

known only from remains in sub-Saharan Africa.

Seeking the hobbit's ancestors, in 2004, Morwood's team returned to a site 74 kilometres from Liang Bua called Mata Menge, where elephant bones and tools had been found in the 1960s. The dig started small, but in 2010 the team scaled up. Bulldozers cleared an area of 2,000 metres square, and more than 100 locals then dug for 6 days a week using chisels and hammers. They found hundreds of stone tools, thousands of fossils from animals such as crocodiles, rats and komodo dragons, but no hominin bones.

By then ill with advanced prostate cancer, Morwood visited the area for the last time in 2012. "He really made an effort to walk through the site, you could see he was in pain, but he was so detailed-minded," van den Bergh says. "He increased the pressure to dig more holes and go faster. He really wanted to find them."

Morwood, who died in 2013 before the teeth and jawbone were found, is an author on the *Nature* papers, which were co-led by scientists based in Japan, Australia and Indonesia.

The team concludes that the jaw excavated at Mata Menge is from an adult (its wisdom tooth had erupted) who was even smaller than the hobbit, and that two canines are the milk teeth of two different children. The thin jaw looks more like that of *H. erectus* and *H. floresiensis*

than the beefier jaws of more primitive hominins such as *H. habilis*. The square-shaped teeth are intermediate between *H. erectus* and *H. floresiensis*.

**"We had given up hope we would find anything, then it was 'bingo!'"**

One tooth and the rock around it led the team to estimate that the remains are some 700,000 years old. The oldest artefacts in the region, meanwhile, suggest that a group of *Homo erectus* arrived on Flores about one million years ago, says van den Bergh.

#### DWARFED BY DIET

He and his team note that the remains point to large-bodied *H. erectus* as the likeliest ancestor of the hobbit, and propose that it shrank in just a few hundred thousand years to cope with the meagre resources on Flores. Elephants and other large creatures have been known to shrink over time to cope with the lack of food typical of islands, and red deer on the island of Jersey in the English Channel shrank to one-sixth of their original size in just 6,000 years, says van den Bergh.

Both Fred Spoor, a palaeontologist at University College London, and palaeoanthropologist Chris Stringer at London's Natural History Museum agree that *H. erectus* is now the best fit for the hobbit's ancestor, although

Stringer isn't so sure that the shrinkage happened on Flores. It's just as likely that the hobbit emerged on another island, such as Sulawesi, and then moved to Flores, he says.

But William Jungers, a palaeoanthropologist at Stony Brook University in New York, says that the fossils are not complete enough to favour the *H. erectus* origin: "I don't believe these scrappy new dental specimens inform the competing hypotheses for the origin of the species one way or another."

A small river that leads down a hill deposited the sandstone in which the teeth and jaw were found, and van den Bergh expects that more hominin remains lie there. His colleagues, meanwhile, have found stone tools in Sulawesi, north of Flores. For once, the prospect of more hobbits isn't looking so bleak. ■ SEE EDITORIAL P.151 AND NEWS & VIEWS P.188

#### CORRECTION

In the News Feature 'South Korea's Nobel dream' (*Nature* 534, 20–23; 2016), one paragraph incorrectly gave numbers in billions instead of trillions of won. In fact, 63.7 trillion won was spent on R&D, 49.2 trillion of which came from private enterprise; and 11.2 trillion won was spent on basic research.