and growth profiles, with no statistical difference, but Morphotype I grew to significantly larger sizes at age three in stratigraphically higher localities, whereas Morphotype II showed no change in size through the section. The relative abundance of each morphotype was different at numerous localities falling outside the 99% confidence intervals to indicate that Morphotype I was found at statistically high or low proportions compared to Morphotype II. It was initially hypothesized that the morphotypes would be attributable to the genera *Cyclurus* and *Amia*. However, we reject that hypothesis as centra of Morphotype I are present in both Mesozoic and Cenozoic *Cyclurus* and extinct and extant species of *Amia*. Morphotype II is not present in these genera, and thus represents a poorly known lineage currently represented by isolated elements that extends at least to the K-P boundary. The presence of two amiines in the mid Campanian of Alberta suggests that amiids had a more complex evolutionary history in the Cretaceous of North America than had been previously recognized.

Poster Session I (Wednesday, October 17, 4:15 - 6:15 pm)

PALEOHISTOLOGICAL ANALYSIS OF METAPODIAL BONES OF MIOCENE *HIPPARION CONCUDENSE* FROM SPAIN

MARTINEZ-MAZA, Cayetana, Department of Paleobiology, Museo Nacional de Ciencias Naturales (CSIC), Madrid, Spain; ALBERDI, Maria T., Department of Paleobiology, Museo Nacional de Ciencias Naturales (CSIC), Madrid, Spain; PRADO, Jose L., Unuversidad Nacional del Centro, Olavarria, Argentina

The life history of extinct animals may be assessed through the study of their hard tissues. During life, bone microstructure is influenced by internal and external factors such as developmental processes, environmental or seasonal factors, life style adaptations, and biomechanical function. Several works have shown the relationship between these aspects of life history and bone histology. In this work, we analyzed the microstructure of metapodial bones of the extinct tridactyl *Hipparion* to provide data about its development, biomechanics, and paleoecology. The genus *Hipparion* is recorded in Eurasia from the Upper Miocene to the Plio-Pleistocene boundary. These fossil horses represent an intermediate stage in horse evolution towards higher crowned molars, larger size, and reduced autopodials. *Hipparion* horses present an autopod composed of a major central toe and two reduced lateral ones. Previous analyses from a systematic, evolutionary and palaeoecological point of view have suggested that body size and morphological variability are related to environmental conditions and ground characteristics. However, no histological studies have been performed on these skeletal elements. Here, we studied the *Hipparion concudense* species from two basins of the Late Miocene of Spain with different environmental conditions: the Turolian site (Concud, Teruel) and the Vallesian site (Valles de Fuentidueña, Segovia). Transverse ground sections from the midshaft of central and lateral metapodial bones were analyzed with qualitative and quantitative histological techniques. Histological data show changes throughout the development that allowed identification of ontogenetical stages and biomechanical changes. Secondary osteons in the central metapodial bones of young individuals occur in the area associated with lateral metapodials, which show remodeled bone in the region close to central metapod. These histological data confirm that lateral metapodials are involved together with the central metapodial bone in the biomechanic processes of these three-toed horses. We compared these histological data between the two *Hipparion* samples to analyze how these changes in the bone microstructure are related to different environmental conditions.

Poster Session II (Thursday, October 18, 4:15 - 6:15 pm)

PRELIMINARY DATA ON THE NEW PARTIAL CARCASS OF THE WOOLLY MAMMOTH, *MAMMUTHUS PRIMIGENIUS,* FROM YAKUTIA, RUSSIA

MASCHENKO, Eugene, Borissiak Paleontological Institute, Russian Academy of the Sciences, Moscow, Russian Federation; POTAPOVA, Olga, Mammoth Site of Hot Springs, SD, Inc., Hot Springs, SD, United States; BOESKOROV, Gennady, Diamond and Precious Metals Geology Institute, Siberian Branch of Russian Academy of Sciences, Yakutsk, Russian Federation; PLOTNIKOV, Valery, Sakha Republic (Yakutia) Academy Sciences, Yakutsk, Russian Federation; AGENBROAD, Larry, Mammoth Site of Hot Springs, SD, Inc., Hot Springs, SD, United States

A partially frozen and mummified carcass of Woolly Mammoth, *Mammuthus primigenius,* was found on the coast of the Dmitrii Laptev Straight by the Yukagir community members in 2009. The carcass (72°40′ N 142°50′ E) was discovered in the rich bone-bearing Late Pleistocene yedoma (permafrost) deposits of the Oyagossky Yar, approximately 30 km west from the mouth of Kondratievo River. The carcass nicknamed "Yuka" is an adolescent individual. No frozen remains of a mammoth of such age were ever found. Previously found frozen/mummified carcasses belonged to younger, or were much older individuals. The mammoth carcass was found hanging over the melting ledge in the upper third of the facing north slope composed of the loess sediments. The condition of the discovered mammoth was unusual: most of the soft tissues of the torso were gone, but most of the bones were present inside the hide. Incomplete set of unarticulated bones of the head and torso included the cranium with teeth and both tusks, mandible with teeth, atlas, both scapulae, pelvis connected to the sacrum, 4th lumbar, 1st , 2nd and 3rd tail vertebrae, and eight right ribs. All bones were covered by short remnants of mummified tendons and muscles. The legs covered by hide retained all soft tissues and almost all bones. Missing bones included the left humerus, both femora, and most of the left hind foot bones. The carcass is missing the left hind foot, which was scavenged, and two large hide portions on the back (30x40 cm) and the neck (20x30 cm). These portions of the hide were ripped off or cut out from the body; the hide edges are being investigated for possibility of human impact. The tail has puncture marks left by canines of a small, possibly recent, predator, but the trunk skin is intact. A lot of places on the hide (neck, throat, belly, legs) have deep and narrow grooves that were left by a very large predator. No punctures from canines or any obvious wounds were discovered that obviously might have caused the animals' death. The fur of very light tan to light ochre–dark brown color was present on the torso sides and legs. Preliminary analyses of the teeth generation (upper and lower Dp4-M1 in wear) corresponds to approximately 8-9.5 year-old Asian elephant. Taking into consideration the fact that mammoth deciduous Dp2/dp2-Dp3/dp3 eruption occurred faster than that of the African and Asian elephants, the Yuka mammoth age could be lowered down to approximately 6-8 years. Her body length was about 205 cm and shoulder height was about 160 cm. The morphology of the genitals allowed identifying the specimen as a female. The ongoing studies of the Yuka mammoth are AMS dating; X-ray computed tomography (CT scan), and DNA and isotopes analyses.

Technical Session XI (Friday, October 19, 3:15 pm)

OSTEOLOGY OF THE EMBRYONIC THEROPODS FROM THE LATE JURASSIC OF PAIMOGO, PORTUGAL

MATEUS, Octávio, Universidade Nova de Lisboa, Faculdade de Ciências e Tecnologia & Museu da Lourinhã, Lourinhã, Portugal; CARRANO, Matthew T., Department of Paleobiology, National Museum of Natural History, Smithsonian Institution, Washington, DC, United States; TAQUET, Philippe, Muséum national d'Histoire naturelle, Paris, France

Among the more than one dozen dinosaur egg- and eggshell-bearing localities in the Upper Jurassic Lourinhã Formation of Portugal (upper Kimmeridgian–Tithonian), the nest from Paimogo was one of the first to be found and remains the largest and most significant. Located within the Amoreira-Porto Novo Member (uppermost Kimmeridgian), this nest has yielded about 300 embryonic bones and bone fragments identified as belonging to a theropod dinosaur. Here we present a detailed anatomical description of the nest and embryos.

The Paimogo nest comprised about 100 eggs (or eggshell concentrations that represented individual eggs), but much of the nest had been eroded, indicating that an even greater number of eggs would have been present originally. There is no clear nest structure, but eggs are more highly concentrated in the center, along with the majority of embryonic bones (suggesting a more advanced ontogenetic stage). All the eggs were crushed, but despite this compression, some eggs are complete and retain embryonic bones inside.

The embryonic anatomy is comparable to the holotype of *Lourinhanosaurus antunesi* from the same stratum and region. However, most *Lourinhanosaurus* autapomorphies are in the pelvis and vertebral laminae, rarely preserved in the embryos, making their positive identification more difficult. A single autapomorphy is present in both subadult and embryos: a medial condyle of the tibia that is half the transverse width of the fibular condyle. Other contemporary theropods differ from the embryos in specific details: the embryonic maxilla lacks an antorbital fenestra (present in *Allosaurus*), the ilium lacks a vertical ridge (present in *Aviatyrannis*), and the tibial cnemial crest is short (unlike *Ceratosaurus*). One other nest with embryos from the Lourinhã area, in Porto das Barcas, has been provisionally ascribed to *Torvosaurus*. These embryonic specimens are much larger in size, and the eggshell structure is entirely different. If this assessment of the Porto das Barcas embryos is correct, then the Paimogo embryos cannot be *Torvosaurus*.

In general, the embryos are morphological miniatures of the adults, fully equipped for predation of small prey, and thus may have been precocial (i.e. relatively mature and mobile from the moment of birth or hatching). The teeth have large denticles on the distal carina only and bear some resemblance to those of more derived theropods, suggesting a role for pedomorphosis in theropod evolution.

Education and Outreach Poster Session (Posters displayed October 17 – 20)

TAKING SCIENCE AND EDUCATION OUTSIDE AT THE BLM MOCCASIN MOUNTAIN TRACKSITE, UTAH

MATTHEWS, Neffra A., DOI-Bureau of Land Management, Denver, CO, United States; CHRISTENSEN, Thomas M., DOI-Bureau of Land Management, Kanab, UT, United States; HAINES, Misti E., DOI-Bureau of Land Management, Kanab, UT, United States; NOBLE, Tommy A., DOI-Bureau of Land Management, Denver, CO, United States; BREITHAUPT, Brent H., DOI-Bureau of Land Management, Cheyenne, WY, United States

America's Great Outdoors (AGO) and Take It Outside (TIO) are Presidential initiatives put in place to encourage families to spend more time together enjoying their natural surroundings. What better enticement to go outside and get excited about science than to experience paleontological resources found on America's Public Lands? A relatively new tracksite has been managed and developed for the benefit of the public, establishing opportunities and providing information about paleontology in accordance with current paleontological legislation (PRPA). The Moccasin Mountain Tracksite (MMT) is located in southern Utah on land managed by the Bureau of Land Management's Kanab Field Office. The MMT reveals multiple fossil footprint levels in the Navajo Sandstone (age ~185 million years) in a slick rock sandstone area covering about 1,000 m^2. Over the past four years, the MMT has received funding from AGO and TIO to produce a variety of educational materials, including a brochure, explorer vests, interpretive signage, and a podcast. Families can visit the Kanab Field Office and check out an explorer vest equipped with a digital camera, GPS unit, measuring tape and other equipment for documenting and measuring the tracks at the MMT. A brochure containing photographs and descriptions of the diverse ichnofauna (*Grallator*, *Eubrontes, Otozoum, Batrachopus* and *Brasilichnium*) and a map lead "Early Jurassic Explorers" on a self-guided tour to the location of select