

# Call for Master Thesis

## Small molecules from the human oral microbiome

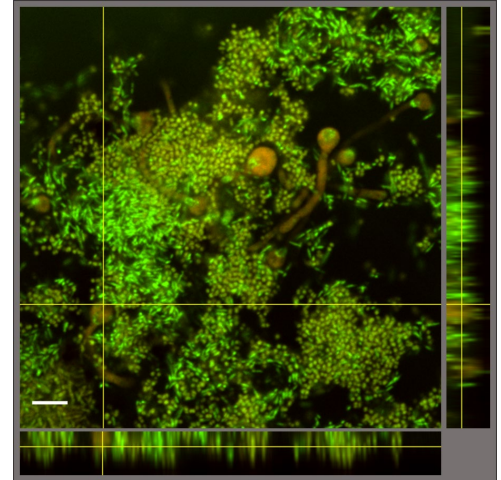
Functional characterization of *Streptococcus mutans* natural compounds and their role in oral biofilm formation

**Time schedule** Start: any time right now; Duration: ~6 months

### Short summary of project

The oral pathogen *Streptococcus mutans* is the major bacterium associated with dental caries. In the oral cavity, *S. mutans* exists as a member of multispecies biofilms known as dental plaque.

*S. mutans* produces a number of compounds, among them **mutanobactins and mutanofactins**, that enable it to survive in the multispecies biofilms and compete with other streptococci. Mutanobactins additionally act as interkingdom communication signals by affecting yeast-to-hyphae transition and therefore biofilm formation in the yeast *Candida albicans*. Mutanofactin has only recently been discovered and influences biofilm formation by *S. mutans* by acting as „molecular glue“.



FISH staining of *Candida albicans* (red) in a multispecies oral biofilm

### Aims

Analyse the effect on synthetically produced mutanobactin and mutanofactin on select members of the oral microflora in mono- and multispecies biofilm experiments

### Methods

Cultivation of anaerobic bacteria (BS-L2) in an *in vitro* multispecies biofilm model, DNA extraction, RT-qPCR, fluorescence *in situ* hybridization, confocal microscopy, SEM.

### Requirements

The candidate should be focused on the field of biotechnology, microbiology, biochemistry or related studies. We appreciate highly motivated students who are excellent team players with the ability to work independently under supervision in an interdisciplinary and very friendly research environment.

### We offer

Motivating scientific environment at BOKU, cutting edge research in glycomicrobiology, weekly seminars and learning of various techniques. Participation in workshops and international conferences are possible.

### Applicants

Please e-mail your CV along with contact addresses to Susanne Bloch, PhD ([susanne.bloch@boku.ac.at](mailto:susanne.bloch@boku.ac.at)) or Ao.Univ.Prof. Christina Schäffer ([christina.schaeffer@boku.ac.at](mailto:christina.schaeffer@boku.ac.at)); Department for NanoBiotechnology/ NanoGlycobiology, Universität für Bodenkultur Wien, Muthgasse 11, 1190 Wien, Austria