



## Review of Doctoral Thesis

### Genetic regulation of *Leishmania* infection

Ph.D. candidate: Yahya Sohrabi, M.Sc., Ph.D.  
Supervisor: doc. Marie Lipoldová, Ph.D.  
Program: Molecular and Cell Biology, Genetics and Virology  
Institute: Institute of Molecular Genetics of the Czech Academy of Sciences

The Ph.D. candidate – dr. Sohrabi – is an experienced researcher, who already obtained a Ph.D. degree in Immunology 5 years ago and to date, he has published 15 research papers, out of which 5 are included in this thesis.

The thesis is focused on immunogenetic control of *Leishmania* and Tick-Borne Encephalitic virus infections employing mouse recombinant congenic strains as a model. The genetic control and regulation has been tested in the context of host susceptibility, parasite load, and the role of selected effector molecules: interferon-induced GTPases and Fc-gamma-receptor 4. The project was designed in the context of current knowledge and the results are accordingly discussed.

The thesis consists of 3 published research papers, 2 published reviews/theoretical papers, and 1 research paper that is currently under review. The quality of the papers is supported by the fact that they were accepted in highly impacted scientific journals, ranging from 2.7 to 7.9, with 5.5 as a median. Some of them have already been cited in other papers.

**Question 1:** In page 60, the candidate states his contribution to some of the papers. Since the presented papers have several co-authors, could the candidate state in more detail his contribution to each of the paper?

The thesis itself consists of the Abstract (of unusual length, 2x4 pages), Introduction (28 pages), Aims of the study and Organization of the thesis (2 pages), Summary of the results and discussion (12 pages), References (160 items), and 6 papers/manuscript as supplement files. There is no List of abbreviations.

Introduction contains all relevant background information, is detailed and well-written with minimum mistyping errors. The text is completed with well-selected figures (5 items) and summarizing tables (2 items).

**Question 2:** pg. 17 – You mentioned co-infection of HIV and *Leishmania*. Can you describe how they affect each other in terms of susceptibility to infection with the other pathogen? Is it only the HIV infection that makes the person more susceptible to *Leishmania* infection or is that valid also vice versa?

**Question 3:** pg. 18 – Concerning vaccination against leishmaniasis, is there any human vaccine in clinical testing?

**Question 4:** pg. 19 – “The parasite has minimally two stages of life cycle in at least two hosts, a sand fly vector and a vertebrate.” What did you mean by “at least”? Is it possible for *Leishmania* parasites to have three or more host cycle?

**Comment:** pg. 22 – There are more than 5 countries affected greatly by visceral leishmaniasis. In addition to those mentioned in the thesis (Bangladesh, India, Nepal, Brazil, South Sudan and Sudan), a significant number of VL cases are also reported from China, Ethiopia, Kenya, and Somalia.

The Introduction ends with well-defined aims of the project and the list of publications. In the following chapter - Summary of the results and discussion – the author provides brief summary of the introduction, methods, results, and conclusions separately for each of the paper. There is no general discussion of all the papers together.

**Question 5:** The last aim of the thesis was defined as the comparison of genetic control between *Leishmania* and TBEV infection. Could you compare and contrast the immune regulation of those two – protozoan and viral – infections?

In conclusion, the Ph.D. thesis of dr. Yahya Sohrabi is a comprehensive piece of work, nicely written and with a lot of novel and important findings for the scientific community. The hypotheses were coherent and the experiments well-designed. In my opinion, this thesis meets all requirements of a PhD thesis, and thus I can recommend dr. Sohrabi to be awarded the PhD title in Molecular and Cell Biology, Genetics and Virology.

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