A nearly complete skeleton of Hyalectotherium grangeri (UM 115547) was found in 2007 at the University of Michigan early Wasatchian (Wa-1) locality SC-16 in the northwestern Big Horn Basin, Wyoming. The skeleton has an inferred age of 30 million years older than the available rabbit skeletons used. Experimental trials varied sediment input (low vs. high flux) and evaluated bone condition (dry vs. water soaked). A number of trials produced similar conditions to the experiment failed to falsify the hypothesis that the Burrow model using PVC pipes and conducted a series of infilling experiments. Results from these experiments may clarify the taphonomy of other within-burrow vertebrate assemblages.

Technical Session III, Wednesday 2:15
AN UPPER CRETACEOUS LIZARD WITH A COMPLETE LOWER TEMPORAL BAR
WU, Xiao-chun, Canadian Museum of Nature, Ottawa, ON, Canada; LU, Jun-chang, Geological Institute, Chinese Academy of Geological Sciences, Beijing, China; NI, Shu-an, Geological Institute, Chinese Academy of Geological Sciences, Beijing, China; DONG, Zhi-ming, Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences, Beijing, China

Squamata (including lizards, snakes, and leg-less lizards) form a large group of Diapsida [also including dinosaurs and pterosaurs]. All fossil or extant squamates have an incomplete or totally missing lower temporal bar/arcade and a quadrate potentially moveable (stereotypical) relative to the skull and mandible. It has been documented that the mandible protracts anteriorly at the beginning of the bite cycles and retracts posteriorly at the end of the cycles in many lizards because strong jaw ligaments connect the jugal and quadrate or the surangular of the lower jaw prevent the mandible from retracting posteriorly during the bite cycles. This represents an entirely new pattern of jaw-muscle functions within Squamata.

Technical Session XIV, Friday 2:30
MODELING AN ORYCTODROMUS CUBICULARIS (DINOSAURIA) BURROW
WOODRUFF, D., Montana State University, Bozeman, MT, USA; VARRICCHIO, David, Montana State University, Bozeman, MT, USA

The hysilophostodont Oryctodromus cubicularis from the Cretaceous Blackleaf Formation of Montana represents the first dinosaur recovered from within a burrow trace. The specimens occur within an incompletely preserved chamber at the end of a S-shaped tunnel. Unlike many fossil vertebrates associated with burrows, the Oryctodromus remains were disarticulated and elevated within the graded burrow fill. To test whether this skeletal arrangement reflected burial from within or transport into the chamber, we constructed a half-scale burrow model using PVC pipes and conducted a series of infilling experiments. The model allowed us to compare burrow proportions but was scaled to accommodate the available rabbit skeletons used. Experimental trials varied sediment input (low vs. high energy), sediment supply (en masses vs. incremental), chamber conditions (dry vs. water-filled), bone placement (mixed with sediments, external to tunnel, within chamber), and bone condition (dry vs. water soaked). A number of trials produced similar conditions to the Oryctodromus assemblage. Twelve of the 13 trials exhibited complete disarticulation, six trials elevated bones to the upper portion of the sediments, and six resulted in graded bedding. Two trials produced unusual but noteworthy results. Trial #8 using saturated bones uniquely preserved the bone on the chamber floor and largely articulated. Trial #13 tested the effects of the bones mixed with the sediment prior to deposition. Although the bone distribution was not unusual, this trial resulted in numerous broken bones. The upper sediment surface in several trials exhibited a soft-sediment deformation structures. Overall, the experiment failed to falsify the hypothesis that the Oryctodromus bones were in the chamber prior to burial and results from several trials would favor this interpretation. This is supported by the nearly identical bone distributions and similar sedimentology in both the model and original Oryctodromus burrow assemblage. Results from these experiments may clarify the taphonomy of other within-burrow vertebrate assemblages.