



## Supervisor's evaluation of the PhD Thesis of Anna Máčová

### ***Apodemus* vs. *Eimeria*: Evolutionary factors of speciation and genomic diversification in host-parasite system**

Anna's PhD topic grew from her bachelor and master's studies that were aimed at phylogenetic relationships between and within eimerian parasites in small rodents, especially in *Apodemus* mice.

In her PhD thesis, focused on more complex and advanced molecular techniques, Anna extended her spectrum of host organisms not only to *Apodemus*, but also to Arvicoline rodents and shrews, and not only to *Eimeria*, but also to *Isospora*. In the course of her PhD study, she successfully contributed to the research on host-parasite relationships, and on host specificity and genetic diversity in coccidian parasites. At this point, it has already shown many new phylogenetic/evolutionary phenomena previously unknown in eimerians, and it turned out impressive how informative the studied systems can be. The width of the studied models presented many advantages, but also challenges, mainly in obtaining sufficient numbers of samples for population-genetic analyses across Europe. Fortunately, Anna proved to be very enthusiastic, especially in field sampling. She usually relied on her own ability to get the mammal samples, to examine them parasitologically, and to isolate their DNA and obtain sequences. Perhaps thanks to her we now have a very good sampling across the whole Czech Republic, including the northwestern part of our country and eastern part of Germany where it is supposed to be a secondary contact zone of the *Polyplax* lice that are studied by our colleagues from Prof. Hypša's lab. In addition, during her field sampling, Anna also collected various samples for the others (e.g. tissue samples, skin swabs, bird mites, ectoparasites such as ticks and keds, and many others), so she also helped other research groups a lot to get data.

I would like to stress that her work covered quite a large span of biological aspects connected to the studied group; from the field sampling, to the microscopical and morphometrical analyses used in classical descriptions and taxonomy, up to phylogenetic and population-genetic analyses. These analyses, especially the input detection coprological examinations, were based on substantial amount of data (thousands of examined samples).

I found a very good collaborator in Anna, who was able to work hard and intensively as it is expected from a PhD student, and she managed to learn the new methods quickly. Her weakness is, however, in the reluctance to compile her results into articles, and I always had to encourage her and push her to do so. Sometimes it took too long, as did the completion of this PhD thesis. Nevertheless, she is aware of this drawback, and finally, her PhD thesis was written, in my opinion and to my surprise, very clearly. Although it was written a bit hastily, and I did not feel comfortable to read it in such a short time before the final deadline.



Přírodovědecká  
fakulta  
Faculty  
of Science

Jihočeská univerzita  
v Českých Budějovicích  
University of South Bohemia  
in České Budějovice

I am satisfied with the amount of data and resulted publications that arose from Anna's PhD study, especially with the data that came from the large amount of *Apodemus* and Arvicoline samples. As a result of her PhD studies, Anna managed to publish 5 manuscripts in international scientific journals (plus one manuscript currently under review, and the second prepared for submission), and she was not afraid to present her results at a number of international conferences abroad. I am looking forward to Anna presenting her main findings in her defence, and I am also looking forward for future papers concerning the population-genetic structure of the hosts - the 3 species of *Apodemus* mice - and for our further cooperation.

I recommend to accept the Thesis as a base for the PhD defence and the following formal procedures.

In České Budějovice, March 26, 2021

Jana KvičEROVÁ

Jana KvičEROVÁ, DVM, PhD.  
Assistant Professor  
Department of Parasitology  
Faculty of Science  
University of South Bohemia  
Branišovská 1760  
37005 České Budějovice  
Czech Republic  
kvicej00@prf.jcu.cz