

## Screening potential anti-parasitic molecules aiming for paratransgenic control

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Current studies in our lab is focused on 1) investigating gut bacterial flora in *Anopheles* mosquitoes to find bacteria suitable for paratransgenics<sup>1</sup>, and on 2) identifying and expressing anti-parasitic molecules. The long-term goal is to genetically modify native bacteria to produce these molecules and reintroduce them in their corresponding mosquito species.

Following an extensive genomic study of the immune response by *Drosophila melanogaster*, 59 different immune-related genes were induced specifically by a natural protozoan parasite of *Drosophila*, *Octosporea muscaedomesticae*<sup>2</sup>.

We plan to focus on two groups within these specific genes, antimicrobial peptides and lysozymes, and test their activity against the malaria parasite (both mammalian and vector stages).

In the case of lysozymes, since their potential anti-malarial activity has not been determined yet, we plan to test both *Drosophila*<sup>2</sup> and *Anopheles* lysozymes<sup>3</sup>, as well as commercially available lysozymes. Antimicrobial peptides have already been shown to be active against vector stage rodent malarial<sup>4</sup>, and we plan to test two new novel cell penetrating peptides<sup>5</sup>. Both the lysozymes and antimicrobial peptides will be tested against *Plasmodium falciparum* using the Malstat assay developed for erythrocyte stages<sup>6</sup> and vector stage *Plasmodium berghei* both *in vitro* and *in vivo*.

### References:

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