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Posudek školitele na doktorskou dizertační práci Mgr. **Lenky Chodákové**

Circadian clock genes in the circadian clock and photoperiodic timer in *Pyrrhocoris apterus*

Lenka joined our laboratory during summer 2013, after she won fierce competition for one PhD position supported from the INsecTIME project. So, Lenka needed only 5.5 years to finish her PhD, which is unusually short duration, at least for our laboratory. Lenka had no background in Chronobiology, yet she very quickly picked all necessary skills. Here, I would especially like to acknowledge guidance and help from Aska, at that time a postdoc in our lab, who carefully and systematically guided her. The only downside was that they started to speak Polish at the level, where I had no chance to understand.

I do not want to talk in detail about Lenka's thesis, which consists of two published papers and two manuscripts that will be publishable. I think it is reasonable amount of work and if you appreciate difficulty of research on non-model organism, it is actually a lot of work and a lot of results. What I would like to stress out at this point is the fact that Lenka did even more experiments which are not presented in her thesis. I have also very appreciated the amount of effort, time and responsibility which Lenka dedicated to writing the thesis. It is important to note that our faculty provides only one course on scientific writing and that is only very recent course.

Important part of duties during the PhD study is teaching and that is the field where Lenka stands out as well. She is able to communicate with students, she likes it and she really pays attention to it. Lenka is also a co-supervisor of one bachelor student, who will, hopefully finish his degree.

On personal level, Lenka is really nice person in the team who is willing to help other people, and not only in the lab. And she is excellent in organizing pub meeting.

Taken together, my general impression is that Lenka is really hardworking and enthusiastic person. She is a great team member, willing to help others and going very well with everybody. So I would like to thank her for joining our group for a few years and wish her good luck in future.

České Budějovice
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David Doležel

Mentor's statement on PhD thesis by Lenka Chodáková "Circadian clock genes in the circadian clock and photoperiodic timer in *Pyrrhocoris apterus*"

Lenka Chodáková joined our group and participated in the systematic research of circadian clock and photoperiodic timer. Although some research directions required team effort and various expertise and skills, Lenka's contributions can be clearly defined, specifically:

- The thesis starts with introduction entirely written by Lenka only with guidance from mentor.
- First chapter is already published study that appeared in Journal of Biological Rhythms in 2016. This is, to my knowledge, one of the largest study comparing circadian clocks between various geographic populations. Lenka is the first author, which entirely reflects that she has obtained vast majority of experimental data. The study was co-authored by another 11 colleagues, who contributed experimental material, provided preliminary, contributed phylogenetic analysis, and participated in data analysis. The manuscript was mainly written by D. Doležel.
- Chapter two is detailed systematic analysis of circadian clock genes in the linden bug, *Pyrrhocoris apterus* with Lenka as a first author. This chapter is not published yet, but it will be a major part of manuscript submitted during 2019. The study is detailed description of circadian clockwork in *P. paterus*, including gene discovery, gene expression analysis and most importantly systematic functional analysis which even identified two new circadian clock genes. This study has therefore potential to be published in some high impact factor. Lenka is again first author, which reflects her major contribution to the study. Lenka wrote this chapter only with minimal advices from the mentor.
- Chapter three was published in journal Physiological Entomology. It describes expression of circadian clock genes during nymphal stage of *P. apterus* and further tests functional role of the *cycle* gene. Lenka is co-author with equal contribution which reflects her active participation in all experiments. The first author, Joanna Kotwica-Rolinska, wrote majority of the manuscript with contribution of other co-authors.
- Chapter four is unpublished characterization of *cryptochrome 2* mutants created with CRISPR-CAS9 gene editing. The process of CRISPR-CAS9 mutagenesis will be published separately elsewhere (with Lenka as a co-author). This chapter is solely focused on the biology of full *cryptochrome 2* mutant when both the circadian clock phenotypes and diapause was assessed. With addition of a few more analysis, the material is sufficient for publication in some focused journal (such as Journal of Biological Rhythms, or Journal of Insect Physiology).
- Discussion and conclusion was entirely written by Lenka.

Taken together, Lenka's thesis is important addition to chronobiology, which was possible thanks to her systematic and persistent effort.

In České Budějovice
12.12.2018


David Doležel, mentor