



► had installed special doors and floodgates to hold back storm waters after Allison. Those precautions saved equipment and animals, says Anirban Maitra, a pathologist at MD Anderson. “I think they prevented a mega-catastrophe,” he adds.

Baylor College of Medicine in Houston lost 60,000 breast-cancer specimens in the 2001 storm. But the lessons learnt from that event have paid off, says spokesperson Lori Williams. “We built a wall around the entire campus,” she says. “We’ve had no animals lost, no research lost.”

The University of Houston (UH), by

contrast, has no special flood infrastructure. So the institution has been dealing with flooded basement labs, and has struggled to keep animals dry and fed. Forty baby rhesus monkeys had their formula milk rationed, says Amr Elnashai, vice-president for research and technology transfer at UH. A few had to be weaned a week early. Supplies of liquid nitrogen and helium are also running low, and frozen samples will be in danger if they cannot be restocked soon. “If the worst is over, then we are fine,” says Elnashai. “If there is another hit, then we are in deep trouble.”

Meanwhile, staff at the Johnson Space Center in Houston are camping out at mission control to keep the International Space Station and the James Webb Space Telescope (JWST) programmes going. Flight director Courtenay McMillan arrived for a shift on 25 August and stayed for days. Staff have been sleeping on makeshift beds and air mattresses, and subsisting on provisions supplied by co-workers and friends. “We have not run out of coffee, which is the most important thing,” McMillan says.

The JWST was in the middle of a 100-day test in a thermal vacuum chamber when Harvey struck, but is unharmed. And a Soyuz capsule landing in Kazakhstan — which the space centre helped to coordinate — went ahead at the weekend with only minor modifications to the plan, says McMillan.

Although many institutions have fared relatively well despite the storm’s ferocity, researchers and staff are still dealing with personal losses. The storm destroyed thousands of homes across the region and has been responsible for at least 60 deaths. Maitra says that one administrator on his team has been evacuated to a hotel. “She had to leave in a hurry with her kids in the middle of the night. They were stuck on the third floor of her complex for three days. It is just heartbreaking.”

Louise Prockter, director of the Lunar Planetary Institute in Houston, was travelling when Harvey swept into town. She has been trying to support her staff remotely from Washington DC. “Some of our staff have lost all their property,” she says. “It is a mess. For some people, normal is a long, long way off.” ■

PALAEOANTHROPOLOGY

Stolen skeleton is one of the oldest in the Americas

Dating of rock-encased bone shard shows human remains are probably 13,000 years old.

BY EWEN CALLAWAY

A human skeleton that was stolen from an underwater cave in Mexico in 2012 may be one of the oldest ever found in the Americas. Scientists have now put the age of the skeleton at more than 13,000 years after analysing a shard of hip bone — left behind by the thieves because it was embedded in a stalagmite.

Cave divers discovered the remains in February 2012 in a submerged cave called Chan Hol near Tulum on Mexico’s Yucatán peninsula, and posted photos of a nearly

complete skull and other whole bones on social media. The posts caught the attention of archaeologists Arturo González González at the Desert Museum in Saltillo, Mexico, and Jerónimo Avilés Olguín at the Institute of American Prehistory in Cancún.

By the time researchers visited the cave in late March, the remains were gone — except for about 150 bone fragments and a pelvic bone that had been subsumed by a stalagmite growing up from the cave floor. On the basis of these bones, the researchers think that the skeleton belonged to a young man who died when sea levels were much lower

and the cave was above ground.

To determine the age of human remains, researchers often measure levels of a radioactive isotope of carbon in collagen protein within bones. But in this case, most of the collagen had been leached out by water while the bones were submerged, making this method unreliable, says Wolfgang Stinnesbeck, a palaeontologist and geoscientist at the University of Heidelberg, Germany, who led the efforts to date the remains.

Instead, Stinnesbeck’s team collected a fleck of the pelvis bone and surrounding stalagmite, which contains a mineral called calcite. The

INFECTIOUS DISEASE

Huge Ebola data site takes shape

International effort seeks African leadership.

BY AMY MAXMEN

More than 11,000 people died when Ebola tore through West Africa between 2014 and 2016, and yet clinicians still lack data that would enable them to identify the disease reliably when a person first walks into a clinic. To fill that gap and others before the next outbreak, researchers are developing a platform to organize and share Ebola data that have so far been scattered beyond reach.

The system is coordinated by the Infectious Diseases Data Observatory (IDDO), an international research network based at the University of Oxford, UK. It is expected to launch by the end of the year. At a meeting to discuss Ebola on 7–9 September in Conakry, Guinea, the team developing the platform will seek input from West African scientists, health officials and advocacy groups.

“We are looking for West African leadership in this initiative,” says Laura Merson, associate director of the IDDO.

Africans must be involved in the platform’s creation so that they can not only use the existing data, but also improve their capacity to conduct research during future outbreaks, says John Amuasi, an infectious-diseases researcher at the Kumasi Centre for Collaborative Research in Tropical Medicine in Ghana and a member of the platform’s steering committee.

Merson and her collaborators want to avoid the kind of data fragmentation that hindered efforts to stop the devastating outbreak in Liberia, Guinea and Sierra Leone. Platform organizers plan to pool anonymized data from the medical records of people who contracted Ebola — and those who survived it — as well as data from clinical trials and public-health projects during this and other outbreaks in Africa.

One sensitive issue is deciding who will control the data. Amuasi says that he would like the database to be hosted and curated in Africa, but he adds that this seems unlikely, because it would raise the cost of the project.

Merson says that a copy of the database will be maintained in West Africa, although its exact location is yet to be determined.

It’s vital that these discussions happen now, in a period of relative calm, says Jeremy Farrar, director of the Wellcome Trust in London. “A great danger is that the world will move on and forget the horror of Ebola in West Africa. ■

TOM POOLE, LIQUID JUNGLE LAB.



A human skull and bones were stolen from Mexico’s Chan Hol Cave soon after their 2012 discovery.

team then dated the rock using the relative levels of uranium and thorium isotopes in the calcite. The deeper into the stalagmite the researchers sampled, the older the dates turned out to be; stone just 2 centimetres from the bone was 11,300 years old. Calcite closer to the bone gave conflicting results, Stinnesbeck says.

The team determined that the skeleton was older than 13,000 years by analysing the rate at which calcite had formed around the bone, and by matching the shifts in stalagmite isotope levels to those in other caves. The findings were published on 30 August in *PLoS ONE* (W. Stinnesbeck *et al.* *PLoS ONE* 12, e0183345; 2017).

Alistair Pike, an archaeological scientist at the University of Southampton, UK, notes that the stalagmite set over the bone during a time of profound climate change, which could have altered the stalagmite’s rate of growth. He says he is therefore more comfortable considering the bones to be a minimum of 11,300 years old — still “very significant”, he notes.

ANCIENT COMPANY

Few other human remains from the Americas are older than 13,000 years. The skeleton of a teenage girl recovered from a different Yucatán cave in 2007 was carbon-dated to more than 12,000 years old; a skeleton found in another submerged cave near Tulum was deemed to be around 13,500 years old, also using radiocarbon dating.

“They’ve done a really nice job determining the age of this thing,” says David Meltzer, an archaeologist at Southern Methodist University in Dallas, Texas. There is convincing archaeological proof that humans colonized the Americas before 14,000 years ago, but

very old remains are precious. “These sites are rare as hen’s teeth,” Meltzer says.

Apart from the Yucatán finds, the next-oldest skeleton from the Americas is that of a 12,600-year-old boy found in Montana, whose sequenced genome places him on a lineage leading to present-day Native American groups. Researchers have sequenced only a few other human skeletons from the Americas that are older than 10,000 years, hindering efforts to unravel the region’s ancient population history.

Getting DNA from what remains of the Chan Hol skeleton will be hard. A sample sent to one of the world’s leading ancient-DNA labs, the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, did not contain enough DNA, Stinnesbeck says. He hopes to find DNA in the few teeth not taken by the thieves.

The theft still boggles Stinnesbeck, whose team is continuing to study the cave and its remains. The researchers recently reported the discovery of fossils in the cave that are of a new species of peccary — a hoofed mammal related to pigs — as well as evidence that the cave’s human inhabitants made fires (S. R. Stinnesbeck *et al.* *J. South Am. Earth Sci.* 77, 341–349; 2017).

“What would you want with a skeleton? Would you take it home?” Stinnesbeck asks. “If they had known it was very old, maybe just to have a souvenir, to have something special.”

“We went to the police and they did some inquiries,” he adds. “They never came up with anything substantial.” ■

“They’ve done a really nice job determining the age of this thing.”