

Scientists report original source of malaria

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A female mosquito of the Culicidae family (*Culiseta longiareolata*). Image: Wikipedia

Researchers have identified what they believe is the original source of malignant malaria: a parasite found in chimpanzees in equatorial Africa.

UC Irvine biologist Francisco Ayala and colleagues think the deadly parasite was transmitted to humans from [chimpanzees](#) perhaps as recently as 5,000 years ago - and possibly through a single mosquito, [genetic analyses](#) indicate. Previously, malaria's origin had been unclear.

This discovery could aid the development of a vaccine for malaria, which sickens about 500 million people and kills about 1.5 million each year. It also furthers understanding of how infectious diseases such as HIV, SARS, and avian and swine flu can be transmitted to humans from

animals.

"When malaria transferred to humans, it became very severe very quickly," said Ayala, co-author of the study that reports these findings. "The disease in humans has become resistant to many drugs. It's my hope that our discovery will bring us closer to making a vaccine."

The study appears online the week of Aug. 3 in the [Proceedings of the National Academy of Sciences](#).

Human malignant malaria is caused by a parasite called *Plasmodium falciparum*, which is responsible for 85 percent of all infections and nearly all malaria deaths. Chimpanzees were known to carry a closely related parasite called *Plasmodium reichenowi*, but most scientists assumed the two had existed separately in humans and chimpanzees for the last 5 million years.

Scientists in the current study examined several new strains of the parasite found in blood taken from wild and wild-born chimpanzees in Cameroon and Ivory Coast sanctuaries during routine health exams.

A gene analysis linked one chimpanzee strain to all worldwide strains of the human malaria parasite. This connection suggests that one mosquito may have transferred malaria to humans. Because there is little genetic variance among strains of the human parasite, scientists believe the transmission occurred in the recent past - maybe 5,000 to 2 million years ago - though an exact time could not be determined.

The results support an earlier hypothesis by Dr. Ajit Varki of UC San Diego and colleagues that genetic mutations made humans first resistant to sickness from the chimpanzee parasite, then extremely susceptible to illness from the human form.

They also corroborate an earlier finding by Ayala and former UCI graduate student Stephen Rich that malignant malaria started spreading throughout the tropics and world about 5,000 years ago, when agriculture began in Africa. Rich, now a professor at the University of Massachusetts Amherst, also is the lead author of the current *PNAS* study.

Source: University of California - Irvine

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