Fakulta rybářství
a ochrany vod
Faculty of Fisheries
and Protection
of Waters

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

Confidential

Supervisor´s Review of USB RIFCH PhD Thesis

Surname of the PhD student: **Bondarenko Olga, MSc**	Name of supervisor: **Dzyuba Borys, PhD**
Title of PhD thesis: The role of osmotic and ionic agents in fish sperm physiology	

OVERALL COMMENTARY ON THE PhD THESIS

Olga Bondarenko entered the laboratory of reproductive physiology as a PhD student in 2011 after receiving of MSc diploma in applied physics in Kharkov National University (Ukraine).
She actively started to learn the basic methods required in fish spermatology such as videomicroscopy, electron microscopy and method specific for study the influence of environment tonicity on cell (nephelometry). Application of these methods has been a first step in her study to understand the sperm cell volume responses on osmolarity in fish species possessing different modes of motility activation. The study was performed in several fish species belonging to different orders and favored because of their high marketable status. This part of work was successfully performed (chapter 2 and 3) and lead to publications in journal with impact factors of 1.96 and 2.06. Further, Olga focused her studies on the involvement of ions in fish sperm motility regulation. This part of Olga's study was also successfully conducted and ended up with 4 more publications incorporated into chapters 4-7. As a result, the thesis of Olga is logically well organized and contains basic results, which have potentiality to practical application. Among basic results are: the ability of spermatozoa to change their volume and motility parameters in response to osmotic tonicity and ionic composition of environment; involvement of ionic signaling into cryptic process of sturgeon sperm maturation. These results could be applied for ferilization of sturgeon egg by testicular spermatozoa; increase of sperm motility parameters by application of specific activating media in trout; improvement of sperm cryoresistance in carp by hypotonic treatment of sperm before cryopreservation.
During her PhD studies, Olga was showing high interest in learning modern scientific technics. During her 4 month foreign stay in University of Tokyo, Japan, she learned sperm membrane potential measurement, intracellular calcium imaging methods and molecular biology techniques such as molecular cloning and PCR. She also obtained good experience in scientific communication through presentations in 8 international conferences, during grant application, and teaching activity during summer schools. As mentioned above, her PhD allowed her to become a really well educated researcher, oriented on results of high scientific level. I also was happy to work with Olga because of her enthusiastic and friendly personality.
Finally, I recommend thesis of Olga Bondarenko for defense and looking forward for our future cooperation.

FINAL RECOMMENDATION

- [x] **can be recommended for defence of PhD Thesis**
- [ ] **can be recommended with reservations for defence of PhD Thesis**
- [ ] **can not be recommended for defence of PhD Thesis**

30.04.2015
Date and place

Dzyuba
surname and signature