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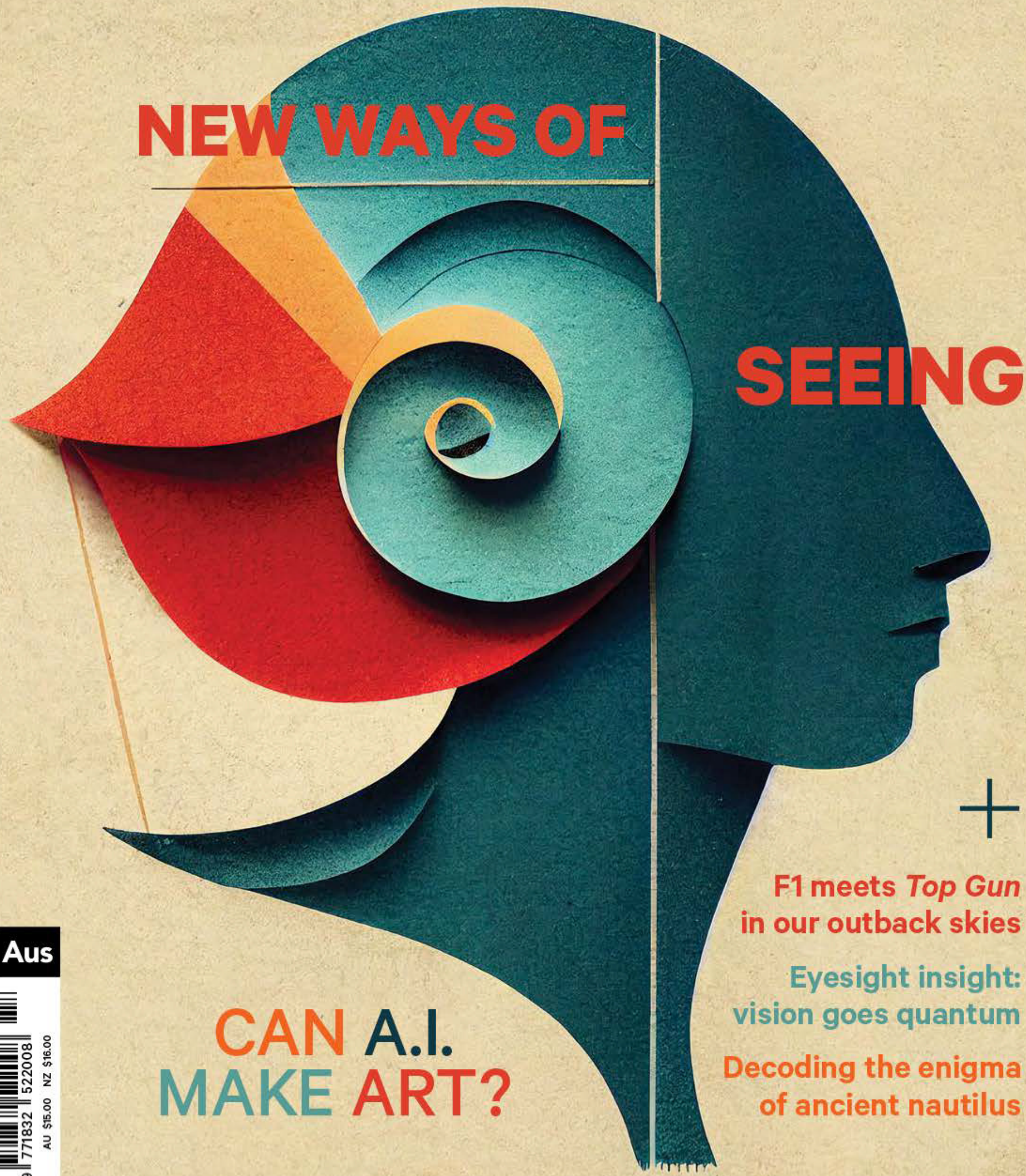
Issue 96



NEW WAYS OF SEEING

CAN A.I. MAKE ART?

F1 meets *Top Gun* in our outback skies

Eyesight insight: vision goes quantum

Decoding the enigma of ancient nautilus

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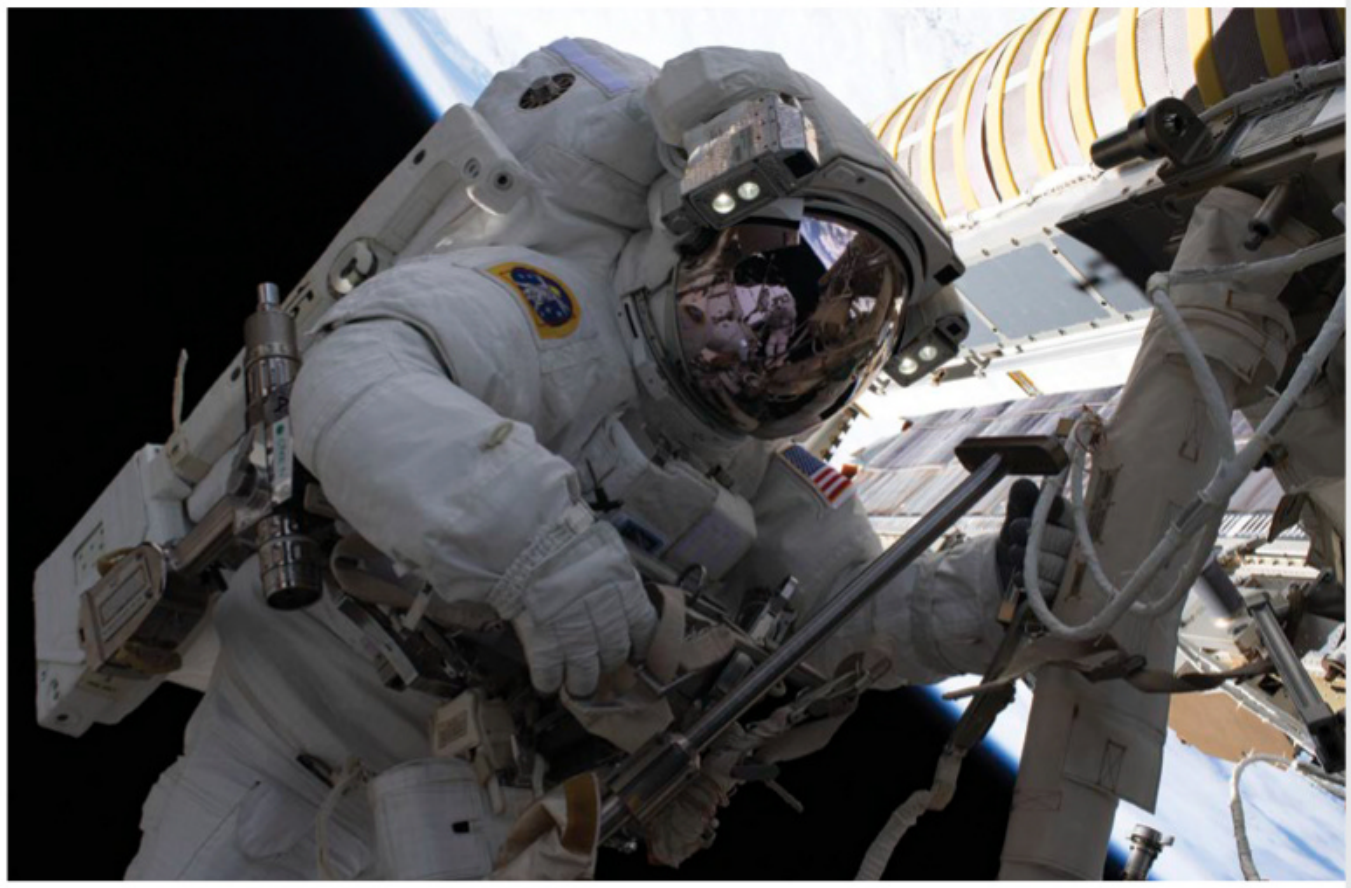
SPACE

Bone density doesn't bounce back

Six months in space is a decade on Earth.



NASA astronaut Shane Kimbrough installing new roll-out solar arrays on the International Space Station's Port-6 truss structure in June 2021.

A year back on Earth is still not enough to recover from a few months of bone density loss in space, according to new research on 17 astronauts.

Living in zero gravity has a number of effects on the body, including a loss of bone density. A study published in *Scientific Reports* has found that this density usually isn't completely restored 12 months after four months (or more) in space.

"Bone loss happens in humans – as we age, get injured, or any scenario where we can't move the body, we lose bone," explains Dr Leigh Gabel, assistant professor in the Faculty of Kinesiology at the University of Calgary.

"Understanding what happens to astronauts and how they recover is incredibly rare."

Researchers scanned the tibia (shin) and radius (forearm) of 17 astronauts (three female, 14 male) before they went to space. They then did the same scans three times on their return: straight after, then six and 12 months after. The scans gave information about mineral density, resistance to fractures, and tissue thickness.

"This suggests the permanent bone loss due to spaceflight is about the same as a decade worth of age-related bone loss on Earth," says Gabel.

In better news for the spacefarers, some exercises during spaceflight seemed to mitigate this. Astronauts who stepped up their in-flight resistance training – deadlifting – were better at recovering bone mineral density in their shins.

BIOLOGY

THE BUGS IN YOUR TEABAG COUNTED WITH EDNA

Yes, you are drinking arthropods in your tea.

Commercial tea leaves contain traces of arthropod DNA, according to a study in *Biology Letters*.

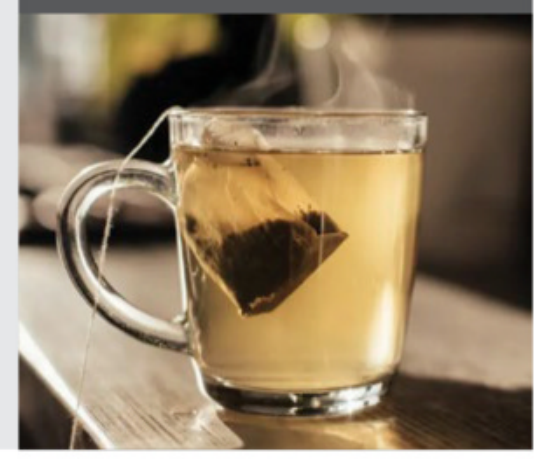
Aside from establishing that yes, there are insect traces in your teabag, the research demonstrates a nifty new technique: the ability to extract eDNA from dried plants.

Environmental DNA, or eDNA, refers to the DNA fragments left behind by many different species in a given environment.

It works best with samples of water. But a team of researchers based at Trier University and the Max Planck Institute for Evolutionary Biology, both in Germany, has figured out a method for getting eDNA from dried leaves.

The researchers extracted DNA from several dozen different commercially bought teabags and dried herbs, including chamomile, mint, tea and parsley.

They were able to spot over 1,000 different species of arthropod from the eDNA they found.



NASA, KSENIYA OVCHINNIKOVA / GETTY IMAGES