



Open position for the LSM call of applications

Department/Institute: Experimental Parasitology, LMU Faculty of Veterinary Medicine

Subject areas/Research fields: Cell Biology, Molecular Biology, Parasitology

Keywords: Host Cell Invasion, Apicomplexan parasites, Malaria

Name of supervisor: Prof. Markus Meißner

Project title: The Function of the Gliding Initiation Complex in *Toxoplasma gondii* and *Plasmodium falciparum*

Project description:

The research group of Prof. Markus Meissner (LMU) invites applications for doctoral student positions to work on fundamental biological aspects of apicomplexan parasites and their host cells. A major focus will be the identification and analysis of critical parasite and host cell genes, using *Toxoplasma gondii* and *Plasmodium falciparum* as model systems.

Using a phenotypic screening approach, we previously identified a new set of critical, hypothetical genes required for host cell egress and invasion (Li et al, **Nature Microbiology 2022**), leading to the identification of a novel “gliding initiation complex” (GIC).

No information exists regarding the exact function of GIC and our initial characterisation localises this essential complex to the conoid of the parasite, where it interacts with the actin nucleator Formin-1 (FRM1) and a putative histone methyltransferase (PCKMT). Importantly, PCKMT is the second critical methyltransferase identified that is required for host cell egress and invasion.

To understand the function, regulation and mechanisms of GIC we will:

1. Investigate the composition of GIC in *T.gondii* using proximity labelling and other biochemical methods.
2. Analyse the function of selected GIC components in *T.gondii*
3. Compare the role of conserved GIC factors in the related apicomplexan parasite, *P.falciparum*, the causative agent of malaria.

The project is highly interdisciplinary and uses state-of-the art technologies, such as super-resolution imaging, reverse and forward genetics based on CRISPR/cas9 in *T.gondii* and *P.falciparum*, proximity labelling and MS analysis, to mention a few.

The Meissner lab is based in the Faculty of Veterinary Medicine. Numerous core facilities ensure state of the art equipment and expertise.

References:

Li, W., et al., Nat Microbiol, 2022. 7(6): p. 882-895.

Periz, J., et al., Nat Commun, 2019. 10(1): p. 4183.

Gras, S., et al., PLoS Biol, 2019. 17(6): p. e3000060.

Andenmatten, N., et al., Nat Methods, 2013. 10(2): p. 125-7.

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Research group website:

<https://www.en.para.vetmed.uni-muenchen.de/index.html>

Apply: Please send your application through the [online portal](#) of the Graduate School Life Science Munich (LSM).