

Engineered microbes found to repel mosquitoes

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Genetically-engineered human skin bacteria can make mice less attractive to mosquitoes for 11 days. Mosquitoes transmit a host of deadly diseases, including malaria, West Nile, dengue, yellow fever, and

Zika. Female mosquitoes on the hunt for a blood meal tune into scents released by skin microbes that live on their targets.

Omar Akbari and colleagues engineered versions of the common human [skin](#) commensals *Staphylococcus epidermidis* and *Corynebacterium amycolatum* to produce much less of a form of lactic acid known to attract mosquitoes. The work is [published](#) in the journal *PNAS Nexus*.

The authors tested the microbes alone and found the engineered version of *S. epidermidis* attracted about half as many *Aedes aegypti* and *Anopheles gambiae* mosquitoes and about 22% fewer *Culex quinquefasciatus* as the wildtype versions of the microbes.

The authors also tried the engineered microbes on mice. Painting the mice with wildtype *S. epidermidis* attracted mosquitos. However, painting the mice with engineered *S. epidermidis* reduced mosquito attraction by up to 64.4%, compared with wildtype, starting three days after the microbe was applied.

The effect lasted for 11 days. Trials with engineered *C. amycolatum* had similar results. In addition, a smaller proportion of mosquitoes that landed on mice painted with engineered microbes bit the mice. According to the authors, the results suggest the feasibility of creating a living and long-lasting engineered microbiome-based mosquito repellent.

More information: Feng Liu et al, Engineered skin microbiome reduces mosquito attraction to mice, *PNAS Nexus* (2024). [DOI: 10.1093/pnasnexus/pgae267](https://doi.org/10.1093/pnasnexus/pgae267)

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