Identifying new interactors involved in rosetting in *Plasmodium falciparum* malaria

Plasmodium falciparum malaria is one of the most lethal forms of malaria worldwide. Malaria pathogenesis is linked to the parasites infecting red blood cells and expressing antigens called *P. falciparum* erythrocyte membrane protein 1 (PfEMP1) on the red blood cell surface, making the cells adhere to other host cells and sequester in the blood vasculature. One adhesion mechanism is rosetting, by which infected red blood cells adhere to other uninfected red blood cells (uRBCs) to form clusters called rosettes. Rosetting has been widely associated with severe malaria in sub-Saharan Africa, but the underlying molecular mechanisms remain poorly understood. Only several rosetting-mediating uRBC receptors and serum proteins are known to date.

In my research, I intend to identify new rosetting-mediating proteins interacting with PfEMP1 using UltraID proximity labelling. UltraID is a genetically engineered biotin ligase, which rapidly biotinylates molecules in its immediate proximity. I have generated a transgenic *P. falciparum* line expressing a PfEMP1-UltraID fusion protein, that allows to label proteins close to PfEMP1 during rosette formation. In a mass spectrometry experiment, I identified several apolipoproteins involved in lipid metabolism as potential rosetting-mediating candidates.

The discovery of new rosetting interactions is important to further characterise host-parasite interactions in *P. falciparum* malaria, and novel interactors may offer new therapeutic targets for preventing or blocking rosetting in patients with severe malaria.