Flu vaccine could cut COVID risk

Health-care workers who got the influenza vaccine were also protected from COVID-19 — but the effect might not last long.

A study of more than 30,000 people found that those who got an influenza vaccination were nearly 90% less likely to develop severe COVID-19 over the next few months than those who hadn't recently had the jab (E. Tayar *et al*. Preprint at medRxiv https://doi.org/hvr5; 2022). The study, which was conducted before the roll-out of COVID-19 vaccines, confirms previous work suggesting that ramping up the immune system using influenza vaccines and other jabs could help the body to fend off the coronavirus SARS-CoV-2.

Laith Jamal Abu-Raddad, an infectious-disease epidemiologist at Weill Cornell Medicine–Qatar in Doha, and his colleagues analysed the health records of 30,774 medical workers in the country. The researchers matched 518 workers who tested positive for SARS-CoV-2 with more than 2,000 study participants who had tested negative. Those who had received a flu jab that season were 30% less likely to test positive for SARS-CoV-2, and 89% less likely to develop severe COVID-19, compared with workers who had not. The study was posted on the medRxiv preprint server on 10 May.

Günther Fink, an epidemiologist at the University of Basel in Switzerland, says the Qatar analysis cuts the odds that other studies that reported the same link were a fluke. His team reported that flu vaccines were tied to a lower death risk for people hospitalized with COVID-19 in Brazil (G. Fink *et al*. *BMJ Evid. Based Med*. **26**, 192–193; 2020).

How long this protection lasts is unclear. Among those in the Qatar study who had the flu jab and later contracted COVID-19, Abu-Raddad's team recorded SARS-CoV-2 infections occurring, on average, about six weeks after vaccination. "I don't expect to see this effect lasting long at all," he says. Mihai Netea, an infectious-disease specialist at Radboud University Medical Center in Nijmegen, the Netherlands, guesses that the benefits last for between six months and two years.

By Ewen Callaway

The fossilized molar, seen here from several angles, is thought to have belonged to a young Denisovan girl that died between 164,000 and 131,000 years ago.

ANCIENT TOOTH SHOWS DENISOVANS VENTURED FAR BEYOND SIBERIA

Molar found in Laos could be first fossil evidence that the hominin species could adapt to different climates.

By Freda Kreier

A fossilized tooth unearthed in a cave in northern Laos might have belonged to a young Denisovan girl that died between 164,000 and 131,000 years ago. If confirmed, it would be the first fossil evidence that Denisovans — an extinct hominin species that co-existed with Neanderthals and modern humans — lived in southeast Asia.

The molar, described in *Nature Communications* on 17 May[1], is only the second Denisovan fossil to be found outside Siberia. Its presence in Laos supports the idea that the species had a much broader geographical range than the fossil record previously indicated.

"We've always assumed that Denisovans were in this part of the world, but we've never had the physical evidence," says study co-author Laura Shackelford, a palaeo-anthropologist at the University of Illinois Urbana-Champaign. "This is one little piece of evidence that they were really there."

Denisovans were first identified in 2010, when scientists sequenced DNA from a fingertip bone found in Denisova cave in Siberia, and showed that it belonged to a previously unknown species of ancient human[2]. Subsequent genetic studies[3,4] have revealed that millions of people from Asia, Oceania and the Pacific Islands carry traces of Denisovan DNA.

This suggests that the species ranged far beyond Siberia — but the fossil evidence has been sparse. The entire fossil record for Denisovans so far boils down to a handful of teeth, bone shards and a jawbone found in Tibet. Aside from the latter, every specimen (including a piece of bone that belonged to a half-Denisovan girl whose mother was a Neanderthal) has come from Denisova cave.

That's partially because fossils have a better chance of surviving in cold, dry conditions than in warm, humid ones. But in 2018, Shackelford and her colleagues were looking for potential dig sites in northern Laos when they came across a cave "just filled with teeth". These belonged to a mixture of species, including giant tapirs, deer, pigs and ancient relatives of modern elephants. Among the first batch of fossils to come out of the cave was a small, underdeveloped hominin tooth.

F. DEMETER

Dating of the cave's rock and animal teeth revealed that the tooth pre-dated the arrival of modern humans in the area. "It was just a huge surprise," says Shackelford, who says the team wasn't expecting to find ancient-human remains. At first, the researchers thought the tooth might belong to *Homo erectus* — an ancient-human species that lived in Asia between around 2 million and 100,000 years ago. But the molar is "too complex" to belong to *H. erectus*, the researchers say, and although it shares some characteristics with Neanderthal teeth, it is also "large, and kind of weird", says Bence Viola, a palaeoanthropologist at the University of Toronto in Canada.

The molar has the greatest resemblance to teeth found in the Denisovan jawbone from Tibet. "Denisovans have absolutely gigantic teeth," Viola says. "So it seems like a good assumption that this is likely a Denisovan."

The tooth's roots are not fully developed, so it probably belonged to a child, the researchers say. They also found that it lacked certain peptides in its enamel that are associated with the Y chromosome — a possible indication that its owner was female.

Right place, right time

Reconstructing the identity of a person whose bones have been degraded by thousands of years of tropical conditions is challenging, says Katerina Douka, an archaeological scientist at the University of Vienna. Without more fossils or DNA analysis, "the reality is that we cannot know whether this single and badly preserved molar belonged to a Denisovan", she says.

But Viola says that the molar is in the "right place and right time" to belong to a Denisovan. If this were confirmed, it would reveal that the species was able to adapt to different environmental conditions. At the time the tooth's owner died, more than 131,000 years ago, the area would have been lightly wooded and temperate — completely different from the frigid temperatures faced by Denisovans in Siberia and Tibet. The ability to live in a wide range of climates would set the Denisovans apart from Neanderthals — whose bodies were adapted for colder places — and make them more similar to our own species.

Even with the uncertainty, the discovery is likely to encourage other researchers to look for ancient-human fossils in southeast Asia, says Viola.

"When we started looking in Laos, everyone thought we were crazy," says Shackelford. "But if we can find things like this tooth — which we weren't even anticipating — then there are probably more hominin fossils to be found."

1. Demeter, F. *et al. Nature Commun.* **13**, 2557 (2022).
2. Krause, J. *et al. Nature* **464**, 894–897 (2010).
3. Browning, S. R., Browning, B. L., Zhou, Y., Tucci, S. & Akey, J. M. *Cell* **173**, 53–61 (2018).
4. Vernot, B. *et al. Science* **352**, 235–239 (2016).

UK LEADERS EYE RADICAL SHAKE-UP OF RESEARCH ASSESSMENT

As the Research Excellence Framework concludes, funders are considering changes to improve culture.

By Holly Else

Researchers across the United Kingdom have received the results of a years-long research-assessment exercise that dictates how much government funding universities will get over the coming years.

The Research Excellence Framework (REF) is one of the world's most comprehensive research assessments — many nations look to it as an example of how to review research. But its leaders are already considering how they might change the process.

The 2021 REF results suggest that more than 40% of UK research is world-leading. Almost all UK universities took part in the mammoth exercise, together submitting 185,000 pieces of research from more than 76,000 researchers for assessment.

The funders in charge of the REF are reviewing how the next assessment might change. Currently, research is given a star rating by 34 expert panels. Reviewers also judge institutions on the impact of their work and the standard of their research environment. Scores for each element carry a different weight in a formula that dictates the size of each institution's share of public research funding. Currently, the score for research outputs holds the biggest sway, accounting for 60% of the final mark.

"The stars are now aligning to support a more radical overhaul than at any point in the past 20–25 years."

The UK government is yet to announce how much money will be up for grabs, and how it will be divided between different institutions. The results of the previous exercise, released in 2014, guided £14 billion (US$17.1 billion) of university research funding.

Those who administer the research-assessment exercise — the UK's higher education funding councils — have a history of changing the rules each time to reflect priorities and to help stop institutions from gaming the process to boost their scores. Ahead of the 2014 results, the exercise was broadened to include a measure of research impact. Researchers now submit case studies to demonstrate the economic, social and policy contributions of their work — a move that has been copied by other countries.

The latest change included a rule that institutions must submit for assessment the work of everyone who does research as part of their job. Previously, some institutions put forward only top performers in an attempt to skew ratings in their favour. As a result of the change, the latest exercise saw a 46% increase in the number of staff submitted for assessment compared with the previous one.

Last year, funders began to look at how the process could be used to recognize and reward institutions fostering a positive research culture. So the rules of the next assessment could look significantly different.

"If we want to improve research culture, then the REF is potentially a powerful ally in that effort because it gives you that reach across the entire system," says James Wilsdon, a science-policy researcher at the University of Sheffield, UK. "I do think the stars are now aligning to support a more radical overhaul of the exercise than at any point in the past 20–25 years."

Catriona Firth, the associate director for research environment at Research England — one of the four funding councils that administers the REF — agrees that a radical shake-up could be on the cards. "The current REF has been quite focused on the research end points, and not focusing so much on the inputs or the research process," says Firth. Because research outputs are assessed for their originality, institutions do not submit review articles, negative results or replication studies, which are all important for research, she says.

The tricky part, Firth adds, will be balancing the continued drive for excellence with rewarding healthy research culture, without placing a huge administrative burden on institutions. The REF already has many critics, who claim it is bureaucratic and expensive (the 2014 exercise cost £246 million to run).

The results of the REF review will be very important for the rest of the world, says Lidia Borrell-Damián, head of research and innovation at policy group Science Europe. "It will be full of insights on what to consider when reforming the assessment," she adds.