# Anthropology

*Bruce Bower reports from Durham, N.C., at the annual meeting of the American Association of Physical Anthropologists*

## Hominids' back-and-forth bodies

New fossil evidence indicates that ancient hominids, members of the human evolutionary family, moved unsteadily toward a strictly two-legged stride. *Australopithecus afarensis*, which lived in eastern Africa more than 3 million years ago, had long legs and short arms relative to its size, much like modern humans. But *A. africanus*, which lived in southern Africa between 2.6 million and 2.8 million years ago, displays relatively shorter legs and longer arms, more like apes.

"Limb proportions may have changed back and forth during early hominid evolution, depending on habitat use and locomotion needs," contends Henry M. McHenry of the University of California, Davis. "There wasn't just one kind of early hominid body."

McHenry bases his argument on analysis and comparison of limb bones and joint sizes in a partial *A. africanus* skeleton recently found in a South African cave (SN: 4/22/95, p. 253), in the available *A. afarensis* specimens, and in a sample of modern human skeletons.

*A. africanus* shares with *Homo habilis* its apelike limb proportions and several cranial features typical of later *Homo* species, such as an expanded braincase and small canine teeth, notes McHenry, who conducted the study with Lee R. Berger of the University of the Witwatersrand in Johannesburg, South Africa. *A. africanus* and *H. habilis* may have independently developed the cranial traits without evolving the pronounced upright gait of direct human ancestors, McHenry theorizes.

## Monkeys sound off, move out

Monkey species vocalize in distinctive ways to mobilize troop members and move them toward food sources, according to Susan Boinski of the University of Florida in Gainesville.

Boinski and her coworkers conducted five field studies of capuchin monkeys, squirrel monkeys, and golden-lion tamarins living in Central and South American forests. These tree-dwelling primates operate amid dense foliage in which troop members often cannot see one another clearly.

To organize a foraging party, one monkey typically sets off in a desired direction and emits a species-specific sound (such as a sustained twitter for Costa Rican squirrel monkeys) that gets the group moving. Troop members, however, often display a lack of consensus as to whether they should follow a self-designated leader, says Boinski. Older, dominant monkeys, who have long-standing social relationships within the troop, inspire the most cooperative troop responses, she adds.

Individual capuchins, on the other hand, sometimes use their distinctive foraging trill to lead others away from nearby food, suggesting that they practice a form of deception, Boinski argues.

## The Iceman ageth

He may have met a lonely, frigid demise about 5,300 years ago, but the so-called Iceman attracted worldwide attention in 1991 when his mummified body was discovered in the Austrian Alps (SN: 4/18/92, p. 253). Forensic investigators have estimated that the Stone Age man's age at death ranged anywhere from 25 to 40 years.

New analyses indicate that he was at the upper end of that age range, perhaps even older, says Torstein Sjøvold of Stockholm University.

Three-dimensional computer images of the Iceman's skull portray bone wear typically produced after 30 to 60 years, Sjøvold holds. Computerized tomography scans show bone structure at the right hip joint characteristic of 40- to 60-year-olds, he adds. Finally, microscopic evaluation of bone wear in the Iceman's right leg yields a similar age estimate, the Swedish scientist asserts.

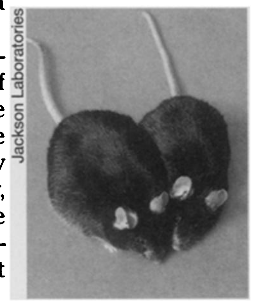
# Biology

## Fifth obesity gene found in mice

Investigators have rapidly been uncovering individual genes that, when mutated, produce obese mice. They first identified the genes at fault in the mouse strains known as yellow, fat, obese, and diabetes. Now a fifth mouse strain, tubby, is due its 15 minutes of fame: Two separate research groups have reported the discovery of a mutated gene in the hefty rodents.

Both teams pinpointed the same gene, according to their reports in the April 11 NATURE and the April 19 CELL. The NATURE report comes from a collaboration between Jackson Laboratory in Bar Harbor, Maine, and Sequana Therapeutics in La Jolla, Calif. "We had been working on this gene for two and a half years," says Jackson Laboratory's Patsy M. Nishina, who headed the collaboration.

Though Nishina's team published its findings first, it may have lost the commercial race to Millennium Pharmaceuticals of Cambridge, Mass. The biotech firm found the *tubby* gene and filed patents on it last summer, says a company spokesperson, but it delayed publishing to preserve a research advantage.




*Tubby mouse (left) next to a normal mouse.*

The tubby mouse has interested researchers because it models the course of human obesity more closely than do the obese and diabetes strains, in which the rodents eat ravenously from birth. Tubby mice don't overeat; they gain weight slowly, as they age. Like people with diabetes, the mice have troubles with their insulin metabolism. Moreover, the rodents lose their sight and hearing at an early age.

Both research groups found that a small mutation in the *tubby* gene altered the protein it codes for, replacing a normal sequence of 44 amino acids with a string of 20 amino acids. The *tubby* gene is most active in the brain, eyes, and testes of mice, but investigators do not yet know its protein's function or how the mutation causes the problems in tubby mice.

Researchers have found that humans, as well as fruit flies and worms, possess a gene similar to the *tubby* gene and plan to examine whether it's mutated in obese people.

## Nitric oxide at war with homocysteine?

The gaseous molecule nitric oxide plays a variety of roles in the body, many of which researchers are just beginning to understand. Nitric oxide apparently plays a part in the immune system, attacking a wide range of infectious microorganisms.

Actually, the derivatives of nitric oxide, each with different abilities, do this dirty work, says Ferric C. Fang of the University of Colorado Health Sciences Center in Denver. One called S-nitrosothiol may combat *Salmonella typhimurium* by placing infected cells into "a state of suspended animation" that prevents the bacterium from replicating, says Fang.

Fang and his colleagues suggest in the April 19 SCIENCE that the bacteria try to ward off this attack by synthesizing the compound homocysteine, which appears to bind directly to S-nitrothiol.

Since the human body makes both nitric oxide and homocysteine, Fang suggests that S-nitrosothiol could govern homocysteine concentrations in the bloodstream. If proved, such an interaction could have therapeutic implications. Epidemiological studies have linked elevated concentrations of homocysteine to increased risk of atherosclerosis.

"These are intriguing results, but we have to be cautious about overinterpreting them," says Jonathan Stamler of Duke University Medical Center in Durham, N.C., who has also shown that forms of nitric oxide interact with homocysteine.