



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: Matilda Emily Freytag

Study program: Biological Chemistry

Department/Institute: Faculty of Science

Thesis title: Telomerase activity in *Bombus terrestris* and *Apis mellifera*

Supervisor: RNDr. Radmila Čapková Frydrychová, Ph.D.

Supervisor's affiliation: Institute of Entomology, BC CAS, České Budějovice

	Point scale <sup>1</sup>	Points
<b>(1) FORMAL REQUIREMENTS</b>		
Formal and graphical quality of the thesis	0-3	1
Ability to work with literature	0-3	1
Language and stylistics	0-3	2
Formal requirements – points in total		4
<b>(2) PRACTICAL REQUIREMENTS</b>		
Fulfillment of the aims	0-3	2
Ability to understand the results, their interpretation, and clarity of the results, discussion, and conclusions	0-3	2
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	2
Contribution of the thesis to the knowledge in the field and the possibility to publish the results (after eventual supplementary experiments)	0-3	2
Practical requirements – points in total		10
<b>POINTS IN TOTAL (MAX/AWARDED)</b>	<b>24</b>	<b>14</b>

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

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

The thesis has been a part of the long-term project conducted by my team and focused on research of aging process in eusocial insects. Eusocial insects provide excellent model systems for research into ageing as these insects reveal notable differences in lifespan between reproductive and non-reproductive castes within a given species. The lifespan of reproductives (kings and queens) might be up to 100-fold longer than that of non-reproductives. In previous study at honeybees we observed the upregulation of telomerase activity in somatic tissues of queens, showing a link between telomerase and the extended lifespan in reproductives. *B. terrestris* is a hymenopteran species with primitive social organization, its colonies are annual and have smaller population sizes than those of more advanced social insects. The main goal of this thesis was to test telomerase activity in somatic tissues of different castes of bumblebees to see if this species, despite its primitive social organization, could have the same pattern in telomerase activity as observed in honeybees. Matilda's thesis helped to support our hypothesis that the lifespan differences between bumblebee workers and queens are simply related to the long diapause period, and lifespan regulation between honeybee and bumblebee queens significantly differ.

Matilda is a really nice person, and I was delighted to meet her and have her in my team. To assess her experimental work, at some moments, I would have appreciated a little greater involvement and activity, therefore I assess this part of her work as average (with 10 points). However, I was pleased with her work on the text part of thesis, and I assess it between excellent and average (with 4 points).

**Conclusion:**

**In conclusion, I**

**r e c o m m e n d**

**the thesis for the defense.**

**In České Budějovice,            January 30, 2020**

  
signature