Anthropology

How Neanderthals chilled out

The evolutionary role of Neanderthals remains a controversial topic among anthropologists. Some assert that anatomically modern humans originated in Africa and drove the hapless Neanderthals to extinction about 35,000 years ago, while others argue the two groups were closely related subspecies of *Homo sapiens* that interbred and evolved in Asia as well as in Africa.

The former argument probably comes closer to the truth, but a cooling climate and ecological shifts – and not the oft-alleged intellectual superiority of anatomically modern humans – led to the Neanderthals' downfall, contends anthropologist John J. Shea of Harvard University in the spring ANTHROQUEST.

The stone artifacts used by Neanderthals at Middle Eastern sites are much the same as those crafted at the same time by anatomically modern humans living nearby, Shea reports. Thus, he concludes, Neanderthals show no archaeological signs of a deficient intellect. Their bodies, however, combined features well suited to moving with speed and power "far beyond the aspirations of even the best Olympic athletes," Shea maintains. In fact, the anatomical evidence suggests Neanderthals were a separate species, he says.

But climatic conditions conspired against them. Neanderthals first appeared in Europe between 130,000 and 90,000 years ago, when that region enjoyed mild temperatures and was blanketed by forests, Shea notes. These muscular hominids apparently competed among themselves for access to dense stands of fruits, nuts and other plant foods. The need to defend patches of plant food may have kept them from living in large groups or avidly pursuing seasonal, highly mobile game.

Around 70,000 years ago, the European climate cooled during the early stages of glacial advancement from the north. Neanderthal fossils from shortly thereafter have been found in the Middle East. Some Neanderthals may have migrated to the Middle East, where anatomically modern humans already lived, Shea says. At first, Neanderthals probably sought out lowland regions containing familiar stands of fruit- and nut-bearing trees, forcing the physically weaker modern-type humans to concentrate on hunting large, mobile herds of antelope and other game in nearby stretches of arid savanna.

Increasing glacial ice volume between 64,000 and 32,000 years ago caused an expansion of savannas in the Middle East and produced extensive pine forests and tundra in Europe. Highly mobile game animals and widely dispersed seasonal plants flourish in these environments, Shea says. In the Middle East, modern humans had a tremendous advantage in obtaining food and reproducing. The demise of Neanderthals in that "boundary region" may then have spread to other regions, culminating in their extinction, Shea proposes.

Oldest African savanna identified

An analysis of fossil soils and grasses at a site in southwestern Kenya demonstrates that extensive savannas – the habitats of early human ancestors – have existed in East Africa for at least the past 14 million years, emerging long before the evolutionary split of apes and hominids. This is the oldest known savanna, or "wooded grassland," in Africa, report geologist Gregory J. Retallack of the University of Oregon in Eugene and his colleagues.

The researchers chemically analyzed fossilized soils at the Kenyan site and compared microscopic details of fossil grasses with those of modern East African grasses. They describe their findings in the March 16 SCIENCE.

A wooded grassland contains dry, grassy vegetation; 10 to 40 percent of it is covered by trees. Previous excavations have indicated this ancient savanna supported more abundant and diverse species of antelope than known earlier in Africa.

Food Sciences

Sweet news on hunger suppression . . .

Remember when mom told you to steer clear of sweets before dinner so you wouldn't spoil your appetite? Well, a new study indicates it's not sweetness that suppresses appetite, but rather the specific sweetener consumed. This finding suggests that sweet-toothed dieters hoping to curb their hunger might do well to choose snacks sugared with one sweetener, while children might save room for mom's chicken and vegetables by sticking to snacks sweetened with another.

Judith Rodin of Yale University compared the hunger-curbing abilities of plain water and three lemonade-flavored drinks containing different sweeteners. She randomly assigned each of 24 men and women, aged 22 to 50, to drink 16.9 ounces of one of the four drinks, served at room temperature. About 40 minutes later, participants selected lunch from a buffet and were told to eat until "comfortably full." Several times over the next few months, each diner returned to down one of the remaining drinks before lunching from the same buffet.

Most subjects ate about as many calories after downing noncaloric, aspartame-sweetened lemonade as they did after drinking plain water, Rodin reports in the March AMERICAN JOURNAL OF CLINICAL NUTRITION. After drinking lemonade sweetened with 200 calories' worth of glucose, they usually consumed about 10 to 15 percent fewer calories. But the most dramatic appetite suppression followed consumption of the drink sweetened with fructose (fruit sugar). The 20 to 40 percent fewer calories generally eaten after drinking fructose far more than compensated for the 200 calories each fructose drink contained. Earlier studies by Rodin indicate that the appetite suppression seen in the new study may be triggered by a fructose snack consumed even 2½ hours before mealtime.

The fructose-sweetened drink appeared to offer a second healthful dividend: It somehow led subjects to select meals with significantly less fat, Rodin says.

. . . and the risk of developing cataracts

Galactose is a simple sugar derived from the breakdown of the milk sugar lactose. Because galactose is toxic to the lens of the eye, infants lacking the enzyme needed to metabolize it develop cataracts at a young age. Epidemiologist Paul F. Jacques has now compared levels of this enzyme, called galactokinase, with dairy food consumption in 106 persons aged 40 to 70 – 73 of them with cataracts. The just-completed study offers the first strong indication that galactose may play a role in adult cataracts, says Jacques, who works in Boston at the Agriculture Department's Human Nutrition Research Center on Aging.

All but two study participants – both cataract sufferers – had galactokinase levels considered normal. So Jacques arbitrarily defined as "low" the half of his study group with the lowest enzyme levels. People in that subgroup who eschewed lactose-containing products – such as milk, yogurt and cheese – had the same cataract incidence as those in the "high" enzyme group, he found. But "low" subjects who regularly consumed even a little dairy food – such as a cup of milk daily – ran four times the cataract risk of those in the "high" enzyme group.

These individuals, with their slowed conversion of galactose to glucose, could unwittingly expose their lenses to a lifetime of low but chronic levels of the cataract-causing sugar, the study suggests. Physicians do not routinely screen for galactokinase deficiency, and in any case they would interpret the levels seen in the "low" group as normal by current standards. However, Jacques says his findings are too preliminary to warrant a change in dairy food consumption. He points out that osteoporosis – the skeletal embrittlement fostered by insufficient calcium intake from dairy foods and other sources – "can be life threatening," whereas cataracts tend only to disable.