

Supervisor's evaluation of Ph.D. thesis by Mgr. David Hartmann

title: "Selected proteolytic aspects as targets to combat ticks and tick-borne pathogens"

David Hartmann entered the laboratory of Vector Immunology, Institute of Parasitology, BC CAS, in 2012. At that time, he was an undergraduate student of the Faculty of Science working on his diploma work supervised by the head of the laboratory Dr. Petr Kopáček. Two years later, after obtaining his Ms. degree title (Mgr.) he decided to continue as a PhD student under my supervision working on topics within mine ongoing projects funded by the Grant agency of the Czech Republic (GAČR). These were dedicated to proteases from ticks and tick-borne diseases. In addition to the major topics summarized in his PhD thesis, David was involved in some other activities related to my previous work on toxoplasmosis and malaria, e.g., expression of *Toxoplasma gondii* dense granule proteins and expression of *Plasmodium falciparum* plasmepsins X and IX in *E. coli* bacteria and the yeast *Pichia pastoris* - topics, that took a lot of David's effort and time but have not led to final publications and thus are excluded from the presented PhD thesis.

The relatively wide topic "Selected proteolytic aspects as targets to combat ticks and tick-borne pathogens" of the thesis is influenced by the fact, that we have been long-term working on tick vectors only, but since 2015 we slowly transformed my small sub-group in the lab to work exclusively on tick-borne apicomplexan parasites of the genus *Babesia*, which is also reflected by the changed focus of the two major GACR standard projects dedicated first to tick legumains (2014 -2016) and then to *Babesia* proteasome as a potential target for therapy (2017-2019). My subgroup in the laboratory substantially relayed financially on these projects and David, as a key member of the subgroup, had to transform his original focus on in proteases in ticks involved in tick physiology and immunology and has significantly helped us in the initial days working on *Babesia* parasites and their proteasome. I must note that David has great skills in computer and IT related techniques, graphical software and is very reliable in his experimental performance. However, I must also mention my subjective feeling that some of David's personal traits sometimes block him from a more rapid progress in his scientific career, which is a pity and I hope he will try to improve this in the future. This is reflected e. g. by the latest deadline for his PhD thesis defense and other issues during his PhD program. On the other hand, David stopped working for my projects in 2019, and since than he is solely involved in projects of Dr. Jan Perner as a key member of his subgroup in our laboratory working on topics unrelated to this PhD thesis.

David's overall contribution to my projects over the five years working on my programs is reflected in three papers in scientific journals with decent impact factors and one review in highly impacted *Trends in Parasitology*. David's contribution is underlined by the fact that he is one time the first author, one time shares the first authorship, and two times is the second author on these published manuscripts. In addition, he shares the first authorship of the major output of his thesis, which is included in the list of publications as manuscript V - in preparation (submission has been several times postponed by our major collaborators from the group of Dr. Mareš, IoCB Prague, the MS should be submitted for publication within 2021).

In Summary, I evaluate David's thesis suitable to obtain the PhD degree title from the Faculty of Science, University of South Bohemia. I hope he will confirm my subjective evaluation of his PhD project by convincing all reviewers and members of the committee upon the oral presentation of his work during the PhD defense in September/October 2021 and I wish him only the best for his future personal life and professional career,

In Č. Budějovice, August 25, 2021


RNDr. Daniel Sojka, PhD., supervisor