

Medical technology

A better way to use bionic hands?

PROSTHETIC hands are usually designed to be operated by the same muscles that would be used if the person had their natural hand, but using unrelated muscles instead may lead to better control.

Hunter Schone at the University of Pittsburgh in Pennsylvania and his colleagues got 40 able-bodied people to undergo training over four days with the i-LIMB Quantum Hand prosthesis strapped to their wrists. Their corresponding real hand was bound so they couldn't move it.

People who had to manipulate the robot hand using unrelated muscle movements, such as those used to hold up one finger, took longer to work out how to control the hand, but seemed better able to learn to use it for new tasks (*Nature Human Behaviour*, doi.org/mq98). **Clare Wilson**



Chemistry

Fractal seen at the molecular scale

A BACTERIUM has evolved an enzyme that assembles in a fractal structure, a mathematical pattern that repeats itself.

Fractal patterns have been found throughout nature on larger scales, such as in romanesco broccoli or fern plants, but hadn't been identified at the molecular level until now.

Georg Hochberg at the Max Planck Institute for Terrestrial Microbiology in Marburg, Germany, and his colleagues discovered the molecular fractal in an enzyme used by the cyanobacterium *Synechococcus elongatus* (*Nature*, doi.org/mq99).

In this organism, the enzyme, called citrate synthase, can arrange its building blocks into an unusual form of triangle that contains ever-smaller triangular gaps – a fractal pattern known as a Sierpiński triangle. **Alex Wilkins**

Conservation

Endangered white rhino could be saved by frozen skin

THERE are only two northern white rhinos left on the planet, but the species may be able to recover with the help of frozen skin cells from dead rhinos.

Much of the hope for the future of the northern white rhino (*Ceratotherium simum cottoni*) has rested on the last surviving members of the subspecies: Fatu (pictured above) and Najin, an infertile mother-daughter pair. Because neither can carry a pregnancy, conservationists are turning to genetic and reproductive innovation.

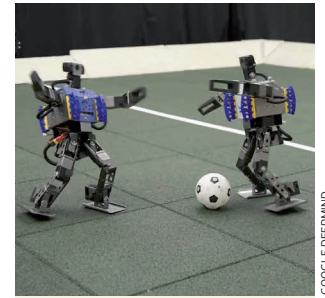
Now, Aryn Wilder at the San Diego Zoo Wildlife Alliance in California and her colleagues have looked at skin cells taken from 12 northern white rhinos and stored

in their Frozen Zoo, a repository of genetic material from more than a thousand species. Using a computer model, they simulated how the subspecies would fare if the rhino genetic material was used to generate sperm and egg cells, which could then be turned into embryos and carried by females of the closely related southern white rhino (*Ceratotherium simum simum*).

They found it would be possible to restore the population and, after 10 generations, the northern white rhinos in these simulations were healthy and genetically diverse, rather than inbred (*Evolutionary Applications*, in press).

However, researchers would still need to chemically coax the frozen skin cells into viable sperm and egg stem cells and hope that southern white rhino surrogates can successfully carry the embryos of the northern white rhinos. Another way forward would be cloning: banked cells could be used to create a genetic copy of deceased animals. **Corryn Wetzel**

Really brief



Humanoid robots get football boost

Soccer-playing robots trained using deep reinforcement learning, which is driven by artificial intelligence, can walk 181 per cent faster, turn 302 per cent quicker, kick a ball 34 per cent harder and get up 63 per cent faster after falling than robots working off scripted lessons (*Science*, doi.org/mrbg).

Air pollution messes up fruit fly mating

When four species of fruit fly (*Drosophila* spp.) are exposed to levels of ozone gas comparable with those present on a hot day in a city, they are more likely to mate with the wrong species. The pollutant breaks down identifying scents the flies release (*Nature Communications*, doi.org/mrbc).

Turing award won for randomness

Mathematician Avi Wigderson has scooped the 2023 Turing award, often referred to as the Nobel prize for computing. One of his key discoveries was showing that certain algorithms that contained randomness and were hard to run could be made deterministic, or non-random, and easier to run.