



## FACULTY OF VETERINARY MEDICINE

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September 7, 2018

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To whom it may concern:

I am writing today to provide my evaluation of the dissertation "Early stages in the evolution of salamanders (Lissamphibia, Caudata) and the transition from stem- to crown-group salamanders" by Dr. Pavel Skutschas. My research has focused on the question of lissamphibian origins among the various possible archaic fossil groups, describing many amphibiamid temnospondyls and microsaurian lepospondyls in detail, so I have expertise in this area of research. I have known Dr. Skutschas for approximately 10 years having interacted at conferences and at research centers around the world, but we have not collaborated to date, so I hope you will accept this review as unbiased by personal or professional relationships.

The manuscript was a very interesting read. It nicely summarizes the nature of the question of salamander origins, and clearly demonstrates the large impact on these questions that have been made by Dr. Skutschas and his colleagues. He discusses the nature of the difficulty of our difficulty understanding the ultimate origin of frogs, salamanders, and caecilians (and the extinct albanerpetontids), although he skips detail on the "lepospondyl hypothesis", which is just as well in my opinion as there is not a lot of strong positive evidence to support it. I really enjoyed reading about the transition in the make up of the faunas of the Mesozoic from stem-group to crown group dominated, and the details on the similarities in faunal make up between central Asia and Great Britain was eye opening for me. Similarly, I learned more about details of latitudinal variation of the amphibian faunas, and the nature of Siberia providing a refuge to a relict assemblage.

Dr. Skutschas is best known internationally for his work describing the important stem salamanders *Kokartus* and *Karaurus*, and so this section was mostly review as this literature is well-known by myself. This dissertation provides an excellent summary of a lot of disparate information, however, and having a discussion of the transitions in character evolution between stem and crown salamanders is very helpful.

I was impressed while reading by two things. One, how Dr. Skutschas has expanded his work from single taxon descriptions to regional surveys of amphibian diversity through time, and two, his efforts to really understand the relevance of region of study to more global trends. This summary of his and his students' research to date clearly demonstrates to me the international impact of his work, and I look forward to future contributions by his research group. The issue of the correct taxonomic placement of the Jurassic-

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aged salamanders from China will no doubt continue to be controversial, but this drives new research and deeper understanding, which provides a long-term benefit to our understanding of amphibian evolution in deep time.

In closing, I very much enjoyed reading this dissertation. It is a helpful document to researchers, and I hope to be able to share it with my new students because I think it can give them a detailed introduction to this area of study. It also is testament to the impact of Dr. Skutschas' work on global discussions of amphibian, especially salamander, origins and evolution. Dr. Skutschas is an internationally recognized leader in the field, and the wealth of new information his research group have provided us will drive new work for years to come.

I thank you for this opportunity to review this dissertation and would be happy to provide further information about my views upon request.

Sincerely,

A handwritten signature in black ink, appearing to be 'J. J. Janders', with a long horizontal line extending to the right.

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