Gorillas carry malignant malaria parasite, study reports

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The parasite that causes malignant malaria in humans has been detected in gorillas, along with two new species of malaria parasites, reports a study co-authored by UC Irvine biologist Francisco Ayala.

The study also confirms a recent discovery by Ayala and colleagues that human malignant malaria, caused by *Plasmodium falciparum*, originated from a closely related parasite found in chimpanzees in equatorial Africa. *P. falciparum* is responsible for 85 percent of malignant malaria infections in humans and nearly all deaths from the disease.

The researchers cautioned that increased contact between primates and humans - mostly because of logging and deforestation - creates a greater risk of new parasites being transmitted to humans. It also could further jeopardize endangered ape populations by spreading diseases to them. Finding *P. falciparum* in gorillas also complicates the challenge of eradicating malaria.

"Hundreds of billions of dollars are spent each year toward ridding humans of malignant malaria. But success may be a pyrrhic victory, because we could be re-infected by gorillas - just as we were originally infected by chimps a few thousand years ago," said Ayala, corresponding author of the study, published this week in the Proceedings of the National Academy of Sciences.

The researchers analyzed fecal samples from 125 wild chimpanzees and 84 gorillas in Cameroon and tested blood samples from three gorillas in

Gabon. They identified two new closely related species of malaria parasites - *Plasmodium GorA* and *Plasmodium GorB* - that infect gorillas. The animals also were found to harbor *P. falciparum*, previously thought to only infect humans.

In August, Ayala and colleagues published a study reporting that *P. falciparum* had been transmitted to humans from chimpanzees perhaps as recently as 5,000 years ago - and possibly through a single mosquito. Before then, malaria's origin had been unclear.

Chimpanzees were known to carry the parasite Plasmodium reichenowi, but most scientists assumed the two parasites had existed separately in humans and chimpanzees for the last 5 million years.

The discovery could aid the development of a vaccine for malaria, which each year causes 2 million infant deaths and sickens about 500 million people, mostly in sub-Saharan Africa. It also furthers understanding of how infectious diseases such as HIV, SARS, and avian and swine flu can be transmitted to humans from animals.

Provided by University of California - Irvine