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Biologist receives NIH grant to fight malaria

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 The award is funded through the NIH's National Institutes of Allergies and Infectious Diseases. Portland State University, Dominican University of California, Geneva Foundation, Walter Reed Army Institute of Research, Drexel University, and Portland VA Research Foundation are all awardees. The lead investigator is Dr. Jane Kelly, a research professor in the Department of Chemistry at Portland State University.

The overall goal of the project is to maximize the anti-malarial potential of the acridone chemotype, said Cooper, associate professor of biology in Dominican's Department of Natural Sciences and Mathematics.
The researchers also plan to conduct a preclinical assessment of possible anti-malarial drugs developed as a result of this project. "We hope that improved drugs resulting from this project can be advanced for clinical trials," Cooper said.

Malaria remains one of the world's deadliest diseases. Each year, malaria causes up to 660 million clinical cases and claims around one million lives, mostly children under the age of five and pregnant women of sub-Saharan Africa. The situation is largely attributed to the spread of multi-drug resistant Plasmodium falciparum, the blood parasite that causes the deadly form of malaria. With no vaccine available currently or in the near future, there is a dire need for low cost, effective, safe, and sustainable malaria treatments.

The novel acridone structure to be investigated by the researchers was featured in a publication by the group in Nature in 2009, and represents a revolutionary approach to designing new drugs.

"Our lab has shown that the lead structural candidate, known as T16.5, is effective against drug resistant lines of parasites, does not easily induce resistance, and also has potency against gametocytes, the stage of parasite transmissible to mosquitoes," Cooper said.

Dr. Cooper's research group has been working on anti-malarial drugs with colleagues at Portland State University, led by Kelly, since 2004.

"Our ultimate goal is the development of a safe, effective, and affordable anti-malarial that can be added to the very limited number of drugs currently in use. With recent reports of resistance

to the new class of anti-malarial drugs occurring in Southeast Asia, there is dire need for new drugs to augment the current worldwide anti-malarial campaign."

Stephanie Huezo, currently a senior at Dominican, has been conducting experiments with T16.5 in Dr. Cooper's laboratory since last year. She will continue her training in malaria research by spending the summer working with a UCSF malaria clinical drug trial in Tororo, Uganda, as part of a strategic initiative grant funded by Dominican.

Upon her return, Huezo will join the acridone team as an NIH-supported master's student.

"Our lab's role in the project, and Stephanie's in particular, will be attempting to induce parasite resistance to T16.5 in the laboratory," Cooper said. "If successful, the data provides important clues about how the drug works, and also can yield molecular markers for field surveillance of drug resistance."

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