Aussie scientists develop new coating to improve implants

By DTI

MELBOURNE, Australia: Prebiotic compounds, whose origin can be traced back billions of years, have been studied intensively since their discovery several years ago. Now, a team of researchers in Australia has found that these prehistoric molecules can be used to modify surfaces of medical implants, reducing the risk of infection and rejection.

The new coating method was developed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in collaboration with microbiologists at Monash University.

Although surface modification methods span a wide variety of applications, ranging from sol-gel sol to implantable medical devices, there are very few simple generic aqueous coating methods that are both robust and versatile, as well as easily applicable over a range of substrate materials, the researchers reported in their paper. Therefore, they examined the suitability of the amimonomononitrile polymerisation process for the formation of coatings on a range of substrate materials.

Victims of Pompeii had excellent teeth

By DTI

NAPLES, Italy: To this day, researchers have not been able to scan and analyze the world-famous plaster casts of the people and animals of Pompeii who died in the volcanic eruptions of Mount Vesuvius in AD 79. Now, with the help of a 16-layer CT scanner, an interdisciplinary team was able to create digital 3-D reconstructions of the skeletons and dental arches of the volcano’s victims for the first time.

Among other things, the scientific tests, which included the use of a special multi-layer CT scanner, laser imaging and DNA sampling, revealed that the city’s inhabitants had nearly perfect teeth.

“We discovered the absence of cavities in the teeth. This is very interesting and not that surprising, because we all know about the healthy Mediterranean diet and this has really shown up in the early analyses,” said Massimo Osanna, superintendent at the archaeological site.

According to the experts, the lack of sugar in the Pompeian diet and the high levels of fluoride in the air and water near the volcano are all accountable for the perfect state of their teeth. In addition to an excellent oral health, the researchers found that most of the victims still had all their teeth.

However, the scans further showed that the teeth wore away, because they were used for cutting, orthodontist Dr Elisa Vanacore said.

The interdisciplinary research project that began in April brought together archaeologists, restorers, radiologists, anthropologists and many others. According to Osanna, many more findings will emerge from the analyses on most of the known 86 Pompeian casts. “It will reveal much about the victims: their age, sex, what they ate, what diseases they had and what class of society they belonged to. This will be a great step forward in our knowledge of antiquity.”

NZ heli crash

By DTI

WELLINGTON, New Zealand: Last month, the wreck of a helicopter was found in a crevasse on Fox Glacier, a glacier on the west coast of New Zealand’s South Island. Although it is still unclear what caused the crash, the New Zealand Police have confirmed that the pilot and the six passengers died. On board the aircraft were a retired dentist and his 70-year-old wife used to work in a dental surgery in Totton in the UK.

West Coast police released the names of the people assumed to have been on the helicopter when it crashed. Among the victims were Britons Nigel Edwin and Cynthia Charlton from Hampshire. As reported online by the Daily Mail, the 66-year-old Nigel Edwin was a retired dentist and his 70-year-old wife used to work in a dental surgery in Totton in the UK.

The 28-year-old pilot, two young women from New South Wales, and another couple in their fifties from Cambridge in the UK also died in the crash.
In September this year, DENTSPLY International and Sirona Dental Systems announced that they have entered into a definitive merger agreement, creating probably the world’s largest dental manufacturer, DENTSPLY SIRONA. Dental Tribune spoke with Sirona President and CEO, Jeffrey T. Slovin, who will assume the role of CEO of the newly combined company, about the merger and its impact on the global dental market.

Dental Tribune: Both Sirona and DENTSPLY have been operating successfully in the dental market for several decades. Why did the companies decide to join forces and how will the companies benefit from the merger?

Jeffrey T. Slovin: I am really excited about the merger and so are the dental professionals, distributors, patients and employees from around the world to whom I’ve spoken.

DENTSPLY and Sirona both have strong commitments to innovation and research and development, DENTSPLY SIRONA is very well positioned to meet both the current demands of the global dentistry industry, as well as anticipate and address future demands. Coupled with the largest sales and services infrastructure in the dental industry and supported by leading dental distributors and a direct sales force, we will be able to serve the dental industry more effectively worldwide. The merger is truly a win for everyone involved.

The merger is expected to be completed in the first quarter of 2016. Which regulations or closing conditions could still prevent a definitive closing?

The transaction is currently on track with the aim to complete the process in the first quarter of 2016. There are, as with any transactions, certain regulatory approvals and other customary closing conditions that we must achieve first. These include anti-trust clearance in the US, Europe and other countries, all of which are outlined in our SEC filings. We are confident that we will receive these approvals and the approval of our shareholders and we look forward to closing the transaction.

Together, we will drive better, faster and safer dentistry around the world.

The new company will be the world’s leading manufacturer of professional dental products and technologies. How will this affect the global dental industry?

After the merger, DENTSPLY SIRONA will be a stronger and larger global company with a broader product platform, deeper focus on innovation and the largest sales and services infrastructure in the dental industry. When you consider how much the global dental industry has recently changed, it should be expected that dentistry will continue its rapid evolution. Today, general practitioners are taking on more specialized procedures that require integrated workflows with consumables and equipment that enhance their efficiency and patient care offering. You’re also seeing an increasing demand for dental care from developing and emerging markets. We expect these needs to continue evolving and that DENTSPLY SIRONA will provide solutions to address their continuous needs.

With our combined focus on innovation and research and development, DENTSPLY SIRONA is very well positioned to meet both the current demands of the global dentistry industry, as well as anticipate and address future demands. Coupled with the largest sales and services infrastructure in the dental industry and supported by leading dental distributors and a direct sales force, we will be able to serve the dental industry more effectively worldwide. The merger is truly a win for everyone involved.

Are you looking into opportunities to acquire other dental companies? Right now we are focused on continuing to run the business and execute our Sirona strategy successfully as we are working toward closing the merger with DENTSPLY. Our future is full of opportunities and we are working hard to deliver on that promise to our employees, patients and the entire dental community.

Thank you very much for this interview.
**Deviations between implant positions found**

By DTI

**HANGZHOU, China:** In measuring the effect of surgical templates on the accuracy of implant placement, a Chinese study recently found that actual and planned implant positions varied significantly. According to the researchers, errors in computer-guided implant surgery are caused by either the operator during surgery or the surgical template preoperatively.

In order to evaluate the effect of surgical templates on the accuracy of implant placement, jaws from 16 patients were scanned using cone beam computed tomography (CBCT). Fifty-three implants were planned in a virtual 3-D environment, of which 35 were placed in the mandible and 18 in the maxilla.

For the analyses, a stereolithographic surgical template was created. The template was then fitted on a plaster model and both were scanned with a CBCT device. The images obtained were matched to images of the virtual planned implant position. The actual implant position was acquired from the registration position of the surgical template.

In comparing the data, the researchers found significant deviation between actual and planned positions caused by the surgical template. The mean central deviation at the hex and apex was 0.456 mm and 0.515 mm, respectively. The mean horizontal deviation at the hex was 0.193 mm and at the apex was 0.277 mm. The mean vertical deviation at the hex was 0.388 mm and at the apex was 0.390 mm. The mean angular deviation was 0.621°.

The results of the study indicate that clinicians should not rely solely on the safety of surgical templates in seeking to avoid critical anatomical structures.

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They found that this polymerisation, carried out in buffered aqueous solutions, can be used to coat a wide range of organic and inorganic substrate materials.

The coating is biofriendly and cells readily grow on and colonise it and could therefore be applied to medical devices, such as dental implants, catheters and pacemakers to improve their performance and acceptance by the body, according to the researchers.

“The non-toxic coating is adhesive and will coat almost all material,” said lead research Dr Richard Evans. “This research opens the door to a host of new biomedical possibilities that are yet to be explored.”

At the coating process is very simple and uses methods and substances that are already available, biomedical manufacturers can produce improved results more cost effectively compared with existing techniques.

CSIRO is the first organisation to investigate practical applications of this kind using prebiotic chemistry. It is currently seeking to partner with manufacturers to exploit this technology.

The study, titled “Prebiotic-chemistry inspired polymer coatings for biomedical and material science applications”, was published online on 13 November in the NPG Asia Materials journal.