

Alberta Palaeontological Society

A Paleozoic Origins of Modern Amphibians

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LOCATION: Mount Royal University, Room B108

TIME: October 20, 2017, 7:30 pm

ABSTRACT

Modern amphibian diversity belongs to three major lineages: frogs (Anura), salamanders (Caudata), and caecilians (Gymnophiona). Each lineage is extremely distinct, with very few features that unite the three groups. The earliest definitive members of each lineage are Mesozoic in age, but generally already exhibit an overall body plan consistent with that seen in modern members of each group. Because the earliest members of each lineage are already highly derived, placing modern amphibians into the diversity of Paleozoic tetrapods has traditionally proven a difficult task. Three possibilities have been suggested: that all amphibians evolved from a large semiaquatic ancestors (temnospondyl hypothesis), that all amphibians evolved from small elongate-bodied ancestors (lepospondyl hypothesis), or that some amphibians evolved from temnospondyls whereas others evolved from lepospondyls (amphibian polyphyly). In recent years, a flurry of papers have examined the New approaches, especially use of microscopic computed tomography (μ CT), have provided new ways of looking at this problem, with some surprising results. New data strongly reject the lepospondyl hypothesis and suggest that tetrapod and amphibian origins both involved a number of important evolutionary novelties. Furthermore, these data call into question whether 'lepospondyls' are a natural group at all. At least one group of lepospondyl, the serpentine aistopods, appear to be extremely basal tetrapods from within the Devonian fin-to-limb transition, suggesting that the earliest tetrapods may have been more diverse than previously thought. Finally, new temnospondyl fossils from the Triassic are showing that there may be more than one viable 'temnospondyl hypothesis,' suggesting that the search for amphibian origins has not yet finished.

BIOGRAPHY

Jason Pardo grew up in Pittsburgh, Pennsylvania. He completed his undergraduate education at the University of Colorado in Boulder, where he conducted undergraduate research in developmental genetics of fish with Dr. David Stock and paleontology with Bryan Small and Dr. Dena Smith. He completed a M.Sc. in Ecology and Evolutionary Biology with Dr. Jason Anderson at the University of Calgary in 2014, in which he used micro-CT to investigate skull anatomy and relationships of a group of early tetrapods, the lysorophians. He is currently pursuing a PhD at the University of Calgary studying the developmental biology of tooth regeneration in salamanders. His research interests include Late Palaeozoic vertebrate evolution, origins of modern amphibians, and development of the vertebrate head.

DIVISION INFORMATION

This event is presented jointly by the Alberta Palaeontological Society, the Department of Earth and Environmental Sciences at Mount Royal University, and the Palaeontology Division of the Canadian Society of Petroleum Geologists. For details or to present a talk in the future, please contact CSPG Palaeontology Division Chair Jon Noad at jonnoad@hotmail.com or APS Coordinator Harold Whittaker at 403-286-0349 or contact programs1@albertapaleo.org. Visit the APS website for confirmation of event times and upcoming speakers: <http://www.albertapaleo.org/>.