Integration of taxonomic and phenotypic fingerprints of marine plastic degrading communities

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Flow cytometry is a powerful tool to monitor microbial communities as it allows to follow changes in the phenotype of the community in combination with absolute abundances in high throughput at a very low price. This information can be combined in a so-called phenotypic fingerprint that can be used for diversity-analysis. In this research we use the phenotypic fingerprint to monitor how microbial communities change over time when exposed to plastics. As phenotypic fingerprinting is not always straightforward to link with taxonomic diversity, the idea rose to combine flow cytometry (FCM) with Fluorescent In Situ Hybridization (FISH). This allowed us to make a combination of taxonomic (FISH) and phenotypic (FCM) information to obtain an integrated fingerprint. By labelling a specific taxonomic group, we can not only add an extra dimension to the fingerprint, but we can also link the behaviour of the microbial community to this particular group. Thus, linking phenotype, taxonomy, and functionality when following the community over time.