# *Bacillus subtilis* attachment to *Aspergillus niger* hyphae results in mutually altered metabolism.

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## Abstract

Interaction between microbes affects the growth, metabolism and differentiation of members of the microbial community. While direct and indirect competition, like antagonism and nutrient consumption have a negative effect on the interacting members of the population, microbes have also evolved in nature not only to fight, but in some cases to adapt to or support each other, while increasing the fitness of the community. The presence of bacteria and fungi in soil results in various interactions including mutualism. Bacilli attach to the plant root and form complex communities in the rhizosphere. *Bacillus subtilis*, when grown in the presence of *Aspergillus niger*, interacts similarly with the fungus, by attaching and growing on the hyphae. Based on data obtained in a dual transcriptome experiment, we suggest that both fungi and bacteria alter their metabolism during this interaction. Interestingly, the transcription of genes related to the antifungal and putative antibacterial defence mechanism of *B. subtilis* and *A. niger*, respectively, are decreased upon attachment of bacteria to the mycelia. Analysis of the culture supernatant

suggests that surfactin production by *B. subtilis* was reduced when the bacterium was co-cultivated with the fungus. Our experiments provide new insights into the interaction between a bacterium and a fungus.

## Involved units

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