

The Department of Microbiome Science at the Max Planck Institute for Developmental Biology in Tübingen is inviting applications for a



Master thesis: Bacterial lipid signaling in the host intestine (m/f/d)

The goal of this thesis work is to characterize the interaction between bacterial lipids derived from members of the gut microbiome with mammalian G-protein coupled receptors (GPCRs).

The human colon is exposed to an array of structurally and functionally diverse lipids derived from the bacteria that inhabit it. An abundant subset of human gut-associated bacteria, the Bacteroidetes, produce a phylogenetically restricted class of lipids known as sphingolipids. Previous work in our lab has identified a role for bacterial sphingolipids in the modulation of lipid metabolism in their host. Given this interaction, and the existence of other bacterial lipids already known to be bioactive in eukaryotes, we are following up on the potential role these lipids may have in signaling cascades in the mammalian cells to which they are delivered.

To this end, a preliminary screen in our lab has identified potential antagonism of colonic GPCRs by gut-associated bacterial lipids. We are now searching for an enthusiastic and ambitious Masters Student interested in continuing to investigate this interaction. During this work, you will learn and perform:

- anaerobic culturing techniques for gut-associated bacteria (*Bacteroides thetaiotaomicron*)
- techniques for the extraction and fractionation of lipids
- cell culture based GPCR assays
- further characterization of lipid-GPCR interactions by analysis of downstream cellular processes in a tissue culture model (Western blot, ELISA, etc.)

The Department of Microbiome Science at the Max Planck Institute for Developmental Biology is an international lab and the working language is English. This thesis project is interdisciplinary; a general biology, microbiology, molecular biology, or biochemistry background is expected, but previous experience working with lipids or microbes is not essential. More important is self-motivation and scientific curiosity!

More information about our lab and current research is available at www.leylab.com.

A preferable start date is in the spring of 2021, with a flexible project length dependent on the timeline of your program. If interested, please send your CV and a brief outline of your research goals, interests, and timeline to Dr. Stacey Heaver at sheaver@tuebingen.mpg.de.