

Diatom-bacteria interactions: Symbiosis on the move

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Intertidal mudflats are highly productive ecosystems, which play a vital role in nutrient recycling and coastal protection. Primary production in these systems can be very high, and is mainly due to the presence of dense biofilms of benthic microalgae (mostly diatoms and euglenoids) embedded in a complex matrix of extracellular polymeric substances. These mats are also inhabited by a diverse bacterial community. Some of these (namely the Proteobacteria and the Bacteroidetes) are consistently found in association with the diatoms. This specificity suggests that, even in the complex and highly dynamic biofilm environment, these bacteria find their way to the diatoms and/or vice versa. In order to unravel the recognition mechanisms between host and bacteria, we are currently performing tracking assays to compare how one symbiosis partner reacts to the presence of the other. Video analyses allows us to identify who is actually attracted by whom and will allow us to identify the infochemicals involved. These videos illustrate the dynamic nature of these interactions in which both partners are motile and allow a microscopic glimpse into one of the most productive systems on Earth.

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