



Review of USB FFPW PhD thesis

First name(s), surname, titles of the PhD student: Swapnil Gorakh Waghmare, Ph.D.	First name(s), surname, titles of supervisor: M.Sc. Azin Mohagheghi Samarin, Ph.D.
Title of PhD thesis: Fish oocyte ageing and histone modifications	

REVIEWER:

Surname: Balasubramanian	Institution: University of Hyderabad India
Name: Senthilkumaran	
Titles: Prof.	E-mail: bsksl@uohyd.ac.in
Please describe your professional relationship to the PhD student: known through his supervisor.	Please describe your field of expertise: Fish Molecular Endocrinology and Reproductive Biology, Sexual Development, Nanotoxicology.

QUESTIONNAIRE

Originality, scientific importance, perspectives and impacts of results presented in the PhD thesis for basic and/or applied research

Evaluate competitiveness of the PhD thesis in the international context and compare its level with the current state of the art in the field (**extent ¼ – ½ page**):

The thesis is well written and seems novel in terms of the objectives framed. The contents are definitely substantial to allow coverage of the field. The literature review on the topic is comprehensive and is well organized to discuss the scientific importance of the research work carried out, from both a theoretical and an applied perspective.

Elaboration of the PhD thesis, objectives of the work and deliverables

Evaluate the overall level of elaboration of the PhD thesis (structuring of the main text, comprehensibility, logicity of the chapters and their ordering) and the originality of the selected approaches to solve the objectives; evaluate publications and whether the results described correspond to objectives of the PhD thesis (**extent ¼ – ½ page**):

The thesis has been compiled with well-defined objectives wherein the results describe corresponds to the objectives. The two publications are well addressed with high impact to the current state of the art in the field. It is well organized with useful illustrations.



OVERALL COMMENTARY ON THE PhD THESIS

Please write in the box specific comments concerning the PhD thesis in extent of 1-2 pages:

Present Ph.D. thesis entitled, “ *Fish oocyte ageing and histone modifications.*” submitted by Mr. Swapnil Gorakh Waghmare has been compiled well. The author has performed investigations on different aged oocytes and the embryos originated from those oocytes to elaborate histone modifications as a crucial epigenetic regulator during fish oocyte ageing. The candidate has conducted few important experiments pertaining to DNA methylation across species meticulously.

The thesis focusses on oocyte ageing with respect to histone modifications. In this context oocyte ageing, with DNA methylation and acetylation analysis has been carried out in zebrafish, grass carp and common carp. Overall, the result for the first time, report the presence of H3K9ac, H4K5ac, H4K8ac, and H4K12ac, as well as the absence of H3K14ac and H4K16ac in common carp and grass carp metaphase II oocytes. Furthermore the, findings of this thesis work suggest a possibility to develop an epigenetic marker for egg quality associated with fish oocyte ageing.

Focusing the results to delineate the species-specific progression and changes during oocyte aging across species will provide more insights. I also had given few minor suggestions while communicating the thesis chapter for manuscript publications in reputed journal (Usage of proper gene/protein nomenclature across the whole text, for example, *hat1*, *sir1*, *sirt2*, *sirt3*, *cbx1* follows random nomenclature patterns. Species nomenclature should be italicized). I appreciate the candidate for publishing the work in internationally peer-reviewed journals.

I congratulate both the candidate and supervisor for executing this kind of work for a Ph.D. programme. I wish to extend my special appreciation to Dr. Azin Mohagheghi Samarin, supervisor, who had taken meticulous care in advising the candidate.

The candidate may answer the following queries during defense.

- (i) The author has performed several experiments on oocyte aging. How these results can be envisaged in terms of oocyte maturation?
- (ii) How would the author relate histone acetylation at H3K9, H3K14, H4K5, H4K8, H4K12, H4K16, during oocyte ageing in common carp and grass carp with that of zebrafish to indicate species-specific histone acetylation patterns?
- (iii) How would the author comment on the expression of *esr2b*, *star* and *fshr* with oocyte ageing in terms of steroidogenesis and oocyte growth?



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a ochrany vod
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Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice
Czech Republic

Overall, based on my evaluation,

**I strongly recommend the thesis to be accepted for the requirements for the award of
“Ph.D Degree”.**

FINAL RECOMMENDATION

- ☒ PhD thesis can be recommended for defence
☐ PhD thesis can be recommended for defence with reservations
☐ PhD thesis cannot be recommended for defence

14/12/2021, Hyderabad, India

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Date and place

B. Senthilkumaran

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Name and signature