

'Ancestral eve' was mother of all tooth decay

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A New York University College of Dentistry (NYUCD) research team has found the first oral bacterial evidence supporting the dispersal of modern Homo sapiens out of Africa to Asia.

The team, led by Page Caufield, a professor of cariology and comprehensive care at NYUCD, discovered that Streptococcus mutans, a bacterium associated with dental caries, has evolved along with its human hosts in a clear line that can be traced back to a single common ancestor who lived in Africa between 100,000 and 200,000 years ago.

S. mutans is transmitted from mothers to infants, and first appears in an infant's mouth at about two years of age. Caufield's findings are reported in an article in the February issue of the *Journal of Bacteriology*.

In his analysis of the bacterium, Caufield used DNA fingerprints and other biomarkers that scientists have also employed to trace human evolution back to a single common African ancestor, known as "ancestral Eve."

"As humans migrated around the world and evolved into the different races and ethnicities we know today," Caufield said, "this oral bacterium evolved with them in a simultaneous process called coevolution."

"It is relatively easy to trace the evolution of S. mutans, since it reproduces through simple cell division," says Caufield, who gathered over 600 samples of the bacterium on six continents over the past two decades. His final analysis focused on over 60 strains of S. mutans

collected from Chinese and Japanese; Africans; African-Americans and Hispanics in the United States; Caucasians in the United States, Sweden, and Australia; and Amazon Indians in Brazil and Guyana.

"By tracing the DNA lineages of these strains," Caufield said, "We have constructed an evolutionary family tree with its roots in Africa and its main branch extending to Asia. A second branch, extending from Asia back to Europe, traces the migration of a small group of Asians who founded at least one group of modern-day Caucasians."

Additional branches, tracing the coevolution of humans and bacteria from Asia into North and South America, will be drawn in the next phase of Caufield's analysis.

Source: New York University

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