

## Supervisor's Report for Mr. Martin Strnad M.Sc.

Dear Chairman, members of the committee, respected reviewers of the Ph.D. thesis, ladies and gentlemen.

It is my pleasure to write the Supervisor's report for Martin Strnad as part of his doctoral thesis defense. I have to start by saying that even though my role in the lab was as Martin's supervisor, Martin's skills concerning microscopy and the methods he has adapted, associated with many techniques used, would not have been possible without the supervision of Dr. Marie Vancova. I believe that the success Martin has had is mostly because of this dual supervision. At the same time I know that Marie agrees with me in that we have been the fortunate ones to have a Ph.D. student as talented as Martin is.

I first got introduced to Martin while he was completing his Master's work and it was clear to me from his lab presentations and personal interactions that not only was he smart and motivated but clearly had a wonderful set of skills when it came to microscopy and methods associated with it. It was therefore a pleasure for me to say yes when Marie asked me if I would co-supervise Martin's Ph.D. work. As you can see from Martin's publication record as a Ph.D. student and his CV, he certainly has applied himself extremely well to the central theme of his work. Martin wanted to use the methods in microscopy that he knew and those which he would be learning to understand how certain surface proteins aided the movement of *Borrelia* and thus its dissemination during infection. Even though the initial months, as with any Ph.D., work were bumpy, Martin motored along to the point where he had his first first author paper in 2015. I can tell you first hand, that luck was minimal here even though the duration of time it took to get the data together was extremely short. Martin displayed his abilities of clear thinking when attacking the question, planning the experiments well given the tight schedule of the instruments being used and then analyzing the obtained data. These qualities are what have made Martin continue to be successful in the lab. Another reason for Martin's success is that he actually has a good knack for writing manuscripts. When there is a strong base on which to work on, then the development of manuscripts is smoother and faster and Martin is good at doing just that. He has also been successful in obtaining a two year doctoral grant from the University as well as receiving in 2019 a two-year scholarship from the Czechoslovak Microscopic Society and Thermo Fisher Scientific Brno s.r.o. for scientists under 35 primarily based on the use of modern imaging techniques for his research. He also obtained a fellowship to travel to the lab of Dr. Vivian Kjelland in Agder, Norway early in his study.

Martin as well has displayed a very important trait for a burgeoning young scientist and that is his collaborative side during his Ph.D study. His three month stay at the Rocky Mountain Labs in Hamilton Montana in the lab of Dr. Patricia Rosa, resulted in him being a co-author on a paper. Dr. Rosa was fully appreciative of Martin's time in the lab and his overall contribution. Martin initiated what is now an over five year collaboration that we have with Prof. Peter Hinterdorfer and Dr. Yoo Jin Oh, from the Johannes Kepler University in Linz. Their background in atomic force microscopy paved the way to helping

Martin investigate and understand how specific proteins of Borrelia possibly help them move in vivo using in vitro data. He has also come up with a couple of ingenious novel experimental methods including an adaptation of the artificial feeding method which I believe will be very useful for future research in the tick/borrelia field. Martin helped to establish a novel correlative approach combining cryo-fluorescence and cryo-scanning electron microscopy that he applied for the study of interactions between Borrelia and host cells. His results/photos have been chosen by the company Leica Microsystem as one of the applications for the cryo-fluorescence microscope.

Martin has been involved in teaching electron microscopy courses at the University of South Bohemia: Biological specimens in electron microscopy, and the practical EMBO course (2019) organized by the Laboratory of electron microscopy. Besides this he has been part of a team teaching a practical course in Biochemistry and Molecular Biology B.Sc. Programme.

Martin has been the ideal Ph.D. student with the qualities stated above along with his good-natured persona and wide smile. He has always been ready to give a helping hand or advice to students in the lab and within the Institute and I cannot recall Martin ever saying no to a task if it was possible for him to carry it out. The fact that he managed to reach this stage while starting to raise 2 very young kids shows that he can keep his wits about him while juggling science and family. Martin has an extremely bright future ahead of him and I consider him now a very close colleague who is on the cusp of even bigger and brighter things. In conclusion I wholeheartedly support and recommend Martin Strnad's thesis to be accepted for his Ph.D.defense.

In České Budějovice

Date : 12.7.2021

A handwritten signature in blue ink, appearing to read 'R. Rego', with a long horizontal line extending to the right.

Ryan O. M. Rego. Ph.D.