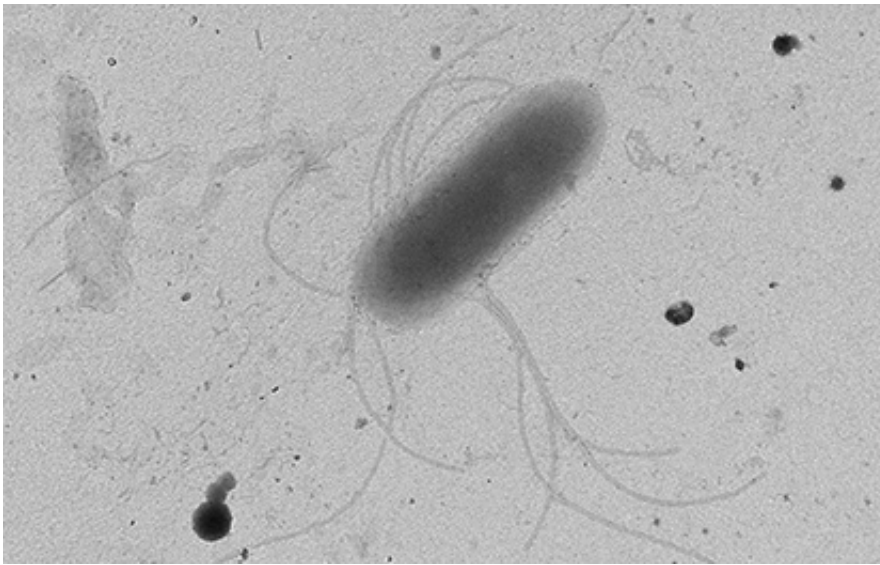


A newly discovered bacterial family may become a weapon in the fight against malaria

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Thorsellia anophelis. EM photo taken by Rita Monson, University of Cambridge in collaboration with Louise Nilsson (SLU) / Wikipedia

A new family of bacteria that are common in malaria mosquitoes has been described by researchers at Swedish University of Agricultural Sciences (SLU) and Uppsala University in Sweden, Justus-Liebig-Universität Giessen, Germany, and the Veterinärmedizinische Universität, Austria. Now, attempts are made to use these bacteria in the fight against malaria.

A brand new bacterial family, which so far is only found along with

disease-carrying mosquitoes, is described in the February issue of International Journal of Systematic and Evolutionary Microbiology. To describe a new family in this part of the bacterial family tree is unusual - it has only happened once before in the last 50 years. Behind the discovery are researchers at the Swedish University of Agricultural Sciences and Uppsala University in Sweden, Justus-Liebig-Universität Giessen in Germany, and the Veterinärmedizinische Universität in Austria.

The bacterial family Thorselliaceae, as well as the genus Thorsellia, is named after the now 96-year old Professor Walborg Thorsell - a legendary mosquito researcher who began her research in the 1970s and then for several decades developed mosquito repellents at the Swedish Defense Research Establishment to be used by Swedish soldiers in wartime.

"When we discovered the first species of Thorsellia in a Kenyan malaria mosquito and decided to name the unique bacterium after Thorsell, we did not know that it would prove to be so common in mosquitoes," says Olle Terenius, researchers at Department of Ecology, SLU. "In retrospect, we can conclude that the name was well chosen."

The discovery of the new bacterial family is strongly linked to research on [malaria mosquitoes](#) and development of tools to combat this disease. The first Thorsellia species were isolated from malaria mosquitoes in Kenya; now, species of the genus Thorsellia have been found in malaria mosquitoes from Africa, India, Iran and Brazil, but also in mosquitoes in the United States spreading West Nile virus. This suggests that Thorsellia has evolved along with disease-carrying mosquitoes for a very long time and that properties facilitating survival in mosquitoes may have evolved.

"It is exciting that these bacteria so far are only found in disease-carrying mosquitoes and their hatching waters," says Olle Terenius. "We and

other research groups are now trying to understand the interaction between *Thorsellia* and mosquitoes. Among other things, *Thorsellia* have properties facilitating mosquito-larvae uptake and survival."

The research now focuses on paratransgenesis, investigating strategies to prevent transmission of malaria parasites by modification of bacteria residing in the gut of the mosquito.

"We are looking for bacteria that live in the mosquito gut and which grow quickly when the mosquito has taken a blood meal. The idea is to genetically modify these bacteria to produce substances that stop malaria parasite development," says Sebastian Håkansson, researcher at Department of Microbiology, SLU. Through the use of bacteria that are closely linked to malaria mosquitoes, we reduce the risk that the altered bacteria end up in the wrong place in nature.

More information: Proposal of *Thorsellia kenyensis* sp. nov. and *Thorsellia kandunguensis* sp. nov., isolated from the larvae of *Anopheles arabiensis* as members of the family Thorselliaceae fam. nov. , Peter Kämpfer, Stefanie P. Glaeser, Louise K. J. Nilsson, Thomas Eberhard, Sebastian Håkansson, Lionel Guy, Stefan Roos, Hans-Jürgen Busse and Olle Terenius. *International Journal of Systematic and Evolutionary Microbiology*, February 2015. [DOI: 10.1099/ijs.0.070292-0](https://doi.org/10.1099/ijs.0.070292-0) .
ijs.sgmjournals.org/content/65/Pt_2/444.abstract

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