



Přírodovědecká  
fakulta  
Faculty  
of Science

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

## SUPERVISOR'S STATEMENT ON BACHELOR THESIS

**Name of the student:** Angela Kienberger

**Study program:** Biochemistry

**Department/Institute:** Institute of Parasitology, Academy of Sciences of the Czech Republic

**Thesis title:** Detection and isolation of relapsing fever spirochete, *Borrelia miyamotoi*, from *Ixodes ricinus* collected in the Czech Republic: separation of relapsing fever and Lyme disease spirochetes by cultivation on solid medium

**Supervisor:** MSc. Maryna Golovchenko

**Supervisor's affiliation:** Vědecký asistent

|                                                                                                                                                | Point scale <sup>1</sup> | Points              |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|
| <b>(1) FORMAL REQUIREMENTS</b>                                                                                                                 |                          |                     |
| Formal and graphical quality of the thesis                                                                                                     | 0-3                      | 3                   |
| Ability to work with literature                                                                                                                | 0-3                      | 3                   |
| Language and stylistics                                                                                                                        | 0-3                      | 3                   |
| Formal requirements – points in total                                                                                                          |                          | 9                   |
| <b>(2) PRACTICAL REQUIREMENTS</b>                                                                                                              |                          |                     |
| Fulfillment of the aims                                                                                                                        | 0-3                      | 3                   |
| Ability to understand the results, their interpretation, and clarity of the results, discussion, and conclusions                               | 0-3                      | 3                   |
| Discussion quality – interpretation of results and their discussion with the literature                                                        | 0-3                      | 2                   |
| Experimental difficulty of the thesis, independence in experimental work                                                                       | 0-3                      | 3                   |
| Contribution of the thesis to the knowledge in the field and the possibility to publish the results (after eventual supplementary experiments) | 0-3                      | 3                   |
| Practical requirements – points in total                                                                                                       |                          | 14                  |
| <b>POINTS IN TOTAL (MAX/AWARDED)</b>                                                                                                           |                          |                     |
|                                                                                                                                                | 23                       | (0-24) <sup>2</sup> |

<sup>1</sup> Mark as: 0-unsatisfactory, 1-satisfactory, 2-average, 3-excellent.

<sup>2</sup> Enter the number of points awarded.

### Comments of the supervisor on the student and the thesis:

The bachelor thesis of Angela Kienberger aims first to detect and then to isolate *Borrelia miyamotoi*, relatively new in the Czech republic spirochete that cause relapsing fever and is transmitted by hard ticks *Ixodes ricinus*, the common vector of endemic in CR Lyme borreliosis. The work was conducted within the applied research program of the Ministry of Agriculture ZEMĚ, research project "Spread of ticks and tick-borne diseases: novel and neglected risks to domestic and farm animals and humans". Hundreds of tick samples were collected within this project and some of them were detected as *Borrelia miyamotoi* positive. In all these samples *B. miyamotoi* was present as a co-infection with the different species from *B. burgdorferi* sl complex. The main goal of the presented Bc thesis was to separate the relapsing fever and Lyme disease spirochetes by cultivation on solid medium and to obtain the pure culture of *B. miyamotoi*.

After initial supervision, Angela performed all the work independently and with great responsibility and care. It must be mentioned that the goal that was set for Angela was not an easy one as *B. miyamotoi* is known as fastidious bacteria which is difficult to grow *in vitro*. The credit should be given to Angela, she managed to cope with her assignment.

During her work in the laboratory, Angela learned all necessary methods and techniques, such as DNA extraction, PCR (conventional, nested), electrophoresis, purification of PCR products, preparation of samples for sequencing, reverse line blotting, medium preparation, cultivation of borrelia in liquid and on solid medium as well as. Angela showed her ability to work with scientific literature, using a large number of scientific papers to reach her goals. Based on different published papers dealing with borrelia cultivation, Angela presented her own modification of solid medium for *B. miyamotoi* cultivation. She also managed to write a detailed but at the same time very specific introduction to her work and then interpret the results obtained and compare them with previously published data.

Despite the limited time and some difficulties during the implementation the goals of the project, Angela completely fulfilled her aims. As a result of her work with us, she has gained in-depth knowledge and developed problem solving and evidence gathering skills.

The results obtained by Angela Kienberger will be included in the broad analysis of tick isolates routinely performed in our laboratory and could be used for further publications.

The last but not the least that should be mentioned are Angela's personal qualities. Her main feature is insistence in achieving her goals, commitment and determination. I believe that she is ready to grow personally and professionally, and I am confident that she will be an excellent student now and scientist in the future.

### Conclusion:

In conclusion, I r e c o m m e n d the thesis for the defense.

In České Budějovice      date 17.01.2023

  
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signature