

# Hello from the other side - Interkingdom Crosstalk between bacteria and diatoms

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Unsuspecting and yet indispensable - diatoms are an important group of microalgae in our oceans which produce up to 20% of global photosynthesis. They live in close association with heterotrophic bacteria, a partnership which evolved over millions of years and led to many different interactions between these microorganisms. However, many details about their complex interaction still remain to be elucidated and this study aims provide further insights.

Diatoms as well as bacteria use small molecules to communicate among themselves. Diatoms produce pheromones to attract mating partners. Likewise bacteria release structurally similar signal molecules to start expression of certain genes, for instance genes causing virulence. Given the structural similarity between the molecules released by diatoms and bacteria this research investigates whether diatoms are able to “listen” to bacterial communication and respond accordingly.

Interkingdom crosstalk has already been discovered between bacteria and plants. Researchers discovered that *M. truncatula* (clover) is able to respond to bacterial signals by releasing mimics of the bacterial molecule and thereby interfering with bacterial communication. Moreover gene expression changed as soon as the plant was exposed to the bacterial signal.

However, so far it is unknown whether such interactions also exist between diatoms and bacteria. In this study diatoms are exposed to synthetic bacterial molecules and their physiological and morphological response is being monitored. First results suggest that diatoms are indeed able to respond differently to a range of bacterial signals.

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