Supervisor's review of the Master thesis of Dominika Dbalá

Symmetry of green algal cells and their colonies resulting from adaptive phenotypic plasticity under planktonic life history

study program Evolutionary biology, 2023/24

Dominika's thesis was primarily focused on the analysis of the relationship between the symmetry of coenobia of the model planktonic species *Desmodesmus communis* and the frequency of mixing of their habitat under experimental conditions. The thesis was conceptually based on and related to some earlier studies dealing with the plasticity of these green algae and my own studies focused on the quantitative analysis of biradial symmetries in microalgal structures. Dominika has been working on this topic essentially since 2022, but especially since 2023 and throughout this year.

Dominika is undoubtedly capable of systematic professional work, both as part of a team and independently. During her own work on the thesis, she quickly learned how to carry out the relevant experimental works. At the same time, she quickly grasped the research questions and objectives of the thesis. The thesis critically depended on obtaining well-grown coenobia from different cultured populations. Isolations from the natural samples were initially difficult, but eventually Dominika was able to obtain three independent clonal strains which, together with the model strain "Greifswald H15", obtained from CAUP, provided a sufficient basis for subsequent experiments and analyses.

During the research she worked with increasing competence and independence and managed to successfully complete practically all parts of the work in a form that can be presented in the final text. I am therefore convinced that the results adequately answer a large part of the questions we asked at the beginning of the study. The actual text was produced in stages over the course of 2024 and it is appreciated that Dominika chose to write it in English, although some parts may have suffered in language and phrasing as a result of this decision. Nevertheless, Dominika managed to prepare the graphical outputs relatively nicely.

We decided to design the data analyses in such a way that Dominika could do them independently, i.e. that she would always know what she was doing and why, and what this or that analysis was supposed to lead to, even though it might be possible to analyse some datasets in a deeper or more sophisticated way. However, this would mean that the analyses would then be a mere "black box" without deeper insight into their nature, which I wanted to avoid.

In conclusion, I would like to say that I recommend the thesis for a successful defence and I hope that Dominika Dbalá will convince the committee of the sufficient quality of her thesis to be accepted by the committee as a basis for her Master degree in biology.

Jiří Neustupa