

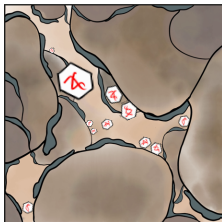


MSc thesis project:

Biophysics of phage sorption in soil

It is increasingly recognized that viruses, and bacteriophages in particular, are important to soil ecosystems and function (carbon cycling, plant nutrition, greenhouse gas balance and more). However, soil minerals can be highly sorptive to phages and presumably constrain infection rates. How soil mineralogy and phage properties interact to determine sorption is poorly understood.

Soils have extensive surface areas consisting of sorptive minerals and organic matter, which can bind phages. At the same time, phage taxa differ in size, charge and hydrophobicity. Understanding the interactions between phage surface properties and soil components could improve phage extraction procedures and provide insight into the binding mechanisms that affect phage movement and ecology in soil.



This project will compare the sorption of contrasting phages to whole soil and pure soil components to determine the governing mechanisms and relative importance of mineral composition and measured phage properties. There will also be space to develop original hypotheses and experiments within the broader research direction. Students will master skills in microbiology (sterile culture technique), biophysics (e.g. sorption mechanisms, zetasizer) and soil science, while contributing to one of the most exciting frontiers of soil biogeochemistry.

Candidates should have knowledge of biology, soil mineralogy and/or environmental sciences. Self-motivation and the ability to work independently is needed. The working language will be English. Students will be hosted in the Soil Microbial Interactions group in the Department of Geosciences (GUZ). For enquiries, please contact Jun.-Prof. Kyle Mason-Jones at k.mason-jones@uni-tuebingen.de.

