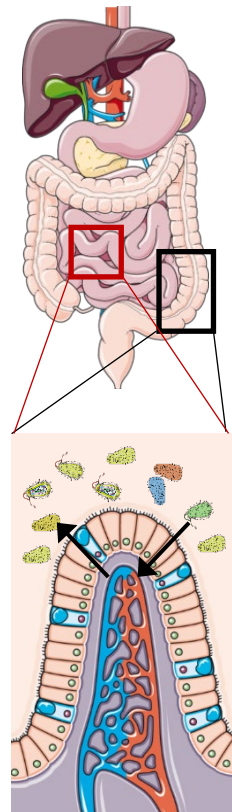


Bachelor/Master Thesis

Reconstruction of metabolic networks for gut microbiota of OMM¹² strains

The Project

Gut microbiota consists of diverse organisms that communicate with each other and the host and manipulate and redistribute energy, thereby providing us with functionalities upon which we depend. It transforms otherwise-indigestible carbohydrates and proteins into short chain fatty acids and organic acids that fuel other bacteria and the host. Advances in metagenome sequencing have revealed a close association of gut microbiota and lifestyle, diet, environment, and diseases such as cancer, obesity, and inflammatory bowel disease. However, mechanistic understanding of how members of the microbial community interact with each other and with the host is limiting. To this end, the project aim is to develop a computational model of metabolite exchange in microbes.



How can you help us?

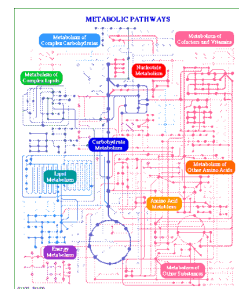
- Reconstruction of metabolic networks for one or two of the OMM¹² strains
- Metabolic flux prediction of microbial capabilities of the strain(s)
- Validation of the model(s) using experimental data from phenotypic screens of our collaboration partners

What do we expect from you?

- Studies of systems biology, bioinformatics, biology, medicine, computational engineering, data science, mathematics, biotechnology, or similar
- Interest in the microbiome
- Interest in bioinformatics and metabolic modelling

How can we help you?

We offer you an introduction in the field of microbial modelling. You'll become part of a great team developing and validating new metabolic methods at JRC computational biomedicine. You'll be supported to finish your thesis in time.



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<https://www.ukaachen.de/kliniken-institute/joint-research-center-for-computational-biomedicine/lehre/institute-for-systems-medicine-with-focus-on-organ-interaction/>

	R1	R2	R3	R4	R5	R6
A	-2	-1	-1	1	0	0
B	-1	-3	2	-4	-2	3
C	1	1	0	0	1	-1
D	3	0	1	1	-1	1
E	0	1	1	0	2	-4