



### **Review of USB FFPW PhD thesis**

<b>First name(s), surname, titles of the PhD student:</b> Eva Šálková, MUDr.	<b>First name(s), surname, titles of supervisor:</b> Prof. Dipl.-Ing. Martin Flajšhans, Dr. rer. Agr.
<b>Title of PhD thesis:</b> Methodical approaches to examination of lymphoid tissues in sturgeons	

#### **REVIEWER:**

<b>Surname:</b> Schmidt-Posthaus	<b>Institution:</b> University of Bern, Switzerland
<b>Name:</b> Heike	
<b>Titles:</b> Assoc. Prof.	<b>E-mail:</b> heike.schmidt@vetsuisse.unibe.ch
<b>Please describe your professional relationship to the PhD student:</b> I know Eva Šálková from courses I gave in Vodnany. We are both co-authors on a manuscript from Sancho Santo et al.. However, I never worked directly with Eva nor was I involved in the supervision of the PhD.	<b>Please describe your field of expertise:</b> I am a trained veterinary pathologist, and diplomate of the European college of Veterinary Pathology. I am specialised in fish histopathology. In addition, in research I am focussing on infectious fish diseases, e.g. Proliferative Kidney Disease.

### **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 work of Eva Šálková consists of three manuscripts, whereas two papers are already published in peer reviewed journals and one manuscript is under review. In addition, a clearly written introduction introduces the reader to the topic and its importance and a general discussion sums up the most important findings and refers back to the chapters where these results can be found. In addition, the general discussion highlights the importance of the findings, but also the limitations of the study.

Sturgeons live on earth for a long period of time with special adaptations in the immune and haematopoietic systems. In addition, several independent polyploidization events took place during evolution. Eva Šálková's thesis added important information to understand adaptation processes depending on the ploidy level (2n, 4n, 6n). This is important to understand evolutionary processes in the immune system of vertebrates. In addition, increase in ploidy is



a common practice in aquaculture to avoid maturation of aquaculture animals. Understanding possible effects of this practice on the immune function is crucial for sustainability of aquaculture. Eva Šálková applied traditional methods in this less studied and mostly unknown field.

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### ***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 is ordered in an introduction, a main body consisting of three manuscripts (two accepted in a peer-reviewed journal and one manuscript under review), rounded up by a general discussion. The first manuscript deals with histological examinations in the thymus of sturgeons, the second manuscript evaluates the applicability of different immunohistochemical markers on the sterlet thymus and the third manuscript deals with haematological parameters in sturgeons with different ploidy levels. The overall goal "methodical approaches to examination of lymphoid tissue in sturgeons" was therefore comprehensively approached.

As sturgeons are poorly investigated animals and reference values are mostly missing, the approach of Eva Šálková using traditional methods and comparing results is appropriate.

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### ***OVERALL COMMENTARY ON THE PhD THESIS***

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

The thesis work of Eva Šálková consists of three manuscripts, whereas two papers are already published in peer reviewed journals and one manuscript is under review. In addition, a clearly written introduction introduces the reader to the topic and its importance and a general discussion sums up the most important findings and refers back to the chapters where these results can be found. In addition, the general discussion highlights the importance of the findings, but also the limitations of the study.

To examine the lymphoid tissue in sturgeons, histology (chapter 2), immunohistochemistry (chapter 3) and haematology (chapter 4) were applied. In the first manuscript, Eva could describe Hassall's corpuscles in the thymi of sturgeons for the first time. In the second manuscript, different immunohistochemistry markers, developed for mammalian tissue, were tested on sterlet thymus tissue. The selection of markers was based on the cell types expected in the thymus. In the third manuscript, haematology values from three sturgeon species with different ploidy levels (2n, 4n, 6n) were compared over the course of a whole year. So, Eva could establish some reference values and could highlight possible influencing environmental parameters, like season and temperature.

With this work, Eva Šálková significantly contributed to the understanding of immune functions in this ancient fish species and evolutionary processes of the immune system, including different ploidy levels.



Eva Šálková

- has made an original and substantial contribution to the knowledge in the field of the study;
- has shown a systematic and critical understanding of a substantial and complex body of knowledge;
- has developed written communication skills;
- has shown expert, specialised, cognitive, technical, creative, and research skills in a discipline area to independently and systematically:
  - was engaged in critical reflection, synthesis and evaluation;
  - developed, adapted and implemented research methodologies to extend and redefine existing knowledge or professional practice;
  - generated original knowledge and understanding to make a substantial contribution to a discipline or area of professional practice;
- can apply knowledge and skills to demonstrate autonomy, authoritative judgment, adaptability and responsibility as an expert and leading practitioner or scholar; and
- demonstrated a high level of research integrity with an ethical approach.

All papers were published in peer-reviewed journals and obtained international recognition. They covered not investigated yet mechanisms and processes of the immune system in sturgeons.

Eva Šálková was the first author and contributed substantially to this work. The field of research was well selected as not explored yet and representing a very important issue.



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Faculty of Fisheries  
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of Waters

Jihočeská univerzita  
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University of South Bohemia  
in České Budějovice  
Czech Republic

### **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**

Bern, 21.06.2021.....  
Date and place

*Sejvor - Polles*  
.....  
Name and signature