

Alberta Palaeontological Society

Lend Us Your Ear: Using Auditory Region Morphology to Resolve the Evolutionary Relationships of Camels

Main Speaker: Selina Robson, PhD Candidate at the University of Calgary

Location: B108, Mount Royal University

Time: September 15, 2023, 7:30 pm MST

Abstract:

Despite camelids currently inhabiting South America (llamas, guanacos, alpacas, vicuñas), and Asia and Africa (camels), the family originated in North America ~46 million years ago. Camelids evolved alongside other endemic North American artiodactyls (even-toed hoofed mammals) such as oreodonts, protoceratids, and oromerycids, but camelids are the only surviving family. The North American fossil record is rich with camelid material, with over 100 extinct species being described, but the evolutionary relationships of these early camelids are poorly understood. Furthermore, the relationship between camelids and other artiodactyl families—both North American and Eurasian—continues to be a source of controversy. Phylogenetic analyses based on morphological data repeatedly recover camelids as being close to ruminants (e.g., cows, sheep, pronghorn, giraffes), but molecular phylogenetic analyses recover camelids in a far more ancestral position, sometimes placing them as one of the oldest branches in the artiodactyl tree. The suborder Tylopoda contains camelids and their purported extinct relatives, but because these evolutionary relationships are unresolved, the composition of the suborder is indeterminate. Previous work has been constrained by the quality of the available fossil specimens; only the externally visible features could be studied, limiting the information gathered. There has now been a burst of research using computed tomography (CT) scanning to image the internal anatomy of fossils. These new data provide additional information that may be critical in resolving the evolutionary relationships of many extinct clades, including Camelidae and Tylopoda. Using recently acquired CT data, I conducted a phylogenetic analysis of basal camelids—the results indicate that there may be multiple unnatural groupings, and some “camelids” may not actually belong within Camelidae. Additionally, previously unknown aspects of the internal ear region indicate that the relationships of camelids to other artiodactyls are more complicated than previously thought; it is quite likely that several “tylopods” do not belong in the suborder, necessitating a large revision of artiodactyl systematics.

Biography:

Selina Viktor Robson was born and raised in Oregon, and as a child, they spent many weekends walking along the Pacific coast collecting invertebrate fossils. Selina Viktor was always interested in natural history and science; when they discovered their love for palaeontology during their undergraduate studies, they never looked back. They completed their BSc in geology at the University of Oregon (2016), then went on to do an MSc in evolutionary biology at the University of Calgary (2018). Selina Viktor is currently a PhD Candidate at the University of Calgary, co-supervised by Dr. Jessica Theodor and Dr. Craig Scott. They specialize in hoofed mammal evolution, cranial anatomy, and phylogenetic systematics.

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 Energy Geoscience Association. 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 Lacey Holoboff at lhoboff@gmail.com or by contacting programs1@albertapaleo.org. Visit the APS website for confirmation of event times and upcoming speakers: <http://www.albertapaleo.org/>.