

## DIARY

### 11th Congress of the European Academy of Paediatric Dentistry A Crossroads of Knowledge, Innovation and Expertise

Date: 24-27 May 2012  
Venue: Convention Centre,  
Strasbourg, France  
www.eapd2011.eu

### Europerio7

Date: 6-9 June 2012  
Location: Vienna  
www.europerio7.com

### New Guidelines on Bisphosphonates in Dentistry, with Professor Jon Suzuki

Date: 18 June 2012  
Venue: British Dental Association,  
London  
Telephone: 020 8487 5555  
www.adi.org.uk/suzuki-evening

### Communicating implants

Date: 23 June 2012  
Venue: Novaden Dental Studio,  
London  
Telephone: 020 8900 6040  
Email: psochor@me.com  
www.courses4implants.com

### 118th Meeting of the American Dental Society of Europe

Date: 28-30 June 2012  
Location: Vienna, Austria  
Telephone: Dr Lloyd Searson,  
020 7637 4518  
www.ads-eu.org

### British Dental Bleaching Society Conference 2012

Date: 26 July 2012  
Venue: Royal College of Surgeons,  
London  
Telephone: 020 7267 7070  
Email: info@bdbbs.co.uk  
www.bdbbs.co.uk

### 100th FDI Annual World Dental Congress

Date: 29 August – 1 September 2012  
Location: Hong Kong  
www.fdicongress.org

### 17th World Congress on Dental Traumatology Science and Art: Overcoming the Limits of Knowledge

Date: 10-22 September 2012  
Venue: Rio de Janeiro, Brazil  
www.iadt-dentaltrauma.org  
www.sbtod.org.br

## 'TOOTH TATTOO' COULD WARN OF BACTERIA IN SALIVA



New research published in *Nature Communications* describes attaching a battery-free, wireless sensor onto teeth to give advance warnings about infections, cancer and other medical issues.

US-based authors Mannoor *et al.*<sup>1</sup> have devised an approach using a wireless graphene-based sensor transferred onto tooth enamel, through water-soluble silk bioresorption, to detect bacteria in saliva that can indicate a variety of health problems. As graphene is only one atom thick with significant electrical and sensing properties, this material shows particular promise for detection of many bacteria that can remain hidden in low minimum infective doses.

Graphene-based nanosensors with a wireless readout coil are printed onto water-soluble silk films, which like a temporary tattoo can then be transferred to biological materials, such as tooth enamel and soft tissue. Bacterium binding agents coating the sensor

enable the system to successfully detect specific bacteria present in saliva samples and other media.

Monitoring of *Escherichia coli*, *Staphylococcus aureus* and *Helicobacter pylori* cells in saliva tested the ability of the tooth sensors to recognise these malicious microbes, which are responsible for significant health risks such as post-surgical wound infections and the development of duodenal ulcers and stomach cancers.

This could have a significant impact on health-quality monitoring, particularly in hospitals, and although the research describes only a prototype tested on a bovine tooth, further development on tissues and teeth in living animals and humans could advance the product's functionality in *in vivo* systems with similarly significant results. The ability to identify specific biochemical targets in the complex media with which teeth come in constant contact in breath and saliva certainly brings new meaning to the words 'wisdom teeth'.

1. Mannoor M S, Tao H, Jefferson D *et al.* Graphene-based wireless bacteria detection on tooth enamel. *Nat Commun* 2012; **3**: 763.

by Laura Pacey

## DENTAL X-RAYS LINKED TO BRAIN TUMOURS

A study published in *Cancer* says that people who have received frequent dental X-rays in the past have an increased risk of developing the most commonly diagnosed primary brain tumour, meningioma.<sup>1</sup>

Researchers in Boston studied information from 1,433 patients who were diagnosed with meningioma aged 20-79 in 2006-2011. The investigators also studied information from a control group of 1,350 who had similar characteristics but who had not been diagnosed with a meningioma.

Over a lifetime, patients

with meningioma were more than twice as likely as controls to report having ever had a bitewing exam. Individuals who reported receiving bitewing exams on a yearly or more frequent basis were 1.4-1.9 times as likely to develop meningioma as controls.

An increased risk of meningioma was also linked with panorex exams taken at a young age or on a yearly or more frequent basis. Individuals who reported receiving these exams when they were under ten years old had a 4.9 times increased risk of developing meningioma. Those who reported receiving them on a yearly or more frequent basis were 2.7-3.0 times as likely to develop meningioma as controls.

Moderate use of this form of imaging may therefore be of benefit to some patients. However, the researchers noted that today's dental patients are exposed to lower doses of radiation than in the past.

1. Claus E B, Calvocoressi L, Bondy M L, Schildkraut J M, Wiemels J L, Wrensch M. Dental x-rays and risk of meningioma. *Cancer* 2012; doi: 10.1002/encr.26625 [Epub ahead of print].