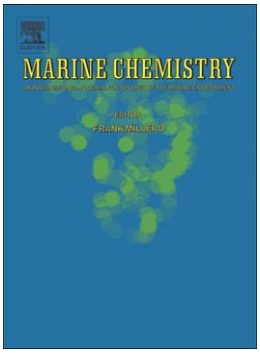

Environmental Metabolomics: Analytical Strategies

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Environmental Metabolomics: Analytical Strategies

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ABSTRACT

Microbial metabolism plays a primary role in shaping the marine carbon cycle through processes of carbon fixation and remineralization. Many metabolic intermediates pass through the reservoir of marine dissolved organic matter (DOM), as compounds move among microbes as part of complex ecological networks of interactions. Environmental metabolomics can be used to identify and quantify these compounds, and thus will provide insight into the chemical underpinnings of microbial networks at the foundation of global biogeochemical cycles. Here we present methods for metabolite profiling (untargeted metabolomics) and for relative quantification (targeted metabolomics) of intracellular and extracellular metabolites from marine microbes. We describe our approach to method development with regard to metabolite extraction and instrumental analysis, culminating in the methods currently in use in our laboratory.