Organic Micropollutant Biodegradation: Interaction with Natural Organic Matter

Background
The closure of drinking water wells due to contamination with organic micropollutants (OMPs) has become an ever increasing problem. To protect freshwater resources from micropollutants like pesticides and pharmaceuticals, it is essential to understand their fate in aquatic systems. Many OMPs can be transformed and mineralized by specific naturally occurring microbes. It appears that biotransformation efficiencies are influenced by the presence of natural dissolved organic matter (DOM), which is universally present.

Aim
In this project you will quantify the growth of a pure microbial strain on a specific organic micropollutant (a sulfonamide antibiotic). You will then identify which DOM constituents support or hinder the growth of the microbial degrader and trace the degradation of the micropollutant when in mixture with various DOM constituents. The results will allow you to more efficiently steer OMP biodegradation.

What you will learn
You will learn how to set-up advanced lab-experiments. You will use microscopy to quantify microbial growth and advanced fluorescence spectroscopy for tracing micropollutant degradation.

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