Investigating the role of a putative K^+ channel during gametocytogenesis in *Plasmodiumfalciparum* parasites

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Introduction: The elimination of the life-threatening malaria disease caused by *Plasmodium falciparum* parasites remains a global health challenge. Novel targets are needed in both the pathogenic asexual parasites and transmissible sexual stage parasites of *Plasmodium falciparum*. One such target is ion homeostasis, which is critical for *P. falciparum* parasites to maintain through the combined action of various ion transport pathways. Interference of the K^+ gradient inhibits asexual growth and gametocyte development of *P. falciparum* parasites (1). While there is two putative voltage-gated K^+ channels that could maintain the K^+ gradient in *P. falciparum* parasites, only PfK2 is expressed throughout gametocytogenesis (2). This project is associated with determining the functional role of PfK2 during gametocytogenesis of *P. falciparum* parasites.

Methodology: Transgenic lines were created using a selection linked integration (SLI) technique that selects for parasites with genomic integration following episomal uptake. These transgenic lines have a *pfk2* gene modified with a *glmS* ribozyme for a conditional knockdown approach as well as tagged with a green fluorescence protein for localization studies. Limiting dilution was setup to obtain clonal isolates of these transgenic lines.

Results: Transgenic lines were successfully created, in which episomal uptake and integration was confirmed through PCR analysis. Limiting dilution was used to obtain clonal isolates, free from wild-type parasite contamination.

Discussion and Conclusion: The functional role of PfK2 during gametocytogenesis of *P. falciparum* parasites will be determined through the clonal isolates obtained from limiting dilution. Since interference of the K^+ gradient prevents gametocyte development, it is thought that PfK2 is associated with important biological processes during these stages, which could in future lead to antimalarial strategies.

References:

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