

Genetic study sheds light on how mosquitoes transmit malaria

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Credit: CDC

An international research team, including researchers from Simon Fraser University, has determined the genetic sequencing of 16 mosquitoes (*Anopheles* genus)—the sole carriers of human malaria—providing new insight into how they adapt to humans as primary hosts of the disease.

Their findings have been published in the *Science Express*.

SFU mathematician Cedric Chauve and his student, Ashok Rajaraman, used computational methods to reconstruct ancestral mosquito genomes and analyze their chromosomal evolution over the past hundred million years. Their hope is to understand how chromosomes evolved and to unravel potential adaptation mechanisms that may be related to [malaria transmission](#). They also hope to determine the genetic differences between these [species](#) and others that are merely bothersome and not toxic.

While only mosquitoes belonging to the *Anopheles genus* species transmit human malaria, not all species within the genus, or even all members of each vector species, are efficient malaria carriers. "This suggests an underlying genetic/genomic plasticity that results in a variation of key traits determining transmission capacity within the genus," says Chauve.

He adds: "This is a very exciting project because there is no way we could sequence the genomes of long-dead ancestral mosquitoes species, without precious data from current species that was supplied by the biological team."

The multidisciplinary team consisted of over 100 biologists, immunologists, infectious disease specialists, computational mathematicians and geneticists from around the world.

While advances in [malaria control](#) have met with successes, the sequencing of these 16 new genomes will contribute to further understanding the genomic adaptability of mosquitoes in transmitting [malaria](#).

More information: *Science Express*, www.sciencemag.org/content/ear...science.1260403.full

Provided by Simon Fraser University

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