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Mechanisms of microbial communication leading to activation of silent gene clusters

Microorganisms (MOs) form multispecies communities in various ecosystems where they produce a wide range of low-molecular-mass organic compounds, the natural products (NP). The producing MOs can use them as chemical signals for specific communication with other cells/species. This interspecies “talk” represents a physiological trigger to activate silent NP-gene clusters which may result in novel, medically interesting compounds. We have been working on several distinct interactions between bacteria and fungi (Schroeckh *et al.* 2009 *PNAS*, Nützmänn *et al.* 2011 *PNAS*, Netzker *et al.* 2016 *AEM*, Macheleidt *et al.* 2016 *Annual Rev Genetics*). By using transposon mutagenesis, transcriptome analyses, LC-MS analyses and methods to unravel histone modifications we aim at understanding molecular mechanisms, *i.e.*, the particular language of the microorganisms involved. This also includes the discovery of potentially novel compounds. This proposal addresses the streptomycete’s part of the described communication. It will focus on the characterisation of bacterial genes / proteins / compounds involved in the communication process.

Supervisor

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