



Editorial: Microplastics and microorganisms in the environment, volume II

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Editorial on the Research Topic

Microplastics and microorganisms in the environment, volume II

The pervasive use of plastics has led to the widespread presence of microplastics across our planet (Thompson *et al.*, 2004; Wang *et al.*, 2019). These tiny particles have been detected in Antarctic sea ice, the guts of marine animals inhabiting the deepest ocean trenches, and in drinking water worldwide. Microorganisms form the foundation of all life on Earth, and play essential roles in sustaining life through their various activities (Liu *et al.*, 2021). Studying interactions between microplastics and microorganisms is of importance for a good number of reasons, such as encompassing environmental, ecological, human health, and socio-economic dimensions (Wang *et al.*, 2021). For instance, identifying microorganisms capable of degrading microplastics can lead to formulation of sound remediation strategies, offering potential solutions to mitigate plastic pollution. Although significant progress has been made in the past few decades in understanding the relationship between microplastics and microorganisms in diverse environments, our comprehension of these interactions remains limited due to their inherent complexity.

The five papers in this virtual special issue (VSI) primarily focus on two topics: microbial degradation of microplastics and interactions between microplastics and viruses. The first topic involves identifying bacteria and microorganisms capable of efficiently degrading microplastics. In the environment, microplastics readily form microbe-rich plastispheres, implying that microbially mediated plastic degradation could be a viable solution to plastic pollution. A common approach to studying this involves using enrichment cultures to observe dynamic changes in microbial communities and identify microorganisms capable of degrading microplastics.

Olabeznova *et al.* employed an innovative approach by using an improved Winogradsky Column (WVC) to enrich plastic-degrading bacteria and genes in landfill soil from Connecticut. Their exciting results revealed new bacterial lineages with potential polyethylene (PE) degradation capabilities. Zhu *et al.* fed polystyrene foam to *T. molitor* larvae and investigated how this dietary change affected the gut bacterial community composition. This groundbreaking study addresses the research gap on anaerobic bacteria in *T. molitor* larvae's gut, offering a potential method to expand plastic biodegradation

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