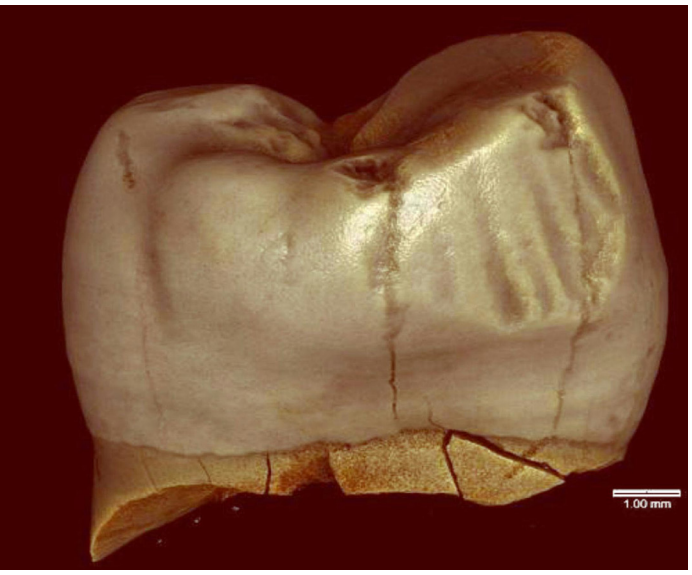
In The News

What primate teeth say about human evolution

For decades, narrow grooves on ancient human teeth were interpreted as evidence of deliberate behaviors such as tooth cleaning with sticks or fibers, often described as the earliest known human habit. New research challenges this view. In a study published in the *American Journal of Biological Anthropology,* scientists examined more than 500 teeth from 27 living and fossil wild primate species and found that similar grooves occur naturally, without any involvement of tools or dental hygiene. Using microscopes, 3D scans, and detailed measurements, they identified non-carious cervical lesions in about 4% of individuals. Some closely resembled classic "toothpick grooves" seen in fossil humans, while others were likely caused by acidic diets rich in fruit or by abrasive particles during chewing. These findings suggest such grooves do not reliably indicate intentional toothpicking. Strikingly, researchers found no evidence of abfraction lesions—deep, wedge-shaped defects common in modern humans—despite studying primates with powerful chewing forces and tough diets. This absence strongly suggests that abfraction is linked to modern human behaviors, such as forceful brushing, processed foods, and acidic drinks. Together, these results highlight the need for caution when interpreting dental marks in fossils and suggest that some common human dental problems are uniquely tied to modern lifestyles rather than deep evolutionary history. ◆



Snow monkeys' hot spring baths

Japanese macaques, or snow monkeys, are famous for bathing in natural hot springs during winter, a behavior often seen as a simple response to cold. New research from Kyoto University shows this habit has deeper biological effects. Studying wild macaques at Jigokudani Snow Monkey Park over two winters, researchers compared females that regularly bathed with those that did not. They combined behavioral observations with parasite assessments and gut microbiome analyses to examine effects on the macaque holobiont—the host and its associated microbes and parasites. The results revealed subtle but meaningful differences. Bathing macaques showed changes in where lice were distributed on their bodies, suggesting warm water may disrupt parasite behavior or egg-laying patterns. Gut microbiome diversity was broadly similar between groups, but several bacterial genera were more abundant in non-bathers, indicating that bathing selectively alters microbial communities. Importantly, bathing did not increase intestinal parasite infection rates, despite shared water use. These findings demonstrate that behavior can shape host–parasite and host–microbe relationships without uniformly affecting all components of the holobiont. The study highlights how natural behaviors influence animal health and challenges assumptions that shared bathing environments necessarily increase disease risk, offering insights relevant to both evolutionary biology and human health. ◆

Crystals that spin, twist, and heal themselves

Crystals made of spinning components may sound improbable, but new research shows they are real and exhibit remarkable properties. Scientists from Aachen, Düsseldorf, Mainz, and Wayne State University report in *PNAS* that systems governed by so-called transverse interactions can form rotating crystals with unusual behaviors. Unlike conventional forces such as gravity, transverse forces act perpendicular to the line between objects, causing them to rotate around one another. At high concentrations, many interacting rotors form solid-like crystals with "odd" material properties. One striking example is odd elasticity: instead of stretching when pulled, these materials twist. They can also spontaneously fracture into smaller rotating pieces without external forces and later reassemble into a crystal. Using a unified theoretical framework and computer simulations, the researchers showed that large rotating crystals tend to split, while smaller ones grow only up to a characteristic size determined by their rotation speed—contrary to normal crystal growth. The theory also predicts dynamic defects whose formation can be externally controlled, allowing material properties to be tuned. Because transverse interactions occur in engineered materials and even biological systems, such as swimming embryos, the findings may inspire applications ranging from soft matter physics to novel mechanical or switching devices. ◆

Ocean that no longer exists

Geologists from the University of Adelaide report that mountain building in Central Asia during the age of dinosaurs may have been driven by forces originating far from the region itself. By compiling hundreds of previously published thermal history models from nearly 30 years of research, the team identified large-scale geological patterns that individual studies could not reveal. Their analysis suggests that the ancient Tethys Ocean played a key role in shaping Central Asia's landscape during the Cretaceous period. Contrary to long-standing assumptions, the researchers found that climate change and mantle convection had only limited influence on Central Asia's topography, which remained largely arid over the past 250 million years. Instead, short-lived episodes of mountain uplift closely correlated with tectonic processes linked to the gradual closure of the distant Tethys Ocean. Extension caused by rollback of subducting oceanic slabs likely reactivated ancient suture zones, forming parallel mountain ridges thousands of kilometers from the future Himalayas. Although today's relief is dominated by the India–Eurasia collision, dinosaurs would have inhabited a similarly mountainous landscape. The study highlights the power of large, integrated datasets and suggests this approach could clarify the origins of mountain building in other poorly understood regions worldwide. ◆