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## To eat or to mate?

### Call for an M.Sc. project

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European Neuroscience Institute  
Göttingen



A final year M.Sc. project is available as a joint, collaborative project in the labs of Frederic Römschied and Anne Petzold. Prospective start date is flexible, and as early as May 2026.

Eating and social behaviors such as aggression or courtship are often in conflict. Usually, we have to pick one behavior at a time, according to how hungry we are for one or the other. In addition, sociosexual behavior can lead to reproduction and reproduction is, energetically speaking, very costly.

#### How do animals know whether to prioritize eating or sociosexual behavior?

Mammals produce a hormone that tracks fat levels and satiation: leptin. Leptin is produced in fat cells, secreted into the blood stream and reaches the brain via the ventricular system. When fat stores are full, leptin levels are high and modulate neural activity to suppress further eating. In previous studies, we found that the functions of leptin, in mammals, are much broader: leptin modulates neuronal circuits not just to suppress eating, but to enable animals to reprioritize and specifically promote sociosexual behavior (Petzold et al. *Cell Metab* 2023).

Non-mammalian animals face the same conflict: to eat or to mate? Fruit flies, for instance, do produce a leptin analogue which modulates feeding behavior. We are now asking the fundamental neurobiological question: Does leptin signalling play a role in prioritizing feeding and sociosexual behavior also in non-mammalian animals such as fruit flies?

The potential M.Sc. project will mainly involve the preparation, conduct and analysis of behavioural experiments in combination with optogenetic stimulation of distinct, genetically defined neuronal populations (Roemschied et al. *Nature* 2023) to test their contribution to feeding and sociosexual behaviour. Depending on project progression, we will also measure spontaneous neural activity using two photon microscopy in behaving flies in collaboration with the Barnstedt lab at ENI.

If interested, please send an email detailing why such a project may be a good fit for you.

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