Research highlights

A BLOOD TEST THAT CATCHES CANCERS YOUNG

By the time a person notices the first symptoms of cancer, the disease has often spread too far to be treated successfully. But that could change, thanks to a blood test that can detect more than 50 types of cancer, many of them at an early stage.

Michael Seiden at US Oncology Research in The Woodlands, Texas, and his colleagues analysed blood samples from 2,185 people with cancer and 2,131 healthy individuals. The researchers scoured the samples for DNA that had entered the bloodstream on cell death and probed that DNA for chemical alterations that are indicators of cancer.

The authors then developed an algorithm to predict the presence of cancer on the basis of these chemical fingerprints. For a group of 12 particularly deadly cancers, such as pancreatic cancer, the algorithm could detect tumour signatures in 39% of people with early-stage cancer and 92% of individuals with advanced cancer. In 93% of cases, the test could also predict the tissue in which the cancer had originated.

The ability to detect multiple types of cancer and identify a tumour’s location in the body could make successful treatment more likely, the authors say.

Ann. Oncol. http://doi.org/dqx7 (2020)

DINOSAUR TRACKS ON THE ROOF

A scientist exploring deep inside a cave in France has discovered huge dinosaur footprints, up to 1.25 metres long, made by some of the largest creatures ever to walk the Earth.

According to Jean-David Moreau at the University of Burgundy–Franche-Comté in France and his colleagues, the footprints probably belong to an unknown species of titanosaur, a category of long-necked herbivorous dinosaur that includes the heaviest and longest land animals in the planet’s history. The tracks were made 166 million to 168 million years ago, when three dinosaurs traversed the shoreline of a sea. The site was then at the planet’s surface, but geological processes have buried and tilted the sediments, and the prints are now on the cave’s roof, 500 metres underground.

Dinosaur footprints have often been discovered in mines and railway tunnels, but they are rarely found in natural caverns. The tracks were a chance discovery by one of the authors on a caving expedition in 2015. It’s a wonder they were ever found, because they can be reached only by way of a labyrinth of tight, frequently flooded crawl spaces 100 metres in length.

J. Vertebr. Paleontol. http://doi.org/dqxw (2020)

WHY OKTOBERFEST AMASSES SO MUCH GAS

Every year, the famous beer-soaked, sausage-laden Oktoberfest in Munich, Germany, produces large amounts of natural gas. Now, scientists have found that most of it comes not from drunken revellers, but from leaks in cooking and heating equipment.

A team led by Jia Chen and Florian Dietrich at the Technical University of Munich measured methane emissions while walking and biking around the 2018 Oktoberfest. Methane levels during the festival were up to 100 parts per billion higher than those after it.

Only about 22% of that extra methane would have come from partygoers’ burps and farts, the scientists calculated. The rest probably came from gas appliances used to heat the festival and cook food for Oktoberfest’s 300,000 daily visitors. The emissions peaked around morning, afternoon and evening mealtimes.

Oktoberfest methane emissions were more than ten times the average annual emissions of Boston, Massachusetts, a notoriously leaky city. Inventories of urban emissions should include the effects of large temporary festivals, the authors say.

Atmos. Chem. Phys. 20, 3683–3696 (2020)

HUMAN CURIOSITY IS SHOCKINGLY STRONG

Human curiosity, even about trivial matters, can be so strong that people are willing to risk uncomfortable electric shocks to satisfy their inquisitiveness.

Johnny King Lau and Kou Murayama at the University of Reading, UK, and their colleagues asked volunteers to view videos of magic tricks. The volunteers were then offered the chance to see how the trick was performed — but before they could learn the secret, they viewed a spinning wheel that gave them their odds of learning the solution versus their odds of receiving an electrical shock. Volunteers then had to decide on whether it was worth taking the gamble to satisfy their curiosity.

Even when their chance of getting a shock was 50% or higher, some volunteers took the risk. Scans of the volunteers’ brains showed that anticipation of having their curiosity satisfied activated neural pathways similar to those involved in expecting a reward, which the researchers say could partially explain why curiosity affects decision-making.

Nature Hum. Behav. http://doi.org/dqvx (2020)