ROYAL TYRRELL MUSEUM

2009/10 Behind the Science

THE PEOPLE BEHIND THE SCIENCE

It's the insatiable curiosity of the scientists at the Royal Tyrrell Museum that drives our research program. Their discoveries provide the building blocks for everything we do, from educational programming to exhibit development.

The work they do enhances our collective understanding of the evolution of life on Earth.

Andrew Neuman, Executive Director

As Executive Director, Andrew (Andy) Neuman brings more than 20 years of leadership experience to the Museum. An accomplished researcher and educator, Andy's vision and expertise have driven notable international exhibit partnerships and research expeditions.

The majority of Andy's research focuses on Mesozoic fishes from Western Canada. He is currently working on Triassic sharks with a team in Europe and on Cretaceous fishes with a team here in Alberta.

Donald Brinkman, Ph.D., Director of Preservation & Research

Donald (Don) Brinkman studies how ancient animals, and turtles in particular, lived in their environments during the time of the dinosaurs. By comparing turtle specimens from Asia and North America, he investigates why some species lived where they did, what unique traits helped them to survive, and how environmental conditions affected them. This research allows Don to determine the conditions of life during specific periods of history, and why some species survived catastrophic events, while others did not.

David Eberth, Ph.D., Research Scientist, Sedimentary Geology and Palaeoecology Research

David Eberth studies ancient environments of fossil-bearing rocks, and participates in projects that take him throughout the USA, Mexico, Argentina, Germany, China, Mongolia, and Canada. His specialties include stratigraphy and sedimentology, chronostratigraphy (the age of the rocks), and taphonomy (influences on preservation and fossilization). Dave also has a deep interest in bonebeds—accumulations of fossils from more than one individual—and what they reveal about palaeobiology, ancient environments, and ecosystems. His research not only sheds light on what the Earth's ancient environments were like, but more importantly, how they changed through time and, thus, what the future may hold for us.

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Dennis Braman, Ph.D., Research Scientist, Palynology

Dennis Braman specializes in palynology, the study of organic-walled microfossils such as plant spores and pollen, algae or fungal spores. In the field, rock samples are collected from shales, mudstones, siltstones, and coals to be processed in a lab. After dissolving the mineral material with acids, the resulting organic residue is concentrated and mounted on glass slides. The slides are then scanned using a microscope so that fossils can be identified. Any 10 to 20 gram sample may contain several thousands of specimens, so these are the most abundant fossils we have in the rocks exposed on the prairies of Western Canada.

François Therrien, Ph.D., Curator of Dinosaur Palaeoecology

François Therrien studies the palaeoecology of extinct animals, which, in essence, is trying to determine what the animals did while they were alive and what the world they lived in looked like. To do so, François uses two different approaches: 1) he studies the shape of the bones of animals in order to determine the behaviours of extinct animals (e.g., how they hunted, walked, laid their eggs) and 2) he studies the features and chemical composition of ancient soils (called palaeosols) in order to reconstruct the environments and climatic conditions the animals lived in. François tries to see past the bones and rocks in order to explore dinosaurs as a single component within a complex ecosystem.

Donald Henderson, Ph.D., Curator of Dinosaurs

Donald (Don) Henderson's research focus is all about dinosaurs. Lately his studies have focused on the rates of fossil erosion in Dinosaur Provincial Park and its effect on the quantities of dinosaur fossils found there. Don also conducts biomechanical comparisons of the bite forces and skull strengths in ceratopsian dinosaurs and examines dinosaur buoyancy. In order to gain a better understanding of the dinosaur locomotion, he creates computer animated models.

James Gardner, Ph.D., Curator of Palaeoherpetology

James (Jim) Gardner, focuses on palaeoherpetology, the study of fossil amphibians (such as frogs and salamanders) and reptiles (like snakes, lizards, and turtles). The primary goal of his research is to document and interpret the evolutionary history of Mesozoic and Tertiary members of the Lissamphibia, or so-called modern amphibians. Jim's research focuses on the morphology, systematics, distribution (both geographically and temporally), and palaeobiology of lissamphibian taxa, especially those with North American representatives. Because fossil and living lissamphibians have a near global distribution, his research includes regional and international components.

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Craig Scott, Ph.D., Curator of Fossil Mammals

Craig Scott specializes in research on Palaeocene age mammals (65 to 55 million years ago) from both the Red Deer and Calgary areas, particularly the evolutionary relationships of early insectivorian mammals (a group that today includes hedgehogs, shrews, and moles). He hopes to integrate his data into an expanded research program that will include an ongoing study of mammal succession in Alberta, before and immediately after, the extinction of dinosaurs.

Michael Newbrey Ph.D., (Betsy Nicholls Post Doctorate Fellow) Palaeoicthyology

Michael Newbrey specializes in the field of palaeoicthyology, the study of fossil fishes. His general research interests include freshwater teleost systematics, biogeography, and ecology for both extant and extinct fishes. He is particularly interested in the effects of climate change on fish populations and evolution. The geologic record contains many instances of major climate change and, as such, the fishes deposited before, during, and after climate change offer insight into the effects of climate change on fishes.

Tai Kubo, Ph.D., Government of Canada Research Fellow

Tai Kubo came to the Royal Tyrrell Museum from Japan as a Postdoctoral Fellow in 2008. His area of interest is in the evolution of locomotion in terrestrial tetrapods, especially in the limb posture evolution from sprawling to upright which occurred during Permian and Triassic. He uses a biomechanical method and trackways of both living and extinct tetrapods in his research.