

African Eve gets lost in the 'trees'

Since 1987, an influential group of molecular biologists has published several reports indicating that analyses of mitochondrial DNA — genetic material located outside the cell nucleus and inherited only from the mother — track the maternal lineage of all humans back to one or possibly several women who lived in Africa around 200,000 years ago (SN: 9/28/91, p.197). That controversial contention gets the statistical rug pulled out from under it in two reanalyses of the most extensive sample of mitochondrial DNA studied earlier. The new findings appear in the Feb. 7 *SCIENCE*.

One study, directed by S. Blair Hedges of Pennsylvania State University in University Park, builds five mitochondrial DNA trees but fails to pinpoint statistically the geographic origins of humanity. Particular sequences of chemical components of mitochondrial DNA appear about as often in all geographically separated populations, Hedges' team argues. This, they say, suggests that widely separated human groups have shared, or conserved, specific chemical arrangements of mitochondrial DNA since those populations diverged from a single group. Analyses of DNA sequences from within the cell nucleus may offer a better possibility of establishing a valid evolutionary tree for humanity, the scientists hold.

A widely cited 1991 study used a computer-driven statistical analysis that created 100 possible evolutionary "trees" based on the similarity of mitochondrial DNA sequences among 136 people from around the world. The computer program then identified several trees containing the fewest branches, or changes, in DNA sequences. The researchers regarded those trees — with purely African roots — as most representative of evolution. However, that study relied on a single computer analysis whose outcome depends on the order in which individual genetic sequences are examined. Tree construction that begins with the mitochondrial DNA of other randomly selected individuals in the sample yields a mixture of African and non-African origins, Hedges' group asserts.

Alan R. Templeton of Washington University in St. Louis also reports generating from the existing mitochondrial DNA data a tree that displays both African and non-African roots.

Most researchers agree that Africans possess more mitochondrial DNA mutations than do inhabitants of other regions, indicating an older evolutionary history. But the rate at which these mutations occur remains controversial, clouding the question of whether all these changes arose in modern humans.

Greece claims early blade industry

A Greek archaeological site contains skillfully fashioned stone flakes and blades that date to about 100,000 years ago, researchers report in the February *CURRENT ANTHROPOLOGY*.

Comparable stone artifacts from the same time period have turned up in central and western Europe, as well as the Middle East. Scientists have associated the sharpened stones with both Neandertals and modern humans. The new find extends the distribution of sophisticated "blade industries" into southeastern Europe, asserts a research team led by Joan Huxtable of the Research Laboratory for Archaeology and the History of Art in Oxford, England. However, no evidence so far shows whether the Greek artifacts were made by Neandertals or by modern humans.

During the 1960s, excavations at the site — a limestone rock-shelter known as Asprochaliko — uncovered flakes, blades and several burnt flints in a 16-foot-deep layer of sediment. Huxtable's team conducted thermoluminescence dating of two flints, comparing measurements of radioactivity annually released in the soil at Asprochaliko and radioactivity released in the form of light when the flints were heated.

Chlamydia and clogged arteries

Physicians usually attribute coronary artery disease to four classic risk factors: advancing age, cigarette smoking, hypertension and high blood cholesterol. Now, Finnish researchers think they may have stumbled across another factor: *Chlamydia pneumoniae*, a bacterium commonly held responsible for respiratory infections such as pneumonia and bronchitis.

Pekka Saikku of the University of Helsinki, who led the Finnish group, warns against confusing this microbe with its sexually transmitted cousin, *Chlamydia trachomatis*. He and his colleagues describe their findings in the Feb. 15 *ANNALS OF INTERNAL MEDICINE*.

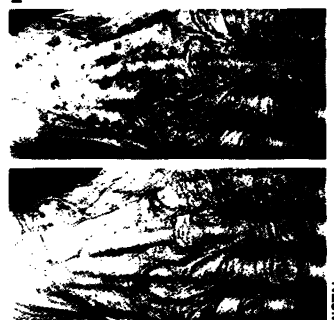
While conducting a large, long-term study of a new cholesterol-lowering drug, Saikku's team discovered that men showing evidence of a chronic *C. pneumoniae* infection — signaled by antibodies and bacterial remnants called lipopolysaccharides in their blood — were nearly two times more likely to have a heart attack than men who lacked such evidence.

To explain how the bacteria might promote coronary artery disease, Saikku theorizes that white blood cells called macrophages inadvertently carry the lipopolysaccharides into the bloodstream after fighting *C. pneumoniae* in the lung. Once in the blood, lipopolysaccharides bind with cholesterol, making it toxic to the endothelial cells lining the arteries. In addition, they indirectly block a crucial fat-destroying enzyme, allowing fatty deposits to accumulate on arterial walls.

While *C. pneumoniae* becomes a new risk suspect for coronary artery disease, the researchers have yet to catch it in the act. Verification of their theory would be a significant finding, says Saikku, because *C. pneumoniae* infections are easily treatable with antibiotics.

Acne cream works as spot remover

Tretinoin (trade name Retin-A), a prescription skin cream for acne, fades liver spots without causing any serious side effects, according to a study led by John J. Voorhees at the University of Michigan Medical Center in Ann Arbor. Furthermore, the effect appears to be permanent, the researchers report in the Feb. 6 *NEW ENGLAND JOURNAL OF MEDICINE*.



Now you see them . . .

Liver spots form when long-term exposure to the sun causes cells beneath the skin surface to overproduce pigment, which builds up and creates a blotch. Although the dark, freckle-like marks are harmless, they're difficult to remove. Each year, thousands of people in the United States undergo minor surgery to get rid of them.

Voorhees and his group treated liver-spot patients with the cream every day for 10 months. After one month, some spots began to fade. By the end of the study, more than 80 percent of each patient's spots had faded, some completely. None of the spots returned in the six months following the study. The only side effects from the treatment were some cases of temporary rashes and scaling, the team reports.

Tretinoin not only inhibits pigment production, but also rapidly transports accumulated pigment to the skin surface, says Albert M. Kligman, a dermatologist at the University of Pennsylvania in Philadelphia. "You're dumping [pigment] out faster than it can accumulate," he explains.

Kligman says the new finding comes as no surprise to most dermatologists, who had noticed the spot-removing effect before, but Voorhees' study is the first to confirm that effect.