Master student

The IMB (www.imb.de) is a research centre on the campus of **Mainz University, Germany**. It is generously funded by the Boehringer Ingelheim Foundation and the state of Rhineland-Palatinate. Our research focuses on the *biology of the cell nucleus* and ranges from the molecular level to systems and computational approaches. Researchers at IMB are supported by strong core facilities that offer state-of-the-art services in bioinformatics, cytometry, genomics, microscopy, proteomics, and protein production. The group of **Sandra Schick** is looking for a MSc. Student.

The human intestine is an essential organ for selective nutrient digestion and absorption and also forms an important protective barrier against harmful environmental effects. To properly fulfill these functions, the intestinal epithelial layer undergoes constant renewal and upon damage displays remarkable regenerative capacity owing to significant degree of cellular plasticity. This cellular plasticity is partially enabled by the permissive, accessible chromatin landscape of essentially all intestinal epithelial cell populations, including intestinal stem cells (ISC) and their differentiated progeny. Unlike during ISC differentiation, extensive chromatin remodeling characterizes ISC specifications during embryonic development.

BAF chromatin remodeler complexes are large multi subunit complexes that can slide or eject nucleosomes and thereby regulate chromatin accessibility and ultimately gene expression. Recently, we have shown that the maintenance of chromatin accessibility requires constant BAF complex activity, suggesting a possible role for BAF complexes in embryonic intestinal development as well as maintenance of homeostasis in the adult intestine. In addition to its physiological roles, frequent colorectal cancer (CRC)-associated BAF complex mutations indicate an involvement in colorectal tumorigenesis.

MSc. project: BAF complex in intestinal development and homeostasis.

The successful candidate will use human induced pluripotent stem cell-derived intestinal organoids to investigate the role of BAF complexes across multiple stages of the intestinal differentiation as well as in colon homeostasis. Furthermore, the candidate will establish high-through put imaging to investigate the effect of BAF complex perturbations on cellular composition and genomic stability of the intestinal organoids.

We are looking for a highly motivated and creative student who enjoys bench-work and has a strong interest in learning new cutting-edge techniques. The applicant should be fascinated by developmental biology as well as epigenetics. Good knowledge of histology and basic experience in cell culture techniques is beneficial. The candidate should have the ability to work independently as well as part of a team. Excellent oral and written communication skills in English are required. If you are interested, **please send your application (CV, Motivation Letter, University certificates and contact information for references) to s.schick@imb-mainz.de.**

References

Schick et al. 2021; Acute BAF perturbation causes immediate changes in chromatin accessibility; Nature Genetics; doi: 10.1038/s41588-021-00777-3

Beumer and Clevers 2021; Cell fate specification and differentiation in the adult mammalian intestine; Nature Reviews in Molecular and Cellular Biology; doi: 10.1038/s41580-020-0278-0

Start date: 15th February 2022 or later