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: Abdul Rasheed Khanzai Baloch	Name of supervisor: Assoc. Prof. Dipl.-Ing. Martin Pšenička, Ph.D.
Title of PhD thesis: Utilization of genome editing techniques for surrogate production in fish	

OVERALL COMMENTARY ON THE PhD THESIS

Abdul Rasheed Khanzai Baloch has worked as an Early Stage Research (ESR) in IMPRESS. The IMPRESS is an Initial Training Network of the Marie Sklodowska Curie Actions funded by the EU Research and Innovation Programme Horizon 2020. The project aimed to develop improved production strategies for endangered freshwater species and run from 2015 to 2019. PhD thesis of Abdul Rasheed Khanzai Baloch compiles all assignments that were given to him during the course of his PhD period. Research goals of thesis were set properly and achieved accordingly, and all research questions are addressed in a logical and correct way. Author of thesis has passed all required PhD courses, supervised MSc student, actively took part in summer schools and other pedagogical activities, completed foreign stays on time and published papers in impact factor journals that are required for PhD thesis defence. He has also actively participated in different international conferences and presented his research work in oral and poster presentation forms. Besides, Abdul Rasheed Khanzai Baloch has attended training workshops under Cost-Aquagamete Program and IMPRESS-ITN program.

Author of thesis for the first time used genome editing technology *i.e.,* CRISPR/Cas9 to knock out *dnd1* gene to produce sterile host for surrogate production in sturgeons. He also thoroughly reviewed role of dnd1 protein in fish covering its different aspects like its importance as germ cell molecular marker, its role in conservation of endangered fish species and its interaction with miRNAs. In an interesting attempt to label germ cells, he injected IONs in sturgeons to label PGCs. It is first study of its kind to label germ cells of any species using nanoparticles, and will certainly open new avenues to study interactions of nanoparticles with living cells precisely, and treat cancer by hypothermia.

Formal layout of thesis corresponds with requirements layed for the PhD theses; and author of thesis has consulted with supervisor constantly and strongly followed his suggestions. I am, being supervisor of author of thesis fully satisfied from outcomes of research work and thesis. Thus, in present form, I recommend his thesis defence.

FINAL RECOMMENDATION

- ☒ **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**

V VODŇANY 9.5.2019
Date and place

PŠENIČKA
surname and signature