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Hyporheic microbes: the unseen players in stream biogeochemistry

Tom J. Battin (1), Mia Bengtsson (1), Nancy Burns (1), Katharina Besemer (1), Ed Hall (2), Judith Rosentreter (1), and Karoline Wagner (1)

(1) University of Vienna, Department of Limnology, Vienna, Austria (tom.battin@univie.ac.at, +43-(0)1-42779542), (2) Natural Resource Ecology Laboratory Colorado State University Fort Collins, CO 80523-1499

The hyporheic zone is the interface between the catchment and its stream. Here streamwater and groundwater interact along numerous flow paths, also conveying solutes and particles. Innumerable microorganisms colonize the large surface offered by the hyporheic sediments and potentially interact with the solute and particle fluxes. Despite our general appreciation of the hyporheic zone for biogeochemical processes in streams and even in rivers, the contributions of its microorganisms to biogeochemistry remain elusive. In this talk, I will present recent research aimed at unravelling the structure and function of hyporheic microorganisms and their involvement in carbon cycling. We experimented with bioreactors simulating the hyporheic zone in headwater streams, and using sequencing and proteomics, we unveiled the massive biodiversity of these microbial communities. Furthermore, using stable isotopes, we explored the contribution of microorganisms to the hyporheic carbon carbon cycle.