

**IMPLANT TRIBUNE****NEW: CERTIFICATE IN IMPLANT DENTISTRY**

Two clinicians first to earn distinction from Academy of Osseointegration.

► page B1

**COSMETIC TRIBUNE****LASER: PERIODONTAL ESTHETICS ADDRESSED**

Case illustrates removal of dense hyperplastic tissue using diode laser.

► page C1

**ENDO TRIBUNE****AAE17 IN NEW ORLEANS**

Endodontists from around the world will gather April 26–29 for annual meeting.

► page D1



Dental plaque DNA shows Neanderthals chewed 'aspirin'

Ancient human mouths had same bacteria that cause caries and gum disease today

Ancient DNA found in the dental plaque of Neanderthals — our nearest extinct relative — has provided remarkable new insights into their behavior, diet and evolutionary history, including their use of plant-based medicine to treat pain and illness.

In research findings published in March in the journal *Nature*, an international team led by the University of Adelaide's Australian Centre for Ancient DNA (ACAD) and Dental School, with the University of Liverpool in the United Kingdom, revealed the complexity of Neanderthal behavior, including dietary differences between Neanderthal groups and knowledge of medication. "Dental plaque traps microorganisms that lived in the mouth and pathogens found in the respiratory and gastrointestinal tract, as well as bits of food stuck in the teeth — preserving the DNA for thousands of years," said lead author Dr. Laura Weyrich, ARC Discovery early career research fellow with ACAD.

"Genetic analysis of that DNA 'locked-up' in plaque represents a unique win-

dow into Neanderthal lifestyle — revealing new details of what they ate, what their health was like and how the environment impacted their behavior."

The international team analyzed and compared dental plaque samples from four Neanderthals found at the cave sites of Spy in Belgium and El Sidrón in Spain. These four samples range from 42,000 to around 50,000 years old and are the oldest dental plaque ever to be genetically analyzed.

"We found that the Neanderthals from Spy Cave consumed woolly rhinoceros and European wild sheep, supplemented with wild mushrooms," said Professor Alan Cooper, director of ACAD. "Those from El Sidrón Cave, on the other hand, showed no evidence for meat consumption, but appeared instead to have a largely vegetarian diet, comprising pine nuts, moss, mushrooms and tree bark — showing quite different lifestyles between the two groups.

"One of the most surprising finds, however, was in a Neanderthal from El

► See **PLAQUE**, page A3



Dental calculus deposit is visible on the back molar of this El Sidrón Neanderthal upper jaw. This individual was eating poplar, a source of aspirin, and had also consumed molded vegetation including *Penicillium* fungus, source of a natural antibiotic. Photo/Provided by Paleoanthropology Group MNCN-CSIC

INDUSTRY NEWS**A4–A8**

- One-take impression material from Kettenbach, a leading international producer of impression materials for dental use, can save time, material and costs.
- Crosstex launches AXESS Mask sedation system: Subsidiary Accutron's product offers comfort, relaxation and efficiency to patients.
- Kovanaze (tetracaine HCl and oxymetazoline HCl) nasal spray from St. Renatus is first FDA-approved, needle-free, regional dental anesthesia for maxillary arch.
- OT Equator and Smart Box: Removable attachment system works even with bone loss.
- Dental referral expert Travis Rodgers of Record.Linc shares '10 do's and don'ts for generating and monitoring online reviews.'

IMPLANT TRIBUNE**B1–B4****COSMETIC TRIBUNE****C1–C4****ENDO TRIBUNE****D1–D6**

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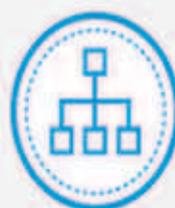
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PUBLISHER & CHAIRMAN

Torsten Oemus t.oemus@dental-tribune.com

PRESIDENT & CHIEF EXECUTIVE OFFICER

Eric Seid e.seid@dental-tribune.com

GROUP EDITOR

Kristine Colker k.colker@dental-tribune.com

EDITOR IN CHIEF DENTAL TRIBUNE

Dr. David L. Hoexter feedback@dental-tribune.com

MANAGING EDITOR U.S. AND CANADA EDITIONS

Robert Selleck r.selleck@dental-tribune.com

MANAGING EDITOR

Fred Michmershuizen
fmichmershuizen@dental-tribune.com

MANAGING EDITOR

Sierra Rendon s.rendon@dental-tribune.com

PRODUCT/ACCOUNT MANAGER

Humberto Estrada h.estrada@dental-tribune.com

PRODUCT/ACCOUNT MANAGER

Will Kenyon w.kenyon@dental-tribune.com

PRODUCT/ACCOUNT MANAGER

Maria Kaiser m.kaiser@dental-tribune.com

CLIENT RELATIONS MANAGER

Leerol Colquhoun l.colquhoun@dental-tribune.com

EDUCATION DIRECTOR

Christiane Ferret c.ferret@dtstudyclub.com

ACCOUNTING COORDINATOR

Nirmala Singh n.singh@dental-tribune.com

Tribune America LLC
116 West 23rd St., Ste. #500
New York, N.Y. 10011
(212) 244-7181

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← **PLAQUE**, page A1

Sidrón, who suffered from a dental abscess visible on the jawbone. The plaque showed that he also had an intestinal parasite that causes acute diarrhea, so clearly he was quite sick. He was eating poplar, which contains the pain killer salicylic acid (the active ingredient of aspirin), and we could also detect a natural antibiotic mold (*Penicillium*) not seen in the other specimens.

“Apparently, Neanderthals possessed a good knowledge of medicinal plants and their various anti-inflammatory and pain-relieving properties and seem to be self-medicating. The use of antibiotics would be very surprising, as this is more than 40,000 years before we developed penicillin. Certainly our findings contrast markedly with the rather simplistic view of our ancient relatives in popular imagination.”

Neanderthals, ancient and modern humans also shared some disease-causing microbes, including the bacteria that cause dental caries and gum disease. The Neanderthal plaque allowed reconstruction of the oldest microbial genome yet sequenced — *Methanobrevibacter oralis*, a commensal that can be associated with gum disease. Remarkably, the genome sequence suggests Neanderthals and humans were swapping pathogens as recently as 180,000 years ago, long after the divergence of the two species.

The team also noted how rapidly the oral microbial community has altered in recent history. The composition of the oral bacterial population in Neanderthals and both ancient and modern humans correlated closely with the amount of meat in the diet, with the Spanish Neanderthals grouping with chimpanzees and our forager ancestors in Africa. In contrast, the Belgian Neanderthal bacte-

ria were similar to early hunter gatherers, and quite close to modern humans and early farmers. “Not only can we now access direct evidence of what our ancestors were eating, but differences in diet and lifestyle also seem to be reflected in the commensal bacteria that lived in the mouths of both Neanderthals and modern humans,” says Professor Keith Dobney, from the University of Liverpool.

“Major changes in what we eat have, however, significantly altered the balance of these microbial communities over thousands of years, which in turn continue to have fundamental consequences for our own health and well-being. This extraordinary window on the past is providing us with new ways to explore and understand our evolutionary history through the microorganisms that lived in us and with us.”

(Source: University of Adelaide)

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