

PhD Thesis Acceptance Report
Research Discipline Council of Biological Sciences
Jagiellonian University in Kraków

Candidate's name and surname: ..**Natalia Szabla**.....

PhD Thesis Title: ...**Cell size as an adaptation – Testing predictions of the theory of optimal cell size**...

Thesis Supervisor: **prof. dr. hab. Marcina Czarnołęskiego**.....

Assistant Supervisor / Second Supervisor/ Co-supervisor (if applicable):.....

Reviewer:**Dr. Wilco C.E.P. Verberk**.....

THESIS EVALUATION

1. Scientific merit of the thesis

a. Originality of the research (25-200 words):

The thesis addresses an original question regarding (i) the extent to which cell size differences can be induced by thermal conditions experienced during either ontogenetic development or in the evolutionary past and (ii) the consequences of these cell size differences for hypoxia tolerance and thermal preference.

b. Scientific merit of the chapters / articles (25-200 words):

The chapters describe relevant experiments used to test the main question, providing a verification or falsification of the a priori hypotheses. When a priori hypotheses are not fully supported the chapters also speculate on a posteriori explanations, providing directions for follow up research.

2. Substantial merit of the thesis

(ability to introduce the research topic and clarity of research hypotheses, the choice of research methods and statistical tools for data analysis, presentation and critical analysis of the research data, the ability to discuss research data and the theoretical background, clarity and quality of the conclusions) (25-200 words):

The general chapters explain the research topic in detail and logically lead to the hypotheses derived from the body of literature. The experimental methodology and data analysis is explained such that it can be replicated. I appreciated the explicit statements in the conclusions as to whether the results support the hypotheses or not, and these conclusions were aligned with the experimental results.

3. Layout and register

(layout, register and the clarity of the language, the quality of the visual material etc.) (25-200 words):

The layout of the thesis and clarity of the language was good and the visualisation of the experimental setup and the results from the models was clear.

4. Critical notes

I found that the discussion on alternative explanations when the results did not support the hypotheses could be strengthened. Currently, alternatives were outlined qualitatively, but I not quantitatively. To what extent do the suggested alternatives make sense; can they explain the deviations only, or do they also shed light on where the results were consistent with the a priori hypothesis? I think there is scope for a more direct approach (e.g. testing whether cell size and body

size differences from CH1 relate to results in Ch2 and CH3 by including these directly in the model). Also, to what extent are results from Ch2 and Ch3 consistent with one another? Are we looking at the same deviations in each chapter (i.e. flies evolved in CH with large body size composed of small cells)?

5. **Final grade** (justification 25-200 words):

I, hereby, declare that the reviewed PhD thesis by **Natalia Szabla** meets the criteria pursuant to art. 13.1 of Act of 14 March 2003 on Academic Degrees and Academic Title and Title in the Arts (O.J. no 65 item 595 as amended) and request that the Research Discipline Council of Biological Sciences of the Jagiellonian University in Kraków accepts **Natalia Szabla** for further stages of doctoral proceedings.

YES/NO

I, hereby, request that the thesis is accepted with distinctions. Justification (25-200 words)

YES/NO

Justification: While I believe that the thesis is a solid piece of work improving our understanding of the causes and consequences of cell size, I would expected a more in depth discussion and set of analysis to consider a distinction.

.....**15 October 2024**.....
date

.....**Dr. Wilco Verberk**.....
Reviewer's signature



INFORMATION FOR THE REVIEWER:

A digital copy should be sent to:
nauki.biologiczne@uj.edu.pl

A duly signed original should be sent to:

**Rada Dyscypliny Nauki biologiczne
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