

Bacteria-diatom interactions in the context of oxylipin production

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While microbes have been studied since a long time, their relationship with one another are still little investigated. This project aims at investigating the relationship between bacteria and diatoms in the context of secondary metabolites produced by this key group of marine algae. Diatom oxylipins have been shown to impact grazers reproduction, therefore affecting their recruitment. They also are toxic to several organisms, including other phytoplankton and bacteria. Marine bacteria exposed to diatom polyunsaturated aldehydes (PUA) show three types of response: resistance even at high concentrations, high sensitivity or even use of these compounds as carbon source. In situ, we could show that exposure to PUA impacts bacterial community composition, and that this is relevant especially during blooms. This project proposes to investigate the nature of this relationship using a combined approach of flow cytometry, High Throughput Sequencing (HTS) and other molecular methods, on both cultures and natural samples. Also, this topic will be treated including a physiological perspective rather than an ecological one exclusively. This is a microbial ecology project relying on recent findings about the composition of marine bacterial communities and their functioning in coastal areas in the Mediterranean Sea. The proposed activities aim at elucidating how PUA modulate microbial community structure and under which environmental conditions. This will contribute to better modelling of diatom contribution to global carbon cycles in the oceans.