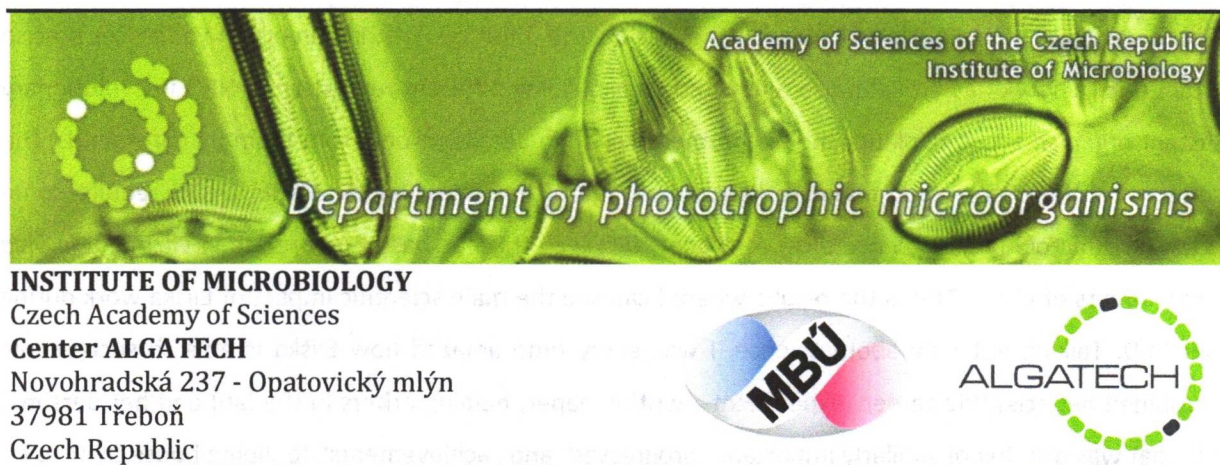




SUPERVISOR'S EVALUATION ON PHD STUDENT ELIŠKA KUTHANOVÁ AND HER THESIS.

I met Eliška for the first time in 2013, when she was starting as my master student at center Algatech. After a successful defense, I was grateful that she decided to continue with us as a PhD student. It gave her a chance to further elucidate the main topic of her "scientific life", as I would call it, the mechanism of photoprotective non-photochemical quenching - NPQ.

Four years later, data on the topic are now summarized in Eliška's PhD thesis entitled "*Regulation of photosynthetic activity of pigment-protein complexes in thylakoid membranes*". These results were collected with three model organisms: *cryptophytes*, *chromerids* and in higher plants thylakoids, the most common model in the "NPQ research". In my opinion, the comparative approach presented in Eliška's thesis, is one from the main advantage of her work. It allowed her to address validity of some generally accepted ideas in the field (e.g. same/different pH sensitivity of antenna proteins). For the purpose of the comparison, Eliška had to learn how to work with three different species from biochemical (isolation of proteins), biophysical (proteins/cells characterization) and physiological point of view. Therefore she managed to handle a large number of methods including results evaluation and interpretation. Clearly, she employed her enthusiasm and experimental skills, because the thesis is supported by 5 co-authored articles directly connected with the main topic of the thesis (in 3, she is the main author). Except this, she was also involved in the 3 other projects/papers with different topics where she was included because of her biochemistry skills especially in isolation of pigment-protein complexes. In fact, these skills were visible from the beginning and thanks to Eliška's effort in testing different methods the whole group has gained expertise in biochemical isolation of pigment-proteins from phototrophs.

I have to pointed out, that Eliška is a goal-oriented person with a clear gift in finishing projects; from the three goals we together established at the very beginning of her PhD studies (namely isolation

of pure antenna proteins, elucidation of the effect of xanthophylls/protons on *in vitro* and *in vivo* quenching, NPQ study in proteoliposomes) she was able to finish two of them in only 4 years. Her precise experimental work has brought also a new model explaining different regulation of NPQ in evolutionary distant organisms (e.g. in plants and in chromerid alga). In details, in one from them (in chromerids) the antenna proteins are ready dissipate light excess, the other ones (higher plants LHCII) require some additional factors (e.g. PsbS proteins) to trigger NPQ – all these is based on precise *in vitro* and *in vivo* experiments of Eliška. This is the results where I can see the main scientific impact of Eliška work during her PhD. Talking not only about science, I was every time amazed how Eliška is able to successfully combined her scientific career (experiments, writing paper, helping others in the lab) and her personal life that was also full of similarly important “progresses” and “achievements” (building house by he own hands, getting married etc.). Moreover, she has a personal gift of positive and heart-oriented attitude towards people that made a fruitful and uplifting atmosphere in our group. Well, I could see only one weak point; even though she was successful in presenting data on international conferences (as a talk or a poster) it was rather not so easy to send her to foreign conferences alone as there was a chance she won't reach the place due to series of “bad luck” events.

Nevertheless, in my opinion, Eliška fulfils all the pre-requisite for PhD study (presenting data in several peer-reviewed journals; paper with first authorship; the active attendance on international conferences; the teaching duties at university) therefore I fully advise her to be given a PhD degree after its successful defense in front of committee.

In TŘEBOŇ, May 20, 2020



Radek Kaňa

PhD supervisor