This is the first mammalian fauna known from northern Idaho as previously known Cenozoic faunas from the region are the early to late Blancan faunas, from the Glenn's Ferry Fm., SW Idaho, some 570 miles to the south and the early to mid-Blancan faunas from the Ringold Fm., central Washington, 225 miles away.

Mesozoic & Early Cenozoic Mammalian Evolution

CAINOTHERIIDAE FROM QUERCY (SW OF FRANCE): DIVERSITY DYNAMICS AND BIOTIC/ABIOTIC INTERACTIONS AROUND THE EOCENE–OLIGOCENE TRANSITION (34–33.5 MA)

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Understanding the diversity dynamics of species is a central topic in evolutionary biology and paleontology. After the massive extinction of the Cretaceous–Tertiary crisis, the Eocene–Oligocene transition (34–33.5 Ma) coincided with one of the major extinction events of the Cenozoic. It is indeed associated with major climatic, geographical, and ocean circulation changes. At the same time, a major faunal turnover occurred in Europe, known as the 'Grande Coupure'. This event is associated with the extinction of numerous endemic European placental mammals, which had evolved in the 'island Europe' context from the middle to the upper Eocene. European artiodactyls are particularly impacted by these changes, and many endemic families died out around this transition. However, a family of small artiodactyls, the Cainotheriidae, crossed the Eocene–Oligocene boundary and diversified during the Oligocene. Here we applied, for the first time, a well-known biological model of diversity analysis to a group of extinct artiodactyls, the Cainotheriidae. Using the cainotheriid fossil record from the karstic infillings of the Quercy Phosphorites (south-western France), we observe that this family experienced a major radiation phase during the early Oligocene, followed by a decline phase until the end of the Oligocene. The exceptional fossil record of the Quercy phosphorites provides us with an extremely precise vision of the evolution of Cainotheriidae diversity over 10 million years, on both sides of the Grande Coupure, with incomparable preservation indices. Our results also highlight the absence of direct correlation between the speciation and extinction phases and the important environmental changes of the Eocene–Oligocene transition and the end of the Oligocene. These results thus suggest the potentially important role of biotic interactions in the evolutionary success and then decline of the Cainotheriidae from Quercy.

Funding Sources ANR program DEADENDER (ANR-18-CE02-0003-01) – P.I. M. J. Orliac.

Mesozoic & Early Cenozoic Mammalian Evolution

A NEW SPECIES OF *PLEUROSTYLODON* (MAMMALIA, NOTOUNGULATA) FROM THE LATE EOCENE LOS QUEÑES LOCALITY, ANDEAN MAIN RANGE, CENTRAL CHILE

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Notoungulata, the most diverse group of ungulates present during South America's Cenozoic isolation, is classically subdivided into Toxodontia and Typotheria. Here we describe a new species of *Pleurostylodon* (a toxodontian) based on a left hemimandible bearing a complete dentition. 'Isotemnidae,' to which *Pleurostylodon* has long been assigned, is currently considered a non-monophyletic assemblage of basal toxodontians. *Pleurostylodon* was first identified from the Casamayoran South American Land Mammal Age (SALMA) of Argentine Patagonia (now including both Vacan and Barrancan 'subages'); other isotemnids became known subsequently from the Casamayoran and Mustersan SALMAs of Patagonia and the Casamayoran of northwest Argentina. This discovery likely extends the range of *Pleurostylodon* into the Mustersan SALMA of central Chile.
The type and only specimen of this new taxon, SGOPV 5529, includes a complete left lower tooth row, including i1–i3, the lower canine, p1–p4, and m1–m3. SGOPV 5529 bears, at mid-crown height, a small projection on the posterior face of the metaconids of m1–m3 that, with wear, merges with the metaconid forming the 'curved' metalophid seen in some species of *Pleurostylodon* and differing from other isotemnids. SGOPV 5529 is distinct from other species of *Pleurostylodon* in being more hypsodont and lacking cingulids on p3–m3. Incorporating the new taxon from Chile into a previously published genus-level phylogenetic analysis pairs SGOPV 5529 with *Pleurostylodon*.
SGOPV 5529 was recovered from the Abanico Formation near the town of Los Queñes in the Andean Main Range of central Chile. This area records at least two stratigraphically superposed SALMAs. The strata from which SGOPV 5529 was recovered are likely late Eocene in age and assignable to the Mustersan SALMA. This

discovery thus extends the biochron of *Pleurostylodon*, which was previously restricted to the Casamayoran SALMA. In addition to *Pleurostylodon* n. sp., the late Eocene strata at Los Queñes host a diverse, as yet undescribed mammalian fauna. Future reports on other elements of this fauna promise to shed light on the biogeographical relationships between Patagonia and northwest Argentina for the middle to late Eocene.
Funding Sources NASA NAG5-11354; NSF DEB-0513476 and DEB-0317014; and the AMNH Frick Fund.

Colbert Poster Prize/Cenozoic Herpetology

LIZARD BYTES: THREE-DIMENSIONAL DENTAL TOPOGRAPHY ANALYSIS OF EXTANT PLEURODONT SQUAMATES, WITH IMPLICATIONS FOR RECONSTRUCTING THE DIETS OF EXTINCT FOSSIL SQUAMATES

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Dental topography analysis has emerged as a powerful quantitative tool for dietary reconstructions of fossil vertebrates, with multiple, homology-free metrics capable of distinguishing among different dietary categories. So far, these methods have almost entirely been applied to mammals, but more recent applications to non-mammalian vertebrates have shown great promise. Further application of these techniques to non-mammalian vertebrates could provide novel or enhanced insights into the quantitative associations between tooth morphology and diet throughout vertebrate evolution.
Squamate reptiles (lizards and snakes) constitute one of the most taxonomically and ecologically diverse clades of terrestrial vertebrates. Squamate diets fall along a continuum from carnivory to herbivory, often with overlapping intermediate dietary categories. Previous dental topography work on extant squamates has relied on geographic information systems (GIS) methods, in which tooth surfaces are converted into digital elevation models instead of being treated as three-dimensional surface meshes. For our study, we used computed microtomography (μCT) to generate high-resolution, three-dimensional dentary tooth row surface meshes for 66 extant, pleurodont species of lizards and snakes. We assigned each species to one of four dietary categories (herbivore, omnivore, invertivore, carnivore) based on data from the literature. Then, using molarR and CloudCompare, we obtained values for each of our surface meshes for the following dental topography metrics: Orientation Patch Count Rotated (OPCR), Dirichlet Normal Energy (DNE), and Ambient Occlusion (PCV).
All three metrics are capable of differentiating between dietary categories, although their efficacy varies. OPCR and DNE values for entire tooth rows are moderately to highly successful at distinguishing among all four dietary categories; herbivores and omnivores have the highest values. However, this pattern becomes somewhat muddled when those values are averaged along tooth rows. PCV seems to be independent of OPCR and DNE, exhibiting an inverse pattern, but there is more overlap between categories. The number of teeth also appears to have a greater impact on PCV results; specimens with more teeth have lower PCV values. This is the first time that any of these three-dimensional dental topography metrics have ever been applied to squamates, paving the way for future work, including dietary reconstructions of extinct fossil squamates.
Funding Sources Thesis Travel Grant, University of Minnesota; Joyce Davenport Fellowship, Bell Museum; Richard Estes Memorial Grant, Society of Vertebrate Paleontology.

Dinosaur Systematics, Diversity & Ecology

A JUVENILE DIPLODOCID SAUROPOD FROM THE MORRISON FORMATION (LATE JURASSIC) PRESERVING A SKIN IMPRESSION

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Carnegie Museum of Natural History (CM) specimen 41682 consists of a fragment of a dorsal rib, five incomplete dorsal neural arches, and a small (12 x 5 cm), subtriangular skin impression. Originally collected by Earl Douglass in 1910 from Dinosaur National Monument (Tithonian; Morrison Formation; Utah, U.S.A.), the skin impression was discovered much later during subsequent preparation. CM 41682 is a diplodocoid sauropod based upon the lack of flaring triangular processes on the dorsal neural spine; it is furthermore assignable to the successively less inclusive clades Flagellicaudata (based upon the presence of ventrally conjoined centropostzygapophyseal and posterior centrodiapophyseal laminae) and Diplodocidae (based upon the presence of a posterior centroparapophyseal lamina). The early loss of bifurcation (here incipient by, at latest, the sixth dorsal) and the early migration of the parapophysis to a position level with the zygapophyseal table both suggest affinities with either *Apatosaurus* or *Barosaurus*; the lack of an accessory lamina on the spinodiapophyseal lamina differentiates CM 41682 from *Barosaurus* and makes a referral to *Apatosaurus* the most likely conclusion.
The skin impression preserves approximately 32 distinct, non-overlapping scale impressions, ranging from