



Origin of sediment bacteria: water versus soil

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Nowadays a thorough understanding of the environments' reaction in response to climatic change seems unavoidable. One way to do this is by studying past events of change and the response of biological communities to it. Several paleoecological studies have already used endospore-forming bacteria in order to reconstruct environmental history. Since endospores are able to survive for extended periods of time, the endospore seed bank community might reflect the evolution of these sites. However, for this approach to be validly used, the autochthonous origin of the endospore-forming community needs to be demonstrated. In this study, we explored the origin of endospores in two alpine lakes located in Grisons, Switzerland (Jöri Lakes I and XIII). We sequenced microbial communities from samples representative of the lakes (sediments cores and water column) and of the surrounding environments (soils and river inlets). By sequencing the 16S rDNA and *spo0A* gene markers, we have demonstrated that endospores preserved in sediment cores are more similar to the community in the water column, compared to communities found in samples external to the lake. This confirms an autochthonous origin of this fraction of the microbial community and shows that endospores evolve in the water column and reflect environmental lake history. This is an essential requirement for further paleoecological studies using endospores as a proxy.