

PALEOANTHROPOLOGY

Hominid Harems: Big Males Competed For Small Australopithecine Females

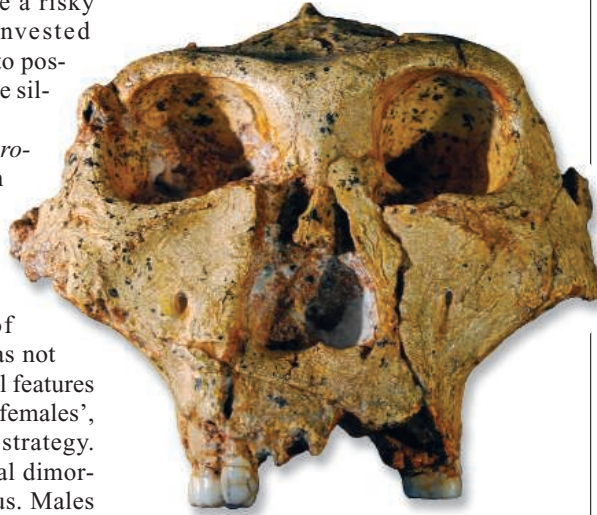
Among living people, men are usually bigger than women—but not by much, averaging 5% to 10% larger. Now a study on page 1443 finds that the males of an extinct species of hominid in South Africa took longer to grow up than females—and got much larger. This suggests that these robust australopithecines chose a risky mating strategy: Top males invested energy in bodybuilding in order to possess a harem of females, much like silverback gorillas do today.

Although this species, *Paranthropus robustus*, is not on the human line, the study is the first to offer solid evidence of the mating strategies of an early hominid, says paleoanthropologist J. Michael Plavcan of the University of Arkansas in Fayetteville, who was not part of the study. The males' facial features were on average 17% larger than females', suggesting a haremlike mating strategy. "You don't get that kind of sexual dimorphism unless you are polygamous. Males don't get that big unless they get a big payoff," Plavcan explains. That suggests diverse social strategies in the hominid family and perhaps the relatively recent adoption of low sexual dimorphism by humans. "This is not the human pattern," says lead author Charles Lockwood of University College London.

Lockwood made the discovery while examining 19 skulls and 16 jawbones of *P. robustus* from caves in South Africa, where they had been consumed by predators between 1.5 million and 2 million years ago. The adult males clustered into two groups: smaller specimens with less dental wear and larger ones with worn teeth and more robust features, such as pillars of bone alongside the nose. Lockwood cites this as evidence that the smaller males were younger and hadn't reached full size. In many primates, males don't achieve full maturity until years after equal-aged females have started to have offspring. This pattern is found in primates in which one male dominates a group of females and wards off other males. In contrast, female humans and chimps are only slightly smaller than their male counterparts, reflecting different mating strategies. "I think [the study] is

very convincing," says biological anthropologist Steven R. Leigh of the University of Illinois, Urbana-Champaign.

The finding challenges a theory that early hominids had a relatively low level of sexual dimorphism, inherited from a common ancestor shared with chimpanzees,



Bachelor boy? Male robust australopithecines took longer to grow up and mated later than females, leaving young males on their own.

says Plavcan. Instead, the primitive condition may have been more gorillalike, and our female ancestors may not have closed the gap until recently, perhaps in *Homo erectus* in the past 2 million years.

But those who have championed the early theory remain skeptical. Paleoanthropologist C. Owen Lovejoy of Kent State University in Ohio isn't convinced that *P. robustus* males were actually much bigger than the females. He warns that using dental wear to estimate age can be risky, as is estimating soft-tissue body mass based on skeletal size. And researchers hold conflicting opinions on the amount of sexual dimorphism in what most consider our closest australopithecine ancestor, *Australopithecus afarensis*. Lockwood plans to apply this type of analysis to that and other species to detect when the sexes grew closer in size, a signal that males were investing more in offspring and in longer-term bonds with females. "This is the \$64,000 question: When did human dimorphism get smaller?" says Plavcan.

—ANN GIBBONS

Gene Therapy Trial Back On

Federal regulators have given a green light to a gene-therapy arthritis trial that was halted in July after a patient died. The decision comes as a relief to researchers who had worried that the treatment was to blame.

The trial conducted by Targeted Genetics Corp., located in Seattle, Washington, was put on hold after the 24 July death of 36-year-old Jolee Mohr of Taylorville, Illinois, who had recently received a gene-therapy injection to treat rheumatoid arthritis in her knee. Mohr apparently died mainly from a fungal infection called histoplasmosis that her immune system was unable to fight off (*Science*, 21 September, p. 1665).

New tests confirm that the gene therapy didn't contribute to Mohr's death, neither through replication of the adeno-associated viral vector nor by raising levels of an immune system-suppressing protein in her blood, the company says. It announced this week that the U.S. Food and Drug Administration has lifted its hold on the trial. The federal Recombinant DNA Advisory Committee will issue its conclusions about the case at a meeting next week.

—JOCELYN KAISER

Italian Cold Cuts

The heads of Italy's four major research institutes are protesting unexpected last-minute cuts in their 2007 budgets, saying they will force them to slash ongoing projects and could harm international collaborations.

As part of its National Fund for Research, Italy had committed €1.6 billion to the nation's research institutes for 2007, which represented a €50 million increase over 2006's budget. Scientists had wanted more but were promised another increase in 2008. Last week, however, Italy's Ministry of Economy announced it would allocate only €1.5 billion to the institutes for 2007.

The research heads are meeting next month with Italy's research minister to plead their cases, but there's little optimism that the cut can be reversed—and fears that the 2008 boost won't come through. Roberto Petronzio, president of the Italian National Institute for Nuclear Physics, says that his organization might have to reduce its contributions to the CERN accelerator near Geneva, Switzerland. "European countries like Spain are increasing research funds at level of 20% while Italy is stuck. That's really worrying," he says. The Ministry of Economy declined comment.

—FRANCESCO DE PRETIS