



## *Clostridioides difficile* reprograms host cell metabolism



### Who are we?

The immuno-metabolism group (head: Prof. Karsten Hiller), located at the Braunschweig Integrated Centre of Systemsbiology (BRICS), investigates cellular and mitochondrial metabolism of immune cells during bacterial infection, cancer, metabolic complications and neuro-degeneration. The team has developed a strong expertise in stable-isotope assisted metabolomics and metabolic flux analysis both on a whole cell as well as on a mitochondrial sub-compartment level.

### Project background

*Clostridioides difficile* infections are a major healthcare crisis, but how does this pathogen manipulate our cells at a metabolic level?

While we know *C. diff* toxins disrupt the intestinal monolayer, the precise metabolic response of the host tissue to the bacterial secretome remains unmapped. In this project we aim to bridge this gap. We will use in vitro co-cultivation models to investigate the metabolic cross-talk between *C. diff* and intestinal epithelial cells.

### Thesis content

You will work with epithelial cell line (HT-29 and Caco-2), investigating how the *C. difficile* impact the metabolism in these cell lines under different condition like hypoxia and normoxia.

#### Methodology:

1. HT-29 and Caco-2 cell lines.
2. *C. difficile* bacteria ( different strains).
  - Seahorse
  - Metabolimcs
  - Mass spectrometry (GC-MS) •
  - Stable isotope assisted metabolomics

### Interested?

Please send your application via Email with your preferred starting date.

- Bachelor or Master
- English or German

Contact:

Mohamad Alalloush  
[m.alalloush@tu-braunschweig.de](mailto:m.alalloush@tu-braunschweig.de)

Prof. Dr. Karsten Hiller  
[karsten.hiller@tu-bs.de](mailto:karsten.hiller@tu-bs.de)