Studying the metabolism of the malaria-causing parasite Plasmodium falciparum

March 19 2014, by Lindsay Taylor Key

(Medical Xpress)—Fighting malaria in today's world will require a new, targeted approach, and Virginia Tech researchers are out for blood.

The parasites responsible for the mosquito-borne infectious disease are increasingly resistant to current drug approaches, and almost half of the world is at risk of contracting an illness.

Maria Belen Cassera, an assistant professor of biochemistry in the College of Agriculture and Life Sciences, and a Fralin Life Science Institute affiliate, examines the metabolism of the malaria-causing parasite Plasmodium falciparum in order to identify new drug targets.

Her newest project, funded by the National Institute of Allergy and Infectious Diseases of the National Institutes of Health, will look at the crucial time when malaria is transmitted—when reproductive cell precursors known as gametocytes develop. Specifically, she wants to understand the role that specific metabolites called isoprenoids play in the early stages of development.

"We think that understanding the role of isoprenoids during gametocytogenesis and identifying metabolic steps absent or sufficiently different from its human host will allow us to design more efficient drugs to block malaria transmission, which is one of the key components for malaria elimination and eradication," Cassera said.

The metabolic pathways that the parasite uses are not found in humans,

so pathway-specific drugs would have little effect on the human host.

"Dr. Cassera has taken a leap forward in malaria research by identifying a unique pathway at an essential step in parasite development and transmission to mosquitoes," said Vern Schramm, the Ruth Merns Chair and Professor of Biochemistry at the Albert Einstein College of Medicine, and former postdoctoral mentor to Cassera. "Dr. Cassera is one of a select few scientists who can work productively at the level of parasite biochemistry, biology, drug discovery, transmission, and even primate models of the disease. Her talents have been justly recognized by support from the NIH."

Provided by Virginia Tech

Citation: Studying the metabolism of the malaria-causing parasite Plasmodium falciparum (2014, March 19) retrieved 4 May 2024 from https://medicalxpress.com/news/2014-03-metabolism-malaria-causing-parasite-plasmodium-falciparum.html

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