

Recommendation of the PhD advisor

Izabela Mujakić MSc. started her PhD study in Hydrobiology in 2017 at the Faculty of Science, University of South Bohemia in České Budějovice. The experimental part of thesis was conducted at the Institute of Microbiology CAS in Třeboň. In her thesis she focused on the bacterial phylum Gemmatimonadota. This phylum was first described in 2003 and till now contains only a handful of cultured species. For this reason, Izabela used mostly bioinformatic analyses of the available genomic and metagenomics data to elucidate their metabolism and ecology. The work was mostly conducted as a part of PhotoGemm+ project financed by Czech Science Foundation.

During her work Izabela learned a number of methods. She has participated in field experiments and conducted water sampling in freshwater lakes. She also participated in experiments and sampling in the Adriatic Sea. She isolates genomic DNA with good quality. She learned how amplify, sequence and analyze amplicon data. Later she mostly focused on metagenomic work and analyses of metagenome assembled genomes. She learned how to annotate a genome and identify the main metabolic pathways. Izabela gradually mastered all necessary techniques, conducted her work with full interest and without the need of much supervision. During tedious bioinformatics analyses she proved all important faculties for successful scientific work, diligence, patience and persistence.

Izabela has fulfilled all the required study duties. She spent more than 2 months in a collaborating lab in Valencia, Spain. She presented her work on posters at several international meetings (ISME, SAME, Fresh Blood for Fresh Waters). Her talk was awarded as the best student presentation at the annual PhD conference in Vodňany in Feb. 2023. Recently, she was selected for an oral presentation and received a fellowship to attend the forthcoming SAME meeting in Tartu, Estonia.

Izabela is currently the first author of one published research paper in *mSystems*, and one accepted paper in *Microbiology Spectrum*. Last year, she wrote a review focused on ecology of Gemmatimonadota, which already has scored more than 35 citations. She also contributed as a coauthor to seven additional research papers.

I conclude that Izabela Mujakić MSc. has demonstrated her excellence as the PhD student and gained all necessary skills and knowledge for future scientific carrier. The present thesis fully meets international standards. Therefore, I suggest its acceptance and strongly recommend a positive evaluation.

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