

Supervisor's evaluation for the Bachelor's thesis of Sebastian Deisenhammer

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Sebastian Deisenhammer's bachelor's project had changed two times. First, it was to address if the core MICOS complex subunit Mic10 was really missing from the discoban amoeba *Naegleria* as was claimed in key article surveying MICOS subunits in Eukaryotes. A PCR he performed answered the question quite quickly: yes! Given that Mic10-absence from a MICOS complex would have been the interesting thing to investigate, we decided to change his project.

Sebastian then became involved in a bigger project addressing whether Mic20, a thioredoxin-like subunit of the trypanosomal MICOS complex, was actually the central catalyst for mitochondrial intermembrane space import as we had hypothesized. Specifically, he was responsible for helping his co-supervisor Jiří Heller with expressing recombinant Mic20 (rMic20) in *E. coli* and characterizing the protein. Sebastian succeeded in showing the protein was catalytically active and determined its midpoint potential, although this was just a first step toward using rMic20 to address our bigger hypothesis. Unfortunately, another colleague working on this project obtained data rejecting this hypothesis, forcing us to cut short the project.

In this evaluation, I will evaluate Sebastian's performance in the lab and then his thesis separately and then state my opinion on the conclusions of the report written by Dr. Tamara Smutná's, who kindly agreed to evaluate Sebastian's thesis

I. Evaluation of Sebastian Deisenhammer's performance in the lab

When Sebastian came to join my group in 2019, he made it clear that he was not willing to put in time on the weekends and during the summer, both in words and in his actions. This is in stark contrast to other students who I supervised from the Biological Chemistry program in the past and now, who were very hard working and willing to dedicate some of their free time into the projects.

When Sebastian was engaged, he was an excellent student. He made very intelligent comments, such as correcting my approach to creating double cysteine mutants in the plasmid for rMic20. He learned independently how to measure inferred structural changes to rMic20 by fluorescence changes in different redox conditions, even learning how to use an anoxic chamber at the Institute of Hydrobiology for initial parts of this project. He was able to read articles himself to figure out how to make the necessary calculations to make sense of the data. I should say that I am not an expert on redox biology, so while I did contribute, I feel these efforts were collaborative and Sebastian made a big contribution.

However, this spurt of engagement happened for about 2-3 weeks in the summer of 2020. He kindly agreed to come briefly in the summer since the first wave of covid forced him to return to Austria for an extended period.

Otherwise, I felt that Sebastian was not really engaged in work in the lab. I felt he was often doing the bare minimum to fulfill the project. He did not really read the articles I gave him or show any real initiative. The most striking thing I noticed about his performance during these times is that he would come to the lab very early in the morning on Thursdays and Fridays so he can leave for home as soon as possible.

So for most of his stay in the lab, he did not demonstrate any real interest in the project or science in general and it was clear he was doing this to fulfill a formal requirement instead of genuine interest.

II. Evaluation of Sebastian Deisenhammer's bachelor's thesis

Sebastian and I agreed when he left the lab in the summer of 2020 that he would send me his thesis for my input so that he can hand it in by the winter 2020 deadline. This plan quickly faded and I did not hear from him again until June 2021. He sent his thesis but failed to say what he wanted me to

do with it or mention the deadline for submitting the thesis. The latter is particularly a shame, because he sent it to use 2 months ahead of the deadline! With the paucity of information, I thought he the deadline was merely days away!

When I read the thesis I was surprised that I was more or less satisfied with the content, notwithstanding Dr. Smutná's evaluation. Once again, I felt that he independently put together the thesis adequately. I cannot comment on whether he read all the cited articles, but the key information he included was accurate in my opinion.

Because of his overall approach to the lab, I also decided not to devote my free-time into reading the thesis, as I do with the other students. So I admit that I did not scrutinize the thesis or provide very much input into how to improve it, *e.g.* the poor Discussion section. I simply was not motivated to put in my effort when it was clear to me for most of his stay Sebastian was not willing to put in the effort. Nevertheless, I think he deserves my praise for writing a thesis that he put together independently from afar.

III. Supervisor's reaction to Dr. Tamara Smutná's review

I would like to thank Dr. Smutná for reviewing Sebastian's thesis. Unlike me, she is an expert on redox enzymes and thus her comments were helpful and her criticisms justified and constructive. I particularly regret the mistakes with the figures, which I also missed. However, many but not all these problems stemmed from conversion of Microsoft Word file into PDF.

However, I do not agree with Dr. Smutná's opinion that Sebastian should get a grade 4, and thus not pass. While I cannot really recommend an excellent grade, I think that Sebastian has fulfilled the requirements for the bachelor's thesis based on the grounds that:

- He wrote the thesis pretty much by himself with minimal input from myself and Jiří Heller.
- He did show flashes of engagement, when he demonstrated the ability to work independently to characterize rMic20
- He seemed to have good hands on the bench, although the sample size is too small to make a confident conclusion
- His supervisor, who was clear about the objectives of the project, is not an expert on redox enzymes, necessitating Sebastian's independence
- He prepared the presentation and rebuttal to reviewer independently with input from colleagues only at the end of the process.

Thus, I lobby the committee members to give him a passing grade of their choosing, pending his performance at the defense on 16 September.

IV. Conclusion: a message to Sebastian

For me the major problems I identify in Sebastian is a lack of genuine interest in science and difficulty in clearly communicating information, especially things that would put him in a positive light. I think it is possible that the projects I gave Sebastian did not really interest him, which is fair enough. I do think that if he was really motivated, Sebastian has the intelligence and other skills needed to be an excellent scientist. I urge him though to choose a career (scientific or not) he really likes so that he can succeed by exploiting his talents. I also think Sebastian has to learn to communicate, especially highlight information that would put him in a positive light.