

Ancient human ancestor emerges in China

A collapsed cave in south central China has yielded evidence that human ancestors inhabited the far reaches of Asia as early as 1.9 million years ago, according to a report in the Nov. 16 NATURE.

Findings at the site support the theory that the genus *Homo* spread from Africa to Asia more than 2 million years ago, an international research team asserts. Moreover, they add, those ancient travelers belonged to a species that arose before *H. erectus*, long considered the first human ancestor to settle in Asia.

"The concept of hominids prior to *erectus* living outside Africa will be hard for some [researchers] to accept," contends Russell L. Ciochon, an anthropologist at the University of Iowa in Iowa City. "The new findings will shake up theories of *Homo* evolution."

His contention rests on discoveries made at Longgupo Cave, excavated between 1985 and 1988 by Chinese paleontologists. Huang Wanpo of the Institute of Vertebrate Paleontology and Paleoanthropology in Beijing directed the project. Investigators found the remains of numerous fossil mammals, including the extinct ape *Gigantopithecus*. A partial jaw and an isolated tooth of what they initially classed as *H. erectus* also turned up, as well as two volcanic rocks that had been intentionally battered along their edges.

In 1990, Ciochon assembled a group of researchers to join the Chinese effort at Longgupo Cave. Animal bones found near the hominid remains, such as those of an ancestor of the giant panda, suggested an age of 1.5 million to 2 million years. Magnetic reversals in the cave's soil layers further indicated that the hominid material ranged from 1.78 million to 1.96 million years old.

A separate dating technique called electron spin resonance (ESR), based on the accumulation of radioactive elements in bone, placed a deer tooth found 10 feet above the hominid remains at 1.02 million years old. This matches the age estimate for the same sediment reached through magnetic analysis, Ciochon says. Specimens from the hominid-bearing layer have yet to undergo ESR dating.

Ciochon and his coworkers now assign



A large, battered flake unearthed in Chinese cave.

the Chinese hominid fossils to an as yet undetermined species that lived before *H. erectus*. In particular, they argue, the Longgupo finds resemble two East African hominids, *H. habilis* and *H. ergaster*, which date to around 2 million years ago. A Longgupo premolar tooth, for instance, features two cusps at the front and a basin in the middle, as in *H. habilis*, and two roots, as in *H. ergaster*. A Longgupo molar has five cusps, as in both African species. None of these dental traits appears in available *H. erectus* specimens from China and Java, Ciochon holds.

Several *Homo* species began to evolve around 2.6 million years ago in Africa, and one of those groups may have trekked across Asia not long afterwards. *H. erectus* may have evolved in Asia from the species found at Longgupo, the Iowa scientist theorizes.

The Chinese fossils offer "meager pickings" but so far support Ciochon's analysis, write Bernard Wood and Alan Turner



Protective wall surrounds Longgupo Cave.

of the University of Liverpool in an accompanying comment.

However, the Longgupo teeth show as many similarities to *H. erectus* teeth from Java as they do to teeth of African hominids, asserts G. Philip Rightmire of the State University of New York at Binghamton. If *H. erectus* specimens in Java indeed date to 1.8 million years ago, as recently proposed (SN: 3/5/94, p.150), the Longgupo hominid may represent an early member of the same species, says Rightmire. — B. Bower

Drug aids failing heart, cuts death rate

Physicians who treat people suffering from heart failure may soon have a new weapon in their battle against the progressive, fatal decline in heart function. Results of a clinical study indicate that a drug called carvedilol not only increases the heart's ability to pump blood but decreases mortality by 67 percent.

"These are genuinely exciting results," says study investigator Milton Packer of Columbia Presbyterian Medical Center in New York City. "Carvedilol is associated with [overall] improvement in scores of heart function as well as decreasing mortality."

Heart failure, the only cardiac disorder with a rising incidence, affects about 3.5 million people in the United States. The condition comes about when the heart, which has gradually pumped less blood to the body, cannot meet the body's demand for oxygen. As the heart fails, the sympathetic nervous system stimulates it to pump more efficiently, thus providing more oxygen. That stimulation damages the heart muscle.

Physicians routinely give patients digitalis to enhance pumping power, diuretics to eliminate fluid buildup, and drugs known as ACE-inhibitors to dilate blood vessels. In the past decade, they have also begun to prescribe beta-blockers, which block muscle stimulation by the sympathetic nervous system.

An especially effective beta-blocker, carvedilol stops sympathetic stimulation completely. But unlike other such drugs, it also dilates blood vessels and serves as an antioxidant.

Packer, Wilson S. Colucci, formerly of Harvard Medical School in Boston, and Michael R. Bristow of the University of Colorado Health Sciences Center in Denver tested carvedilol in 1,052 people with mild, moderate, or severe heart failure. All participants took either carvedilol or a placebo in addition to their standard heart medications.

As the team reported this week at the American Heart Association meeting in Anaheim, Calif., carvedilol reduced mortality among people with moderate to severe heart failure. Bristow reported that participants' exercise capacity increased with the amount of carvedilol given.

Colucci, now at Boston University Medical Center, led the studies of carvedilol in participants with mild heart failure. Those on the drug enjoyed a 50 percent reduction in the progression of disease, as well as a significant drop in mortality, compared to the group taking the placebo.

Although he finds these results provocative, Barry M. Massie of the University of California, San Francisco points out that the study monitors people for at most 2 years and that "during that time, not many people died." He argues that longer studies are needed to validate carvedilol's early promise.

Packer agrees that further study is needed to determine whether carvedilol will become the standard of care. The Food and Drug Administration recently approved carvedilol for hypertension, but the drug is not yet available.

— L. Seachrist