

## **Interaction of gut microbiota and the brain in Anorexia Nervosa**

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### **Authors**

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### **Aim**

The purpose of the study is to analyze the changes of microbiota and the gut-brain axis in an animal model for AN during starvation and refeeding. Altered microbial species, reduced variability of microbiota and reduced gut permeability will be associated with brain changes like reduced volume, cell count and BDNF as well as learning impairment and depressive symptoms.

### **Background**

Until recently the role of gut bacteria was underestimated in the pathogenesis of psychiatric disorders. Current studies of the gut-brain axis, however, indicate an association between microbiota and psychiatric impairments such as anxiety and depression as well as bodyweight regulation. Since a dysregulation of bodyweight is a core symptom in AN and anxious and depressive symptoms common comorbidities, research studying the role of microbiota in AN is warranted.

### **Method**

The activity-based anorexia (ABA) paradigm is conducted with female adolescent rats. ABA combines starvation and access to a running-wheel. Next to behavioural tests and brain volume measurements, gut permeability is analysed using staining and Ussing chamber. Moreover, hormones and other markers such as BDNF will be detected in serum. To test the causal role of microbiota, antibiotic treatment will be used to eradicate gut bacteria. Finally probiotics will be administered to test them as potential future therapeutic interventions for patients with AN.

### **Execution**

July 2017 – June 2020

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