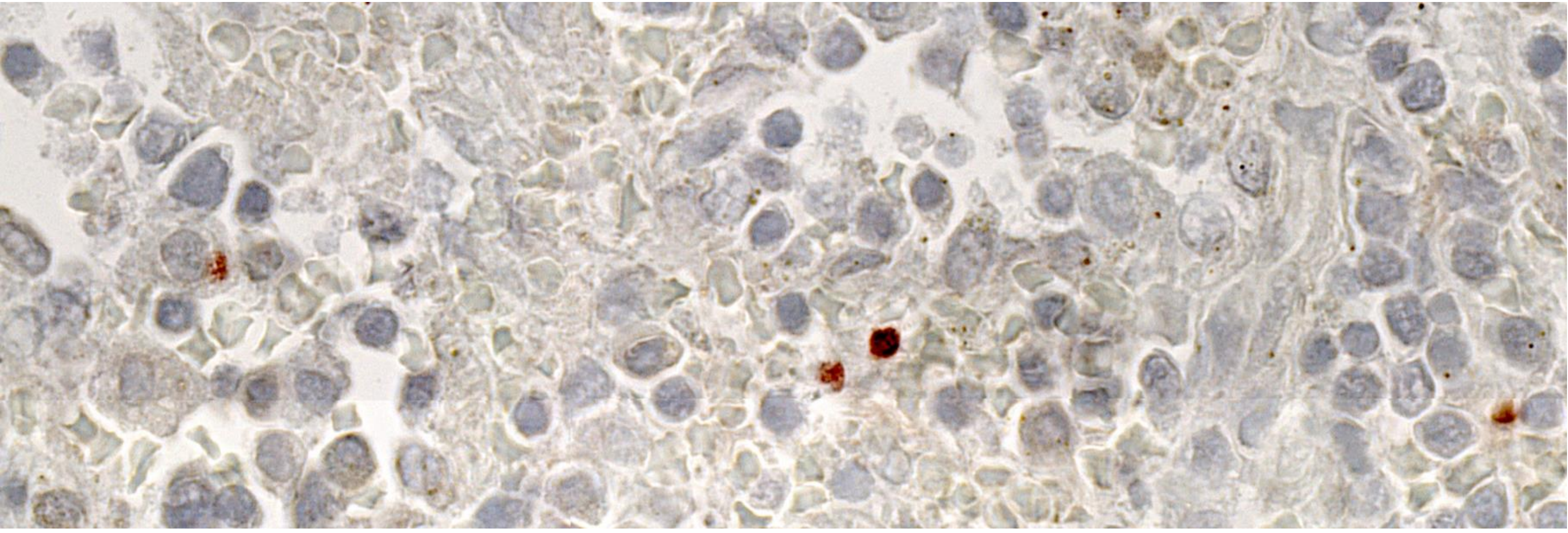

Characterisation of the hidden splenic burden of malaria in Africa

PhD

Malaria is a parasitic disease and a significant global health problem causing over half a million deaths each year, the majority (>94%) in Africa and mostly children. Hidden reservoirs of infection represent additional obstacles in malaria elimination. Through studies in Indonesia, we recently discovered a large hidden biomass of malaria parasites in the adult human spleen and the presence of novel intrasplenic parasite life cycles, a major paradigm-shift in understanding this illness. Major outstanding questions are the magnitude of splenic tropism in 1) children, and 2) African populations, where malaria transmission is highest. Furthermore, the fundamental biology underlying the hidden splenic malaria reservoir remains understudied.

This project will use unique human spleen and blood samples from a cohort of individuals with current or past malaria infections in Uganda. The successful candidate will quantify parasite biomass across spleen and blood samples and study the genetic diversity of the hidden splenic reservoir. The successful candidate will compare transcriptomics profiles of parasite populations in the spleen and circulating blood and undertake in depth analysis of host-parasite interactions that enable splenic parasite survival. The candidate will apply advanced parasitology, imaging, molecular and phenotypic techniques (including IHC, qPCR, NGS, single-cell RNAseq, flow cytometry, spatial profiling) and analyse data using bioinformatic pipelines and advanced statistical methods.

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This project will provide seminal knowledge advancements on the splenic burden of malaria in Africa, its underlying pathobiology, the mechanisms of splenic parasite survival, and may reveal additional barriers to malaria control and elimination. Findings may contribute to future improvement of malaria detection, prevention and treatment strategies.

This project requires an individual with a background in parasitology, molecular biology and/or bioinformatics.

Eligibility Criteria and Scholarship Provisions

Eligibility: The successful applicant should be eligible to undertake a full-time Doctor of Philosophy program.

Scholarship Provisions: The successful applicant will be required to apply for a Domestic Research Training Program (RTP) scholarship through Charles Darwin University.

For more information on scholarships and how to apply see link below:
https://www.cdu.edu.au/research-and-innovation/future-research-students

The successful candidate will also receive $3,863 per annum for up to 3.5 FTE in student support funds to assist with direct cost of research. In addition to financial provisions, successful applicants will also have access to research training opportunities.

Application Process:
Applicants should submit the following to Dr Steven Kho:
(steven.kho@menzies.edu.au)

- A cover letter detailing your interest in the project and why you should be considered
- Current CV with 2x reference contacts
- Copies of certified academic transcripts
- Proof of residency (not required for Australian citizens)