

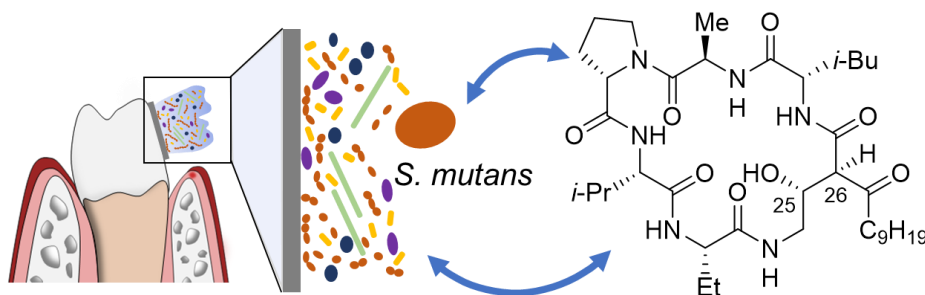
Importance of heme biosynthesis in the oral pathogen *Porphyromonas gingivalis*

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Oral health maintenance relies significantly on the delicate balance within the oral microbiome. The probiotic bacterium *Streptococcus oralis* subsp. *dentisani* as well as *Rothia* species are integral members of this microbial community, playing pivotal roles in oral ecology and health. Both have been shown to counteract the cariogenic pathogen *Streptococcus mutans*, thereby contributing to the maintenance of oral homeostasis. *S. mutans* produces a small-molecule secondary metabolite named mutanobactin. This is a lipopeptide for which a broad-spectrum growth inhibitory effect on members of the oral biofilm community has been observed by the Schäffer Research Group in collaboration with Alex Mira, FISABIO Foundation, Valencia, Spain.

This study delves into the potential inhibitory effects of the lipopeptide mutanobactin on specifically health-associated species focusing on *S. oralis* subsp. *dentisani*, *R. aeria*, *R. dentocariosa* and *R. mucilaginosa*. Through a series of planktonic and biofilm growth assays, co-culture systems and multispecies biofilm assays, we will elucidate the interaction dynamics between *S. mutans* and the emerging candidate probiotics, and the role of mutanobactin D in this process.

Our findings already underscore the nuanced relationship between microbial agents and oral health, offering insights into the development of novel strategies for oral microbiome modulation and disease prevention.



MutD production by *S. mutans*, a member of cariogenic supragingival biofilms, influences growth and biofilm formation of commensal bacteria and the yeast *C. albicans* and thereby might contribute to dysbiosis by shaping the composition of the resident microbiota