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## *The dynamic bacterial colonization on plastic: an exposure experiment at sea*

Plastic debris is widespread in our marine ecosystem. For some marine organisms, e.g. fish and seabirds, its presence could be harmful as they could be entangled by plastic debris or ingest microplastics. However, other organisms, especially micro-organisms, may take advantage of the plastic pollution in the seas, as they can use plastic as habitat or even as food source.

We previously showed using 16S rDNA metabarcoding, that bacteria are able to colonise plastic items in the North Sea. The composition of the bacterial community on these items was different from that of seawater and sediment. This indicates that the plastic surface represents a specific environmental niche for bacteria, and suggests that plastic could act as transport vector for microbial organisms. Also between the plastic items, variation in bacterial community composition was observed which could be associated to three main factors: plastic-related factors (e.g. pigments), environmental factors (e.g. seawater temperature, salinity) and the stage of biofilm formation.

To study the dynamics of the bacterial colonisation of plastic, we exposed two different types of polyethylene (sheet vs. dolly rope) to the marine environment on two different locations (harbour vs. offshore). Plastic was sampled on a monthly interval during six months. Biofilm formation could be observed visually after six months of exposure. Using 16S rDNA metabarcoding, the temporal dynamics of bacterial community composition and diversity will be studied with the aim to study the early processes of marine plastic debris colonization

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