# Researchers find metabolic pathway in malaria parasites; possible drug targets

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A newly described metabolic pathway used by malaria-causing parasites may help them survive inside human blood cells. The finding, by researchers supported by the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, clarifies the picture of parasite metabolism and provides clues to potential weak points in the pathway that might be attacked with drugs.

In most living things, several major chemical processes involved in converting food to energy are linked through a cyclic hub called the tricarboxylic acid cycle, also known as the Krebs cycle. NIAID grantee Manuel Llinas, Ph.D., of Princeton University, and his colleagues discovered that Plasmodium falciparum, the deadliest malaria parasite, uses a double-branched metabolic pathway instead of the classical loop. According to Dr. Llinás, this specific branched pathway has not been detected previously in any other organism.

The malaria parasite appears to use one branch primarily to generate the molecule acetyl-CoA, which it needs to thrive within a host organism. This branch may represent particularly vulnerable spots to target with anti-malarial drugs, says Dr. Llinás. The detailed description of the chemical steps involved in the metabolic pathway of the malaria parasite also could aid future malaria drug development efforts because the pathway sits at the heart of several other biological processes currently being investigated as drug targets.

So far, it is clear that the newly discovered pathway operates while the

parasites are growing inside human blood cells. Next, the scientists will explore whether the parasite uses the same pathway during other stages of its lifecycle in humans and in mosquitoes, and how exactly it is involved in the metabolic control of the cell.

**More information:** KL Olszewski et al. Branched tricarboxylic acid metabolism in Plasmodium falciparum. Nature. DOI: 10.1038/nature09301 (2010).

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