

## Berlin Institute of Health @ Charité

### Master Thesis Project (Masterarbeit) “Medium optimization for a gut-lung multi organ-on-chip system” (f/m/d)

The Hedtrich Lab is recruiting a Master student to optimize medium composition for a multi organ-on-chip system to study the gut-lung axis. We are a young and enthusiastic group looking for people willing to contribute to our exciting research. The Hedtrich Lab is located in the just recently inaugurated research building Kaethe-Beutler-Haus on Berlin-Buch campus which is in close proximity to clinical departments, the MDC, and the FMP.

This Master Project projects falls within project A05 of the SFB 1449 whose overall aim is to study the interdependency of the gut-lung-axis and hydrogel barrier in health and disease.

Experimental and epidemiological data show a pivotal role of inter-tissue communication between the intestinal and the lung epithelium in health and disease, a crosstalk that has been termed the ‘gut–lung axis’ (GLA). So far, gut-microbe-derived components and metabolites such as short-chain fatty acids have been identified as putative mediators of the GLA. Yet, mechanism beyond the microbiome are highly likely and many questions remain as to how this crosstalk impacts lung and intestinal hydrogels and, thus potentially contributes to the manifestation of comorbidities.

Therefore, the Hedtrich Lab proposes the development of a microphysiological system (MPS) allowing a long-term co-cultivation of intestinal and pulmonary epithelial tissue models to emulate the GLA in a human-based *ex vivo* system to test that the gut-lung crosstalk governs the composition and function of epithelial hydrogels.

The Master Project should unravel the key components and medium formulation allowing for the co-culture of our intestinal and lung model. This investigation is crucial as each tissue requires very specific supplements which are not shared between different types of organs. Therefore, medium optimization currently represents one of the biggest struggles when developing multi-models.

#### Your tasks:

- Literature research
- Tissue culture of lung and intestinal cells
- Optimization of co-culture medium formulation *via* DOE (Design Of Experiment)
- Biochemical assays

#### Your qualifications:

- A background in biology, biochemistry or biotechnology
- Fluent in English
- Highly motivated
- Prior experience in tissue culture

#### What we offer:

- Constant support and guidance by PhD students as well as senior lab members
- Teaching of tissue culture and biochemical assay methods
- A state of the art lab in the newly inaugurated KBH building in Campus Buch
- A pleasant and friendly working atmosphere

If interested, please apply by e-mail, by sending your CV to Alessandro Bentivogli (alessandro.bentivogli@bih-charite.de) and Konrad Schmidt (konrad.schmidt1@charite.de).