



Supervisor's statement on the doctoral thesis of Milankumar Varsadiya

Milan was accepted for his PhD studies in the autumn of 2016 and the following year he participated in a scientific expedition to Greenland as part of the ongoing MiCryoFun project. The main focus of his thesis was to study soil microbial communities in the Arctic permafrost and how the composition and activity of microbial communities is influenced by various abiotic and biotic factors including temperature, oxygen, nutrients and last but not least the influence of vegetation. The study of soil microbial communities and their interactions poses a considerable challenge to early career scientists. Nowadays, modern molecular techniques such as metagenomics, metatranscriptomics allow a comprehensive and detailed description of microbial communities. On the other hand, it is important for the soil microbiologist to accurately quantify the processes studied or the microorganisms responsible for the process. As Milan collected the first data, we narrowed the topic more to the description and quantification of specific functional groups of microorganisms (N fixators, methanogens, methanotrophs) that are involved in the main biogeochemical cycles (i.e., C and N cycles) in permafrost and whose changing activity may play an important role in the changing climate of the Arctic.

Milan quickly joined our team, and was one of the fastest and strongest pit diggers during fieldwork in Greenland. He provided the mentor with more than one hot moment and tears in his eyes, not from scientific failures, but as an excellent cook of spicy Indian curries. Milan also soon proved himself in molecular biological methods, performing and evaluating a large part of the analyses himself. He also became well skilled in bioinformatic analyses, such as microbial network analyses, which can reveal important interactions of microorganisms in a community. Often, Milan and I would try to find answers in the data that did not come from a simple description of the major microbial phyla, but were just more based on these cross-cutting bioinformatic analyses, whether it was the functional potential of the microbial community, microbial networks, or quantitative metatranscriptomics.

In writing and presenting data, Milan suffers from the common novice scientist syndrome. Show everyone what he has measured, put all the interesting data in the paper. He would often get lost in the data and interpretations, but gradually, under constant pressure from his supervisor (not physical pressure), he found that less is more and that he needed to stick to one main theme and story. I think Milan succeeded in doing this, as evidenced by 2 accepted papers, one after minor revision and one in manuscript form.

Overall, I was very pleased with Milan's work, and I think he is headed for a promising scientific career. From November he will be working at the University of Bayreuth in Prof. Tillman's team as a PostDoc in a large German project (<https://soilsystems.net/>), where he will gain a wide range of experience and contacts.

In Ceske Budejovice 8.8.2022

doc. Ing. Jiří Barta, Ph.D.