News in brief

BREAKTHROUGH COVID BOOSTS IMMUNE PROTECTION

Two studies suggest that 'breakthrough' SARS-CoV-2 infections improve immune protection against several variants of the virus.

People who catch SARS-CoV-2 and then are vaccinated tend to make lots of antibodies against the SARS-CoV-2 spike protein, and their antibody-containing blood serum excels at blocking a range of SARS-CoV-2 variants.

To test whether infection after vaccination confers similar benefits, scientists analysed serum from people who'd had such breakthrough infections; others infected before vaccination; and vaccinated people with no history of infection (pictured, a vaccination centre). Sera from both previously infected groups had more antibodies against the spike protein than did serum from those protected only by vaccines (T. A. Bates *et al. Sci. Immunol.* https://doi.org/gn9tgz; 2022).

A second study examined people who'd been infected and then given two doses of vaccine; who'd had two shots and then breakthrough infections; and who'd had a third vaccine dose but no infection. Serum levels of antibodies that blocked variants including Omicron were higher, and persisted for longer, in all three groups than in people who'd had two doses of vaccine and never been infected (A. C. Walls *et al. Cell* https://doi.org/gpdfp6; 2022).

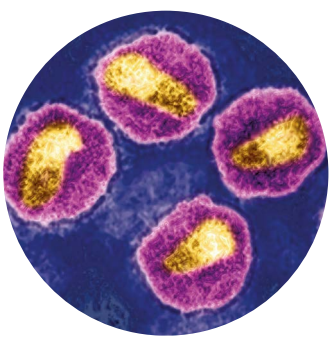
HIGHLY VIRULENT HIV STRAIN CIRCULATING IN EUROPE

A highly transmissible and damaging variant of HIV has been circulating in the Netherlands for decades, researchers have found.

An analysis of more than 100 infected people suggests that the variant boosts the number of viral particles in a person's blood, making them more likely to transmit the virus. The variant also seems to lead to a reduction in immune cells called CD4 T cells, so infected people are at risk of developing AIDS more rapidly than are those infected with other versions of HIV (C. Wymant *et al. Science* **375**, 540–545; 2022).

The emergence of a more virulent form of HIV is "a reason to stay vigilant", but not a public-health crisis. The mutations in the new variant don't make it resistant to existing HIV drugs, says Joel Wertheim, an evolutionary biologist at the University of California, San Diego. "All of the tools in our arsenal should still work," he says.

The study highlights the importance of HIV testing and treatment, says Salim Abdool Karim, director of the Durban-based Centre for the AIDS Programme of Research in South Africa. "It's key to identify infected people quickly and start treatment early, because treatments work well, even against this variant," he says.



EVIDENCE OF EUROPE'S FIRST *HOMO SAPIENS* FOUND IN FRENCH CAVE

Archaeologists have found evidence that Europe's first *Homo sapiens* lived briefly in a rock shelter in southern France — before mysteriously vanishing.

A study published on 9 February argues that distinctive stone tools and a lone child's tooth were left by *H. sapiens* during a short stay, some 54,000 years ago — and not by Neanderthals, who lived in the rock shelter for thousands of years before and after that time (L. Slimak *et al. Sci. Adv.* **8**, eabj9496; 2022).

The *H. sapiens* occupation, which researchers estimate lasted for just 40 years, pre-dates the previous earliest known evidence of the species in Europe by around 10,000 years.

Researchers excavating the Grotte Mandrin rock shelter in the Rhône Valley uncovered tens of thousands of stone tools, along with animal bones and hominin teeth. Most of the tools resemble artefacts found at Neanderthal sites across Eurasia. But one of the shelter's archaeological levels — dated to between 56,800 and 51,700 years ago — contains tools such as sharpened points and small blades that are more typical of early *H. sapiens* technology.

An analysis also found that the only hominin tooth in this layer is similar in shape to those of *H. sapiens* who lived in Eurasia during the last Ice Age. Other teeth found in Grotte Mandrin resemble those of Neanderthals.

"It is exciting to see that *Homo sapiens* was in western Europe several thousand years earlier than previously thought," says Marie Soressi, an archaeologist at Leiden University in the Netherlands. "It shows that the peopling of Europe by *Homo sapiens* was likely a long and hazardous process."

But some researchers are not so sure that the stone tools or tooth were left by our species. And the tooth's DNA has not yet been analysed to confirm its origins.

"I find the evidence less than convincing," says William Banks, a palaeolithic archaeologist at the French national research agency CNRS and the University of Bordeaux. He adds that there can be substantial overlap in the shapes of teeth from *H. sapiens* and Neanderthals.

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