

Anthropology

Bruce Bower reports from Miami at the annual meeting of the American Association of Physical Anthropologists

Lucy's weighty stature

Members of the evolutionary family that includes modern humans, collectively known as hominids, underwent radical changes in body build with the appearance of the *Homo* lineage, says Leslie C. Aiello of University College in London, England. Australopithecines, exemplified by the 3.5-million-year-old partial skeleton dubbed Lucy, weighed nearly twice what would be expected for their height based on the ratio of stature to weight in modern *Homo sapiens* and earlier *Homo* species, Aiello asserts.

Consider Lucy, an adult member of the earliest known hominid species, *Australopithecus afarensis*. She stood an estimated 3½ feet tall and weighed about 66 pounds. An average British youngster today reaches Lucy's height at 4½ years of age but weighs only about 38 pounds, Aiello says. Four years later, the same child reaches Lucy's weight but stands almost a foot taller than the ancient hominid.

Lucy and other australopithecines were built much like African apes living today, Aiello contends. Many reconstructions of Lucy's appearance underestimate both her girth and the extent to which her ribcage was funnel-shaped, as in modern apes, Aiello points out.

With the ascendance of the *Homo* lineage around 1.6 million years ago, stature increased dramatically in relation to body weight, she maintains. The average ratio of height to weight is remarkably consistent in living human groups, and Neanderthals also fell within the upper limits of the modern human range, according to Aiello.

Arabia goes African

Approximately 6 million years ago, the sparsely vegetated desert of the Arabian peninsula was a lush, tropical home to diverse forms of animal life, including primates, reports Andrew Hill of Yale University. During the past two years, Hill and his colleagues have excavated a coastal outcrop in the United Arab Emirates. Spring rains have gradually exposed underlying sediment and fossils at the site.

One of their finds, the canine tooth of an ancient monkey, represents only the second primate fossil unearthed in Arabia. Other remains include fish, turtles, crocodiles, pigs, elephants, hippopotami, giraffes and antelopes. A pig species identified at the site is known to have lived about 6 million years ago. Ostrich eggshells and fossil wood were also uncovered.

Arabia apparently possessed an "African-like" environment at a time when the first hominids strode onto the scene in Africa, Hill asserts.

Fossil sites in Arabia are rare, Hill says, but a potentially rich, fossil-bearing sediment stretches for at least 90 miles along the coast of the United Arab Emirates.

Human roots in India

In 1982, the upper portion of a hominid skull was found on a river bank in central India. Researchers initially considered the specimen a member of the species *Homo erectus*, which lived from about 1.6 million to 300,000 years ago.

But a reanalysis of the skull — conducted in 1988 by Kenneth A.R. Kennedy of Cornell University in Ithaca, N.Y., but until now unreported — indicates it was actually an early form of *Homo sapiens*. The Indian skull shares "an impressive suite" of anatomical features with archaic *Homo sapiens* specimens from Africa and Europe, Kennedy says.

Stone hand axes and cleavers found near the Indian hominid closely match stone tools found in Africa that date to between 150,000 and 250,000 years ago, he adds.

Kennedy's findings support the theory that archaic *Homo sapiens* and anatomically modern humans evolved in several geographic regions, not just in Africa.

Biomedicine

Ron Cowen reports from Washington, D.C., at a meeting of the Federation of American Societies for Experimental Biology

Alcoholism treatment under scrutiny

For several years, researchers and physicians have pondered the effectiveness of treating alcoholics with disulfiram (Antabuse), a drug that counteracts alcohol craving by causing such ill effects as nausea and flushing whenever a person takes an alcoholic drink. A study in rats added to the complexity of the issue by showing that disulfiram interacts with the neurotransmitter serotonin to boost brain levels of a chemical that enhances alcohol craving in animals. Building on that work, a new study in humans suggests that people who take disulfiram may need to avoid serotonin-rich foods.

Disulfiram works by inhibiting enzymes that normally convert acetaldehyde, an intermediate metabolite of alcohol, into acetate. The toxic acetaldehyde accumulates, creating extreme discomfort in people who drink alcohol while on the drug.

But disulfiram can also increase the accumulation of other, potentially addictive compounds. Among these are the intermediate breakdown products of certain neurotransmitters, including a serotonin metabolite called 5-hydroxytryptophol (5-HTOL). The rat study showed that elevated brain levels of 5-HTOL boost the animals' consumption of alcohol. Researchers have yet to conduct similar tests in human alcoholics, says nutritionist U.D. Register of Loma Linda (Calif.) University.

Register and his colleagues have now applied the rat findings to a study of 12 nonalcoholic men, gauging the effects of two serotonin-rich foods on 5-HTOL production. The researchers added three bananas and 3.5 ounces of walnuts to the men's daily diets. Taken without disulfiram, these foods did not alter the production of 5-HTOL as measured in urine. Adding disulfiram to the supplemented diets did not intensify alcohol craving, but it did cause the men to excrete 10 to 40 times the normal level of 5-HTOL, indicating excess production.

Register told SCIENCE NEWS he plans to repeat the study with a group of alcoholics to determine whether the combination of disulfiram and a serotonin-rich diet increases their alcohol craving. But on the basis of the existing findings, he advises alcoholics to avoid serotonin-rich foods while using the drug.

More generally, he asserts that physicians should consider disulfiram a "second-line therapy" for alcoholics rather than a primary treatment, in light of its interaction with neurotransmitters and other chemicals in the body. This is not the first time researchers have questioned the drug's use, he notes, although several physicians have reported that neither they nor their colleagues have ever found that the compound increases alcoholics' urge to drink. In 1983, a team led by Ted D. Nirenberg of Brown University in Providence, R.I., attempted to determine whether disulfiram could increase an alcoholic's cravings. To gauge the degree of craving, the study relied on self-reports from alcoholics, some taking disulfiram and others maintaining abstinence without it. But the results, published in ADDICTIVE BEHAVIORS, proved inconclusive and were never followed up with a controlled study, Nirenberg says.

In 1986, a large, controlled study led by Richard K. Fuller at the Cleveland Veterans Affairs Medical Center showed no significant differences in abstinence among alcoholics on three different regimens: a therapeutic dose of disulfiram; a dose too small to be effective; or a placebo. Nonetheless, clinical observations have indicated that many alcoholics who are motivated to stop drinking, yet have difficulty quitting, do well on the drug, notes Fuller, now at the National Institute on Alcohol Abuse and Alcoholism in Rockville, Md. A report on alcoholism treatment, scheduled for public release next month by the Institute of Medicine in Washington, D.C., stresses the need for more research on disulfiram and other drugs that use negative reinforcement to combat alcohol abuse.