

Supervisor's Evaluation of the Master Thesis

Author: Hana Velanová

Title: Growth kinetics of the Lyme disease spirochetes in vector ticks *Ixodes ricinus* and *Ixodes scapularis*

Hana Velanová has been a member of our team since the autumn of 2018. Work on her master project was lined with two disasters. The original topic of Hanka's master thesis was the identification and purification of paralytic peptides from the saliva of the Australian tick *Ixodes holocyclus*. However, this project, solved in collaboration with the University of Sydney, had to be suspended due to extreme drought and massive bushfires across Australia in the winter of 2018/2019. Hanka had to quickly reorient herself to the new topic. The main aim of the presented Master thesis was to test whether an American tick *I. scapularis* is able to transmit European *B. afzelii* spirochetes and vice versa if a European tick *I. ricinus* is able to transmit American strain of *Borrelia burgdorferi*. The second aim was to describe the growth kinetics and transmission dynamics of both spirochetes in both experimental settings. Hanka proved that both tick species are able to transmit both *Borrelia* strains. Results also suggest that *B. afzelii* and *B. burgdorferi* display an opposite strategy during nymphal feeding. Data further support our previous suggestions that the tick plays a passive role in the transmission, and more importantly, the transmission of different *Borrelia* species is not identical.

The second disaster came when Hanka was finishing her experiments and writing her thesis. During the coronavirus outbreak, our laboratory was fully occupied with the diagnostics of the disease. Even in this challenging time, Hanka was able to complete most of the planned experiments and wrote a high-quality diploma thesis on her own. At this point, I would like to highlight Hanka's ability to write a well-structured and logically arranged scientific text in English.

To sum up, Hanka is an extremely promising young scientist. Thanks to her friendly nature and positive mood, it was a pleasure to work with her. I want to thank her for her excellent work, and I am fully convinced that the submitted thesis can be accepted as a Master thesis and evaluated by the mark "1" ("A").

In České Budějovice, July 14th 2020.

Radek Šíma