

Response of *Synechococcus elongatus* PCC 7942 to Microplastics

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About 80 percent of all plastic produced nowadays accumulates in the rivers and landfills. Including that, 95 percent of the plastics thrown in the rivers end up in the oceans. These are highly concerning statistics, since plastics, in fresh and salt water, do not degrade easily and can impact living organisms for over a hundred years. In our laboratory, we have been examining how a specific fresh water bacterium, *Synechococcus elongatus* PCC 7942, responds when exposed to microplastics.

We have exposed PCC 7942 to polystyrene and polyethylene particles of diameters varying from 0.2 μm to 10 μm and examined these samples using fluorescence microscopy and cryogenic scanning electron microscopy. The bacteria attached to the particles within 24 hours. Biofilm formation was detected within 72 hours of contact, and after 12 days of exposure it increased drastically, followed by an increase in the hetero-aggregates size. The control sample within this timeline showed spread cells and few small agglomerations. We reveal yet another pathway by which microplastics affect fresh water life.