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ABSTRACTS OF PAPERS

**SIXTY-SIXTH ANNUAL MEETING
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CANADIAN MUSEUM OF NATURE
MARRIOTT OTTAWA
CROWNE PLAZA OTTAWA
OTTAWA, ONTARIO, CANADA
OCTOBER 18-21, 2006**

HOST COMMITTEE:

**Alison Murry, Stephen Cumbaa, Richard Day, Robert Holmes, Kieran
Shepherd, and Xiao-Cun Wu**

CONVENORS OF SYMPOSIA:

**Hans Larsson and Karen Sears; F. Robin O'Keefe and Tamaki Sato; Suzanne Strait
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David Archibald, Kristina Curry Rogers, Donald Prothero,
David Froehlich, and Eric Dewar**

A CT SCAN OF A TITANOSAURIFORM SKULL (DINOSAURIA:SAUROPODA) FROM CENTRAL PATAGONIA, ARGENTINA

MARTÍNEZ, Rubén, VITA, Javier, CEMPENTA, Comodoro Rivadavia, Argentina; LAMANNA, Matthew, Carnegie Museum of Natural History, Pittsburgh, PA; IBIRICU, Lucio, Drexel Univ., Philadelphia, PA

We preliminarily report the results of a computed tomographic study of a titanosauriform skull from the Bajo Barreal Formation (Cenomanian-Turonian, early Late Cretaceous) of southern Chubut Province (central Patagonia, Argentina). For the study, we made a series of helical computed tomographies with a Multiple Slice System (MXTwin Multislice). Of the 281 images, 22 are three-dimensional reconstructions, 21 are sagittal, and 238 coronal. The slice thickness was two mm. The CT images allow the recognition of the olfactory bulb (CN I), the optic (CN II), trigeminal (CN V), and hypoglossal nerves (CN XII), the three subequal semicircular canals, middle and posterior cerebral veins, metotic fissure, and pituitary fossa. The latter is comparable in size to that in the endocranial mold of *Camarasaurus grandis*, although more rostrally oriented in the Chubut form. The exit points of the cranial nerves IX and X are tentatively identified. In the premaxillae, maxillae, and mandibles, the replacement teeth, adductor fossae and Meckelian grooves are visible. The latter are open medially as in *Brachiosaurus* and other forms. Other structures are more difficult to identify and will be the object of future studies. It is expected that the analysis of these images, and their comparison with related forms such as *Brachiosaurus* and more derived titanosauriforms, will allow to establish, in addition to the total encephalic volume of this dinosaur, characters and encephalic topographical features common to this sauropod lineage.

Wednesday 10:45

NEW MULTIPLE LATE JURASSIC DINOSAUR ICHNOCOENOSSES OF SWITZERLAND: EVIDENCE FOR ENDURING DINOSAUR COMMUNITIES ON THE NORTHERN TETHYS PLATFORM

MARTY, Daniel, PARATTE, Géraldine, Office de la culture, Porrentruy 2, Switzerland; MEYER, Christian, Naturhistorisches Museum Basel, 4001, Switzerland; BILLON-BRUYAT, Jean-Paul, AYER, Jacques, Office de la culture, Porrentruy 2, Switzerland

Since 2002 dinosaur tracks are systematically excavated in Late Jurassic (Kimmeridgian) carbonate platform sediments (Canton Jura, Switzerland). This platform formed part of the Northern Tethys passive margin in Late Jurassic times. To date, over 55 essentially narrow-gauge trackways of sauropods, and over 90 trackways of bipedal, tridactyl dinosaurs chiefly attributed to theropods, have been excavated and documented on multiple (>15) track-bearing surfaces. This provides insight into track formation and taphonomy, in particular the distinction of true tracks from under- and overtracks, a key point for consistent ichnotaxonomical and paleoecological interpretations. Multiple ichnocoenoses (associations of true tracks on a single surface) include (1) trackways of tiny (FL (footprint length)<25 cm) and large (FL>100 cm) sauropods with trackways of small (10<FL<25 cm) theropods; (2) trackways of tiny and medium-sized (25<FL<40 cm) sauropods with trackways of minute (FL<10 cm), small and medium-sized (25<FL<30 cm) theropods; (3) trackways of tiny and medium-sized sauropods with trackways of medium-sized and large (FL up to 50 cm) theropods. These ichnocoenoses exhibit diverse trackway orientation patterns and trackways with changes in gauge and gait of both sauropods and theropods. Even if these ichnocoenoses only partially reflect the former terrestrial vertebrate ecosystem of the platform, they indicate a recurrent presence of diverse dinosaur communities, at least during periods with prolonged inter- to supratidal conditions. The repeated associations of trackways of similar patterns and track morphology of very small and medium or large sauropods give a hint for different age classes within a single species. Moreover, this suggests that—contrary to recent publications—stance and resulting trackway gauge of sauropods is not necessarily related to ontogeny. This might be corroborated by more ichnocoenoses obtained by ongoing excavations. Finally, the paleogeographic situation implies that the platform was frequently connected to continental landmasses. This probably prevented a development of insular, dwarfed faunas, as has been postulated for similar carbonate platform settings.

Vertebrate Development Symposium, Wednesday 10:45

EVALUATING CRANIAL DISPARITY, MORPHOLOGICAL INTEGRATION, AND MODULARITY OF THE ARCHOSAURIAN CRANIUM USING GEOMETRIC MORPHOMETRICS

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Shape analysis via Landmark-based Geometric Morphometrics is currently one of the best suited methodologies for the study of the organization and evolution of the phenotype, hence its usefulness in Paleobiology. While the multivariate statistical apparatus of geometric morphometrics is readily set, for instance, for the exploration of allometry, other conceptual proxies such as morphological integration and modularity are becoming prevalent among morphologists, mostly among those interested in the role of and mechanisms by which the developmental program might bias the direction of evolution. Evolutionary developmental biology research is making giant steps into unveiling the mechanisms underlying such phenomena, thus providing the experimental basis upon which to interpret morphological integration and modularity at a phenotypic level. We have explored the major patterns of endocranial shape variation and integration at a macroevolutionary scale across modern avian and some fossil Theropod dinosaurs by means of geometric morphometric

procedures. Interlacing our morphological observations and the statistical accounts of the analyses with current developmental proceedings in experimental biology carried out in modern birds (i.e. chick and quail embryos), we render a hypothesis from which to propose the integrated and modular nature of the theropod skull, and possibly of representatives of the node Archosauria.

Preparators Symposium, Thursday 11:15

THE THRILL OF THE FRILL: WEAR AND TEAR DEMANDS RESTORATION OF A *DILOPHOSAURUS WETHERILLI* SKULL, UCMP 77270

MASON, Jane, Berkeley, CA

As the research interest in theropod dinosaurs has soared while museum budgets dwindle, the resulting wear-and-tear on fossil collections has been magnified by inexperienced researchers having fewer role models to follow in handling fossils as collection and preparation staff are also slashed.

Unique and key specimens, sometimes types, must bear the challenge of this intense interest and heavy traffic. Such a specimen is the double-crested *Dilophosaurus wetherilli*, UCMP 77270, used as a model for the “Spitter” in the movie Jurassic Park. The original preparation of UCMP 77270 was done before the presently available, more archival choices of glues, consolidants, and reconstructive mediums. These earlier materials did not offer the greater strength and flexibility tolerances of those now used by fossil preparators.

This charismatic theropod specimen has been stressed over time by a latex-lined jacket that abraded the transparently thin and topographically complex parts of the skull’s crest as the jacket cover was removed and replaced during study. Because access to this spectacular fossil is often sought, redesign of the clamshell jacket that will permanently house the specimen will be a crucial step in assuring the specimen’s future preservation.

The use of a custom-fitted sandbox has allowed placement of sculpted acrylic elements at key areas of structural stress. These supports have allowed further preparation of the ventral surface of the brain case, which was previously unknown, un-photographed and unstudied due to the specimen’s fragility; it could not have been turned upside down before.

To reduce unskilled handling in the future, as far as possible with visual clues, an archival graphic device that warns in the international signs and symbols code, “DO NOT TOUCH”, was developed and placed on key areas of weakness. Protection of other specimens in our collection with similar problems of fragility, combined with near universally comprehensible of warning labels, is also now addressed.

Poster Session II

NEW SPECIMEN OF *PROGNATHODON* (REPTILIA: MOSASAURIDAE) FROM THE BEARPAW FORMATION OF ALBERTA

MASSARE, Judy, SUNY College at Brockport, Brockport, NY

An exceptionally complete mosasaur was recovered from a mining operation on the Blood Nation Reservation near Lethbridge, Alberta. The *Prognathodon* specimen is from the lower Bearpaw Formation, approximately equivalent to the DeGrey Member of the Pierre Shale. It may be one of the best specimens of the genus from North America. The pectoral region and forelimbs were damaged by the mining operation, but the remainder of the skeleton was recovered. It includes a flattened skull that is missing parts of the posterior region, but has well preserved preorbital skull region, jaws, and teeth. The articulated vertebral column is nearly complete, missing only a few anterior vertebrae, and extending beyond the region of elongated neural arches, usually interpreted as a tail fluke. The hind limbs are fairly complete, as is the pelvis. The specimen is tentatively assigned to *P. rapax* on the basis of the shape of the quadrate, the dentary not projecting anterior to the first tooth, and the lack of a medial ridge on the frontal. If the tentative identification is correct, it expands the geographic range of *P. rapax* into the Western Interior Seaway. Moreover, this discovery provides new details about the morphology of this poorly known species.

Friday 9:30

THE CRETACEOUS OF ANGOLA

MATEUS, Octávio, Lourinhã, Portugal; MORAIS, Maria, Universidade Agostinho Neto, Luanda, Angola; SCHULP, Anne, Natuurhistorisch Museum Maastricht, Maastricht, Netherlands; JACOBS, Louis, POLCYN, Michael, Southern Methodist Univ., Dallas, TX

The coastal region of Angola has long been known to be richly fossiliferous, but until recently no continuous vertebrate paleontology and collecting has been undertaken there since the pioneering work of Miguel Telles Antunes in the early 1960’s. In May 2005, two of us (O.M. and L.L.J.) performed a short field reconnaissance in the Angolan provinces of Namibe and Bengo, from where rich Cretaceous faunas, including mosasaurs, fishes, turtles, plesiosaurs and other marine taxa have been known, bringing to light the first dinosaur from Angola, a Late Turonian non-titanosaurian sauropod.

The stratigraphic sequence extends from the Early Cretaceous (Barremian, 128 Ma) through the Neogene, making this the longest continuous fossiliferous section known in Africa. In addition to dinosaurs, this section records (1) the formation of the eastern margin of the South Atlantic Ocean; (2) a nearly continuous and biostratigraphically significant sequence of sharks and bony fishes that record changes in oceanic currents; (3) the opening of the Atlantic Ocean and the disruption of a land connection between South America and Africa; (4) the biogeographic invasion of the South Atlantic by marine amniotes, including turtles, plesiosaurs, and mosasaurs; (5) interbedded nearshore marine and igneous rocks; (6) a superbly exposed Cretaceous-Paleogene Boundary section; (7) Paleogene squamates and turtles; and (8) Neogene cetaceans and a rhinoceros.