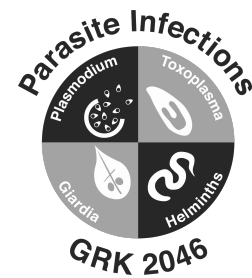


Project Title: Manipulation of the mosquito vector by malaria extracellular vesicles

Research Group: **Vector Biology Unit**
Address: Max-Planck Institute for Infection Biology
Charitéplatz 1
10117 Berlin

Supervisor: **Elena Levashina**



Project Description:

Malaria is a devastating human parasitic disease caused by *Plasmodium falciparum* (*Pf*). The parasites undergo multiple developmental stages as they cycle between their two hosts - the mosquito and the human. To adapt to vastly different environments, the parasites have developed a range of efficient means to manipulate responses of their hosts, including extracellular vesicles (EVs). EVs comprise diverse classes of membrane vesicles released from virtually every cell type and are emerging as important regulators of intercellular communication. *Pf*-infected red blood cells (*Pf*-iRBC) secrete EVs that mediate parasite-to-parasite communication. Given the abundance of EVs produced during blood stages, a large population of EVs must be taken up by a mosquito during its blood meal along with parasitized and uninfected blood cells. However, the effect of parasite-derived EVs on the parasite transmission to the mosquito has not been investigated.

This project will explore whether *Pf*-derived EVs manipulate mosquito immunity and metabolism by RNA sequencing and cell biology approaches and by genetic engineering of the parasite and its vector. Identification of mosquito targets of parasitic manipulation should reveal critical conditions of parasite invasion and offer new tools to prevent malaria transmission.