EDITED BY CONSTANCE HOLDEN

Cell as Time Capsule

Biochemist and author Nick Lane, 42, of University College London has won UCL's first £150,000 Provost's Venture Research Prize for researchers "whose ideas challenge the norm and have the potential to substantially change the way we think about an important subject."

Over the next 3 years, Lane proposes to use his prize to tackle a few simple but deep questions, such as: Why have complex cells evolved only once in 4 billion years? "A narrowly genetic perspective suggests that complex life should evolve repeatedly," Lane says. He suspects complexity resulted from a rare merging of two species. Only after our single-celled ancestors engulfed bacteria—which became modern cells' energy-producing mitochondria—did they get enough energy to build and run a complex cell. Once he's put together his theory, Lane says, he plans some experiments with the help of "labs who know what they're doing."

Not Out of Java

Most scientists think modern humans evolved only in Africa. But the theory of "multiregionalism" still has its holdouts who think *Homo sapiens* evolved all over the Old World.

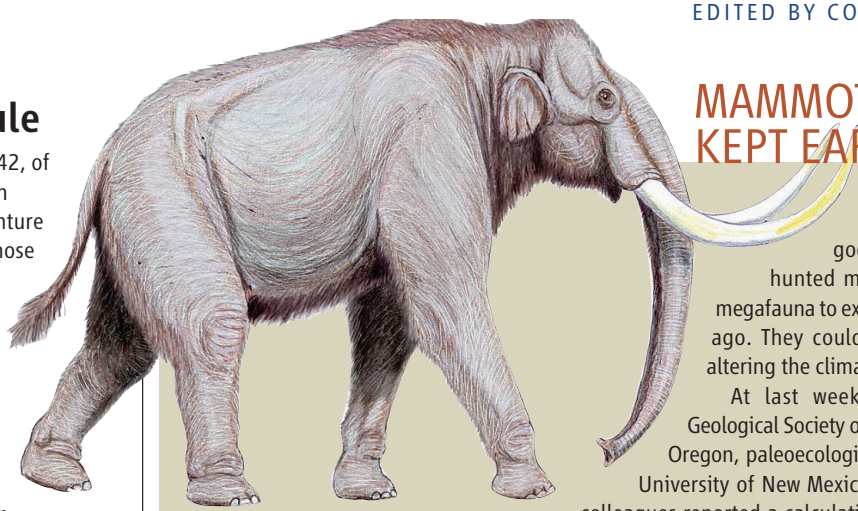
Now the biggest study yet of fossil skulls from Australia, Indonesia, Africa, and the Middle East has delivered another blow to that theory. Paleoanthropologist Michael Westaway of the Queensland Museum in Brisbane, Australia, and primatologist Colin Groves of the Australian National University in Canberra compared 26 15,000- to 40,000-year-old skulls from the Willandra Lakes of New South Wales, Australia, with skulls of 19 early modern humans, dated at up to 195,000 years old, and five *H. erectus* skulls from Java (dates uncertain).

Willandra Lakes region.

Puzzlingly, the Willandra skulls include both light (gracile) and heavy-set (robust) crania. The out-of-Africa camp thinks they all descend from a single population, but some multiregionalists argue that they could have two sets of roots: in robust Indonesian *H. erectus* and gracile people from China. The researchers looked for signs that the robust Willandra individuals inherited some traits, such as a distinctive brow ridge, from the Indonesian hominins. They found none, they reported in the journal *Archaeology in Oceania*. "There were commonalities between the Australian, African, and Middle Eastern people, but the Indonesian specimens stood outside the range," Westaway says.

But paleoanthropologist Fred Smith of Illinois State University in Normal says the jury is still out. He thinks modern humans arose in Africa but later bred with archaic locals around the globe. "I'm still not convinced that it [the study] proves there is no assimilation," he says.

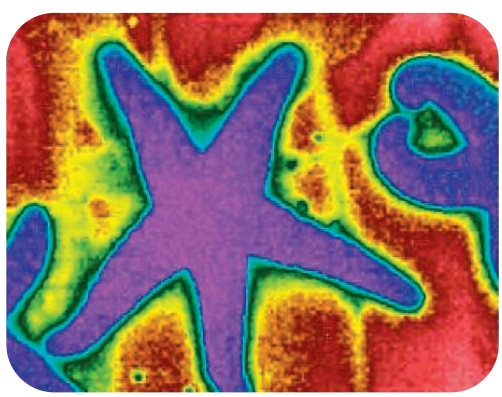
MAMMOTH BURPS KEPT EARTH WARM?



Paleo-Indians were just after a good meal when they hunted mammoths and other megafauna to extinction 13,000 years ago. They couldn't know they were altering the climate too.

At last week's meeting of the Geological Society of America in Portland, Oregon, paleoecologist Felisa Smith of the University of New Mexico, Albuquerque, and colleagues reported a calculation of just how much impact on the climate wiping out the mammoths and 113 other species of large herbivores in the Americas could have had. Such herbivorous mammals, including domestic livestock, belch prodigious amounts of methane, a powerful greenhouse gas, the researchers noted. That's bad for today's climate. But back then, it was on the chilly side anyway. Driving all those large herbivores to extinction robbed the globe of about 10 million tons of methane per year that had been boosting the natural greenhouse effect, the group calculates. Deprived of all those mammoth-size burps, climate would have cooled.

As it happened, the world momentarily staggered back toward the last ice age about then for other reasons. But Smith and colleagues suggest "humans measurably influenced" methane flows, and thus climate, long before agriculture and the trappings of civilization. Paleobiologist Scott Wing of the National Museum of Natural History in Washington, D.C., says, "This is a reminder that there are lots of ways for the climate system and the biota to interact."



Natural Coolant

This infrared image of a sea star from California's Bodega Bay reveals how it keeps cooler than its surroundings. Marine biologists led by Sylvain Pincebourde of the University of South Carolina, Columbia, put sea stars in aquaria that mimicked changes in heat and water levels in their intertidal habitat. When exposed to warm air at low tide, the researchers found, sea stars wait until high tide and then suck more seawater than usual into a large fluid-filled body cavity. The extra fluid increases the animals' "thermal inertia," buffering them against the next low-tide exposure. The authors report the result in the December issue of *The American Naturalist*.

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