

China, and will provide short-term training opportunities for another 50,000 people to travel to seminars and workshops.

The action plan also offers scholarships for postgraduate training in China and at African institutions, such as the Sino-Africa Joint Research Centre at the Jomo Kenyatta University of Agriculture and Technology in Juja, Kenya. The centre, which opened in 2013, collaborates with Wuhan Botanical Garden in China, and has produced dozens of academic papers in fields including biodiversity and climate-change monitoring.

China will also support a major expansion of the University of Health and Allied Sciences, a modern biomedical training institution in Ho, Ghana, which received \$20 million from the country in 2015.

“Developing indigenous talents locally is extremely important to the future of science in Africa,” says Tommy Karikari, a neurology researcher from Ghana who works at the University of Gothenburg in Sweden. The latest plan will dramatically expand training opportunities for African scientists, he says.

Karikari says that local scholarships and training facilities are important to ensure that some researchers stay in Africa. Many people currently train abroad because of a lack of opportunities on the continent, says Karikari. “It is expensive, and many beneficiaries do not return home, which affects the pool of trained scientists in Africa,” he says.

Benabdallah says the summit focused

particularly on ways to include African scientists in China’s global-diplomacy programme, the Belt and Road initiative. For example, the plan encourages researchers in Africa to join the Young Scientists Exchange Program, which pays for scientists to study in China for up to a year.

China has also promised to help countries develop real-world applications in quantum

“Developing indigenous talents locally is extremely important to the future of science in Africa.”

physics and artificial intelligence. But Benabdallah says there is a risk that African nations might become too dependent on other countries to provide training and skills. It is important

for African nations to be producers of science and technology, not just consumers, she says.

The plan also reaffirms China’s decades-long commitment to help improve agricultural science and practices and environmental protection in Africa. Analysts characterize this investment as a mix of profit-seeking, philanthropy and food security, as China seeks grains and oilseeds that it can bring back home.

The plan calls for new centres for joint research in environmental issues and geoscience, although their locations are yet to be announced. Other programmes will focus on safeguarding biodiversity and combating climate change and desertification. Five hundred senior agriculture experts from China

will also be sent to Africa to help modernize agricultural practices.

But Ademola Adenle, who studies sustainable development at Colorado State University in Fort Collins, is sceptical about China’s intentions. He says little knowledge has been gained from the more than 20 Chinese-government-funded agricultural-technology development centres created in Africa since 2006. The centres lack transparency and mainly represent Chinese commercial interests, he says. One of them reportedly sells farm equipment, mushroom powder and dried mushrooms to local people.

“Since this initiative kicked off, I am not aware of any significant breakthrough in agriculture research and development, or any type of innovation that could transform agricultural development,” he says.

China’s agriculture ministry did not respond to questions about the agricultural-technology centres by *Nature’s* deadline.

Adenle hopes that the forum will result in training for agricultural scientists to improve local farming techniques. But if these initiatives just give China more access to Africa’s natural resources, it could spell doom for the continent, he says.

For China’s investments to help Africans harness science and technology, there will need to be more public discussion of the trade agreements and political deals as they’re worked out. “There is no doubt that China has invested a lot of money in Africa,” says Adenle. “But we need more transparency.” ■

POLICY

Fetal-tissue work under scrutiny

US government will examine federally funded studies.

BY SARA REARDON

The US government has begun a review of federally funded studies that use fetal tissue, a move that critics fear could be a first step toward curbing such research.

Following complaints from anti-abortion groups and Republican lawmakers, the Department of Health and Human Services (HHS) plans to evaluate “all research involving fetal tissue” and “all acquisitions involving human fetal tissue”. In a statement on 24 September, the department also said that it had cancelled a US\$15,900 contract between the Food and Drug Administration, which it oversees, and Advanced Bioscience Resources (ABR), a non-profit tissue supplier in Alameda, California.

According to the contract, which the FDA awarded in July, agency researchers would implant the human fetal tissue provided by the company into mice that lacked immune systems. The goal was to give the animals human-like immune systems and use them to evaluate the safety and efficacy of various drugs.

The HHS said that it cancelled the contract because it “was not sufficiently assured that the contract included the appropriate protections applicable to fetal tissue research or met all other procurement requirements”.

The action comes after 85 members of the US House of Representatives sent a letter to FDA commissioner Scott Gottlieb on 17 September, claiming that ABR might have violated federal law by selling “the body parts of

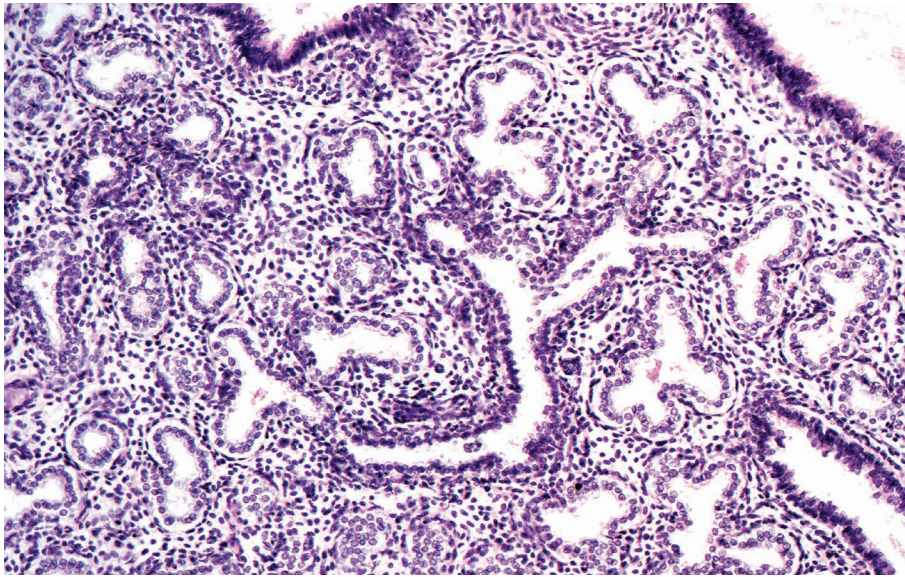
children” for a profit. In 2016, a special House committee — the Republican-led Select Investigative Panel on Infant Lives — had referred the company to the US Department of Justice for investigation. ABR did not immediately respond to *Nature’s* requests for comment.

“We are alarmed that the FDA has continued to award contracts to ABR for the procurement of human fetal tissue,” the lawmakers wrote to Gottlieb.

The HHS has offered little detail about its review of fetal-tissue contracts and research. In its statement, the department said that it is auditing “all acquisitions involving human fetal tissue” to ensure that firms that supply the tissue adhere to federal regulations.

The department is also reviewing research involving fetal tissue “to ensure the adequacy of procedures and oversight of this research in light of the serious regulatory, moral, and ethical considerations involved”, as well as whether alternatives to such research exist. An HHS spokesperson declined to comment on how long the process would take, but said that it would encompass research funded by the department.

That decision has “troubled” the International Society for Stem Cell Research in Skokie, Illinois, the group said in a statement on 27 September. “The directive appears to come after



The US government is reviewing research that involves fetal tissue, such as these lung cells.

intensive lobbying efforts by special interest groups with the goals of delaying or curtailing scientific research,” the group wrote. “Research that has saved lives, and will likely save more,

should not be delayed for political reasons.”

Larry Goldstein, a neuroscientist at the University of California, San Diego, says that it’s hard to know why the HHS decided to

cancel the contract. “I think the question is whether there’s an attempt to politicize this or whether we can keep to straight scientific and medical merit,” he says.

Goldstein is concerned that a ban or heavy restrictions on federally funded experiments with fetal tissue could harm research, particularly on human development, organ regeneration and determining whether tissue created from stem cells recapitulates the real thing.

Moreover, he says, the fetal tissue used in research would otherwise be discarded. “Scientists are simply asking, if you’re going to throw the tissue away anyway, can you at least donate it to important medical research?”

Renate Myles, a spokesperson for the US National Institutes of Health (NIH), which sits within the HHS, says that the agency does not have any standing contracts with any providers of human fetal tissue. “We agree that it is important that research involving human fetal tissue should be consistent with the statutes and regulation governing such research, and reminded NIH-funded institutions that awards are conditioned upon compliance of all applicable federal, state and local laws and regulations,” she says. ■

PALAEONTOLOGY

Early–Jurassic dinosaur find puts evolution of walking to test

Fossils suggest quadrupedalism evolved 10 million years earlier than thought.

BY SARAH WILD

Researchers have discovered fossils from South Africa’s largest dinosaur yet — a find that they say changes their understanding of how four-legged walking evolved in a lineage that includes some of the biggest animals ever to have walked the planet.

The newly described species, *Ledumahadi mafube*, would have weighed about 12 tonnes, and is a type of sauropodomorph: a large group of dinosaurs with long necks and tails. When *L. mafube* lived, around 200 million years ago during the early Jurassic period, it would have been the largest animal walking on Earth (B. W. McPhee *et al.* *Curr. Biol.* <http://doi.org/cvbd>; 2018).

Palaeontologist James Kitching first found fossils of *L. mafube* in 1988 near South Africa’s border with Lesotho. But the bones were left on a shelf for more than a decade and ‘rediscovered’ only in the 2000s, in the collections of the University of the Witwatersrand in Johannesburg, South Africa. Palaeontologists returned to the site in

2010 and completed the excavation last year.

Most of South Africa’s dinosaur discoveries have been of animals that would have weighed about five tonnes, says study co-author Jonah Choiniere, a palaeoscientist at Witwatersrand. The discovery of such a heavy creature shows “we don’t know the dinosaurs of South Africa as well as we thought”, says Choiniere. Other researchers agree that *L. mafube* was probably the largest animal of the early Jurassic.

A WALKING GIANT

But the find is also significant because it seems to show that quadrupedalism — walking on four legs — emerged in this lineage of dinosaurs at least 10 million years earlier than thought, and then disappeared before returning.

Researchers knew that other, later sauropodomorphs, such as *Brontosaurus*, had straight, ‘columnar’ limbs that could support their huge

mass, often in the region of 80 tonnes. They also knew that some sauropodomorphs that came before *Brontosaurus* and its kind, but after the time of *L. mafube*, walked on two legs. “We thought [quadrupedalism] might be a one-time evolution: a quadruped walks once, is successful, and it sticks in that lineage,” says Choiniere. But the latest proposal — which is based on a ratio of the circumferences of thigh and arm bones, calculated from dinosaur specimens and animals alive today — that *L. mafube* also walked on four legs changes that view. The finding hints at evolutionary experimentation: some sauropodomorphs had quadrupedalism and then the group lost it, says Choiniere.

That claim is controversial, says Michael Benton, a palaeontologist at the University of Bristol, UK. Unlike later sauropods, *L. mafube*’s legs flexed out to the sides, a stance that is typically able to carry less mass than columnar limbs, “What’s needed next is a true biomechanics test of whether 12 tonnes is the maximum size an animal can reach without having columnar limbs,” he says. ■

“We don’t know the dinosaurs of South Africa as well as we thought.”