

Source: Dentsply Sirona



From left: Product Manager Laser Systems André Förster, Marketing Manager Ingo Höver and Director Product Management Julius Müller-Albinus of Dentsply Sirona Instruments at the Dentsply Sirona World 2018 in Orlando, USA.

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