

focused on the researchers' science, the gap in success rate was the same as in the conventional programmes. But in the grant programme that focused on the applicants' experience and qualifications, the success rate for male applicants was 4% higher than for female applicants. "That's a significant difference," Witteman says.

A RANDOM ACT

However, Witteman warns that the study was not randomized, meaning that there may be differences between male and female applicants, such as their publication records, which might help to account for the different success rates. Her team was unable to account for such factors, because it didn't have access to those data.

"That's a big problem," says Beate Volker, a social scientist at the University of Amsterdam. She says that the CIHR results would reflect bias if they could show that two applicants had similar publication records, but one was preferred over the other. It would be relatively easy to test this by looking at the number and quality of publications for each applicant. But until the researchers do that, the bias is "unproven," Volker says.

Donna Ginther, an economist at the University of Kansas in Lawrence, who analysed racial bias in grant programmes at the US National Institutes of Health³, echoes this concern. But she says it's interesting that the gender differences in funding outcomes disappeared after the CIHR implemented new policies, which included asking reviewers to complete a training module about unconscious bias.

Previous work, Ginther notes, showed that training might stir biases and be counterproductive⁴. The effects of the new CIHR policies suggest the opposite: in the 2016–17 grant cycle, female scientists were as successful as men in both science- and person-focused grant programmes. "It would be helpful to know what kind of training it was," Ginther says.

The CIHR is committed to eliminating bias against women and minorities by educating and evaluating reviewers, says Robyn Tamblyn, scientific director of the CIHR Institute of Health Services and Policy Research in Montreal. "We're just at the beginning," she says.

Witteman now plans to look at the reviewer-training module, to see whether it might help to reduce biases. ■

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An upper jaw and teeth are thought to be the earliest evidence of *Homo sapiens* outside Africa.

PALAEANTHROPOLOGY

Israeli fossils hint at early migration

Bones suggest humans left Africa 180,000 years ago.

BY EWEN CALLAWAY

The oldest human fossils ever found outside Africa suggest that *Homo sapiens* might have spread to the Arabian Peninsula around 180,000 years ago — much earlier than previously thought. The upper jaw and teeth, found in an Israeli cave and reported in *Science* on 25 January¹, pre-date other human fossils from the same region by at least 50,000 years. But scientists say that it is unclear whether the fossils represent a brief incursion or a more-lasting expansion of the species.

Researchers originally thought that *H. sapiens* emerged in East Africa 200,000 years ago, then moved out to populate the rest of the world. Until discoveries in the past decade countered that story, scientists surmised that a small group left Africa some 60,000 years ago. If so, it would mean that signs of earlier travels were from failed migrations. That evidence includes 80,000–120,000-year-old skulls and other remains from Israel, uncovered in the 1920s and 1930s.

However, recent discoveries have muddied that simple narrative. Some *H. sapiens*-like fossils reported last year from Morocco², which are older than 300,000 years, have raised the

possibility that humans evolved earlier and perhaps elsewhere in Africa. Teeth from southern China³ hint at long-distance migrations some 120,000 years ago. And genome studies have sown more confusion, with some comparisons of global populations pointing to just one human migration from Africa^{4,5}, and others suggesting multiple waves⁶.

EARLY START

In the early 2000s, archaeologist Mina Weinstein-Evron, at the University of Haifa in Israel, and palaeo-anthropologist Israel Hershkovitz, at Tel Aviv University, began a project to excavate a series of Israeli caves. "We called it 'Searching for the Origins of the Earliest Modern Humans'. This was what we were looking for," says Weinstein-Evron.

Their team discovered the jaw fragment in 2002, in Misluya Cave. It is just a few kilometres away from the Skhul cave, one of the sites where the 80,000–120,000-year-old remains were found in the 1920s and ▶

"People were coming and going through this land corridor from one continent to another."

► 1930s. Using several different methods, the team estimates the jaw and teeth to be 177,000–194,000 years old.

The remains are unquestionably *H. sapiens*, says team member María Martín-Torres, a palaeoanthropologist at the National Research Centre on Human Evolution in Burgos, Spain. The shapes of the teeth match those of both modern and ancient humans, she says. They also lack features typical of Neanderthals, which lived throughout Eurasia at the time.

The dating seems solid and the fossils are *H. sapiens*, says Huw Groucutt, an archaeologist at the University of Oxford, UK. But he isn't very surprised to see them in Israel. He and his colleagues have previously said that 175,000-year-old stone tools from other sites in the Middle East resemble those used by *H. sapiens* in East Africa⁷.

CLOSE ENCOUNTERS

Hershkovitz says that the jaw and teeth point to a long-term occupation of the Middle East by early *H. sapiens*. "It was a central train station. People were coming and going through this land corridor from one continent to another, and it was occupied all the time." Once in the region, humans probably encountered and interbred with Neanderthals. As evidence, he points to a 2017 ancient-DNA study that suggested interbreeding had occurred before 200,000 years ago⁸.

Wet periods could have drawn humans into the Middle East, but long, dry spells mean that "the region was probably more often a 'boulevard of broken dreams' than a stable haven for early humans", write Chris Stringer and Julia Galway-Witham, palaeoanthropologists at the Natural History Museum in London, in a commentary accompanying the paper⁹.

The fossil could indicate that Israel and the rest of the Arabian Peninsula were part of a larger region in which *H. sapiens* evolved, says John Shea, an archaeologist at Stony Brook University in New York. "We tend to think of Israel as part of Asia for geopolitical reasons, but it is really a transition zone between North Africa and western Asia," he says. "Plenty of Afro-Arabian animals live there, or did so until recently," including leopards, lions and zebras. "*Homo sapiens*," Shea says, "is just another such Afro-Arabian species." ■

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Satyapal Singh is a junior minister for human-resource development in India.

INDIA

Anti-Darwin comments outrage researchers

Indian scientists condemn higher-education minister who questioned the theory of evolution.

BY T. V. PADMA

Thousands of scientists in India have signed an online petition protesting against comments by a higher-education minister who last month publicly questioned the scientific validity of Charles Darwin's theory of evolution and called for changes to educational curricula.

The incident continued to simmer when Indian science minister Harsh Vardhan, a medical doctor, declined to comment on his colleague's remarks at a press conference on 24 January. Vardhan said he had not studied Darwin's theory since he was a student and so wasn't qualified to discuss it.

The original comments were made by Satyapal Singh, a junior minister for human-resource development who oversees university education. On 20 January, he told reporters at a conference on ancient Hindu texts in Aurangabad that Darwin's theory of evolution of humans "is scientifically wrong". Singh added that "nobody, including our ancestors, in written or oral, have said they saw an

ape turning into a man". Two days later, he proposed holding an international seminar on the subject.

The comments provoked outrage in the Indian scientific community. Vishwesh Guttal, an evolutionary ecologist at the Indian Institute of Science in Bangalore, suggests the remarks are the first time that such anti-evolution opinions have been aired by high-ranking politicians in India. "I have seen these kind of issues (anti-Darwin stance) when I was a student in the US. This was totally unheard of, so far, in India," says Guttal. "My first thought was, 'Is this coming to India now?'"

Senior government officials later dismissed the comments. On 23 January, Singh's boss Prakash Javadekar, the senior minister for human-resource development, said that he had asked Singh to refrain from making such remarks. "We should not dilute science," Javadekar said. He added that his ministry would not support any anti-Darwin activities such as Singh's proposed conference or changing curricula. Singh did not respond to a request for comment from *Nature's* news team.

CORRECTION

The News story 'Israeli fossils hint at early migration' (*Nature* **665**, 15–16; 2018) gave the wrong URL for reference 1. It should have been <http://dx.doi.org/10.1126/science.aap8369>.