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Molecular basis of bacterial-mushroom interactions

Natural products are an important drug source with properties ranging from antibacterial and antifungal to antiproliferative and immunosuppressive. Intriguingly, a significant number of secondary metabolites are produced during microbial interactions. Therefore, this field of natural product research is very promising in order to gain new drugs or drug leads to fight emerging resistance of human pathogens.

During my PhD project I am investigating a variety of bacterial-fungal interactions between cultivated mushrooms and diverse bacteria like *Janthinobacterium agaricidamnosum*. *J. agaricidamnosum* and other fungal pathogenic bacteria cause diseases, such as soft rot disease or brown blotch disease. The aim of this project is to understand the molecular basis of the bacterial infection process and to identify and characterize natural products that are involved in these interactions. Thereby, we hypothesize that the isolated natural products might also be active against human pathogens and hence might serve as a starting point for the development of novel antifungal therapy. The bacteria's capacity to produce secondary metabolites are analyzed via genome mining. Additionally, the bacterial-fungal interactions are studied with various elaborated analytical techniques like imaging mass spectrometry. Structural elucidation of the virulence factors is carried out with the help of NMR, MS/MS and chemical derivatization experiments.

Publications

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Supervisor

Christian Hertweck

Start of PhD

September 12, 2011

Doctoral Disputation

February 14, 2017