



**STOMACH BUG MAKES  
FOOD RELEASE CALORIES**  
Plus more from the  
American Society of  
Microbiology meeting.  
[www.nature.com/news](http://www.nature.com/news)

# Old tools shed light on hobbit origins

They may have been tiny, but the hobbits of the Indonesian island of Flores are still the focus of the biggest controversy in anthropology. The latest twist in the tale suggests that these one-metre-tall hominids, with a brain the size of a grapefruit, were the final members of a tool-making tradition stretching back more than 800,000 years. But amid fresh doubts over the species' evolutionary history, the idea that the curious creatures were deformed modern humans refuses to go away.

News of the discovery of the 18,000-year-old remains of tiny people amazed the world when it was revealed in October 2004 (P. Brown *et al. Nature* 431, 1055–1061; 2004; M. J. Morwood *et al. Nature* 431, 1087–1091; 2004). Researchers named them *Homo floresiensis* after their home, and concluded that they were ancestors of the much larger *Homo erectus* — the only hominid species known to have been in Asia at the right time. Since then, at least eight more individuals have been found (although the original specimen, called LB1, remains the only skull), dating from around 90,000 to just 12,000 years ago (M. J. Morwood *et al. Nature* 437, 1012–1017; 2005).

Some experts, such as Robert Martin of the Field Museum in Chicago, have never accepted that the fossils represent a new species of hominid, arguing that LB1's brain was just too



Tools from Liang Bua cave, home of *H. floresiensis*, are similar to older stone blades made by *H. erectus*.

small. He believes the hobbits were small modern humans and that LB1 had a deformed, miniature brain — a condition called microcephaly. In this hypothesis, tools found with the hobbits' remains must have been made by normal *Homo sapiens*. A recent exchange (see *Science* 312, 999; 2006) argued about whether casts of the inside of the hobbit skull resemble that of a microcephalic human — a debate that seems unlikely to be resolved soon (see 'Is the Flores hobbit a deformed *Homo sapiens*?').

In *Nature* this week, a separate line of evidence points to *H. floresiensis* as a tool-maker. More than 500 stone blades found on Flores and dated to more than 700,000 years ago seem to have been made in the same way — by striking stones to chip off large flakes — as the more recent blades found with the hobbits.

The earlier tools were almost certainly made by *H. erectus*, say Adam Brumm of the Australian National University in Canberra and his colleagues (see page 624). They conclude that *H. floresiensis* may have inherited the technique from *H. erectus*, although they admit more evidence is needed, and are heading to Flores this month to try to acquire it.

The *H. erectus* case is also supported by results from Susan Larson of Stony Brook University in New York. In April, she told the meeting of the Paleoanthropology Society in Puerto Rico that *H. floresiensis* has a shoulder joint more similar to *H. erectus* than *H. sapiens*.

However, even the researchers who unveiled the hobbit bones now think that Indonesia's *H. erectus* may have been too big to evolve into something so diminutive. Michael Morwood of the University of New England in Armidale, Australia, says he believes the hobbits may instead descend from a smaller, as-yet-undiscovered hominid, resembling 1.8 million-year-old specimens found at Dmanisi in Georgia.

More fossils and artefacts are needed to settle the dispute. But views about *H. floresiensis* are now so entrenched that it will be difficult for some to retract their arguments, says Chris Stringer, an anthropologist at the Natural History Museum, London: "Whoever digs in Flores now has to do so with an open mind." ■

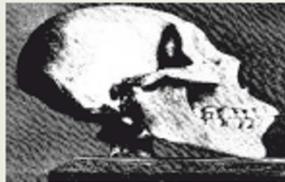
Michael Hopkin

## Is the Flores hobbit a deformed *Homo sapiens*?

### YES

**Robert Martin, Field Museum, Chicago**

The brain is too small to fit anything I



know about. I calculated that if you start with a 60-kilogram *Homo erectus*, you have to go down to 2 kilograms to get a brain that small — the size of a domestic cat. That started me thinking that LB1 must have been microcephalic.

The average brain size for a human microcephalic brain is 400 cm<sup>3</sup>, the same as LB1. The brain of a 32-year-old microcephalic woman from Lesotho (skull pictured above) shows that, although roughly 75% of microcephalics die before adulthood, some get by surprisingly well.

Although the other Flores individuals seem to have been small, they may have been a community with a microcephalic living among them, in which people with normal brains would have made the tools.

### NO

**Dean Falk, Florida State University, Tallahassee**

Microcephalics can and do have brains this size. But the LB1 brain doesn't have a microcephalic shape. We now also have parts of nine individuals, which shows LB1 is not a single pathological specimen.

The Flores skull also has features that you just don't see in the brain of *Homo sapiens*, particularly in the temporal lobes and the frontal lobe — an area involved in complex thinking. You need to look not just at size, but also organization, the internal wiring. This thing is small, but it's specialized.

Martin's team don't provide enough detail to show the identifying features and landmarks of the brain. And as for the microcephalic human from Lesotho (pictured on left), compare that with LB1 (above). They do not look alike.



M.H.