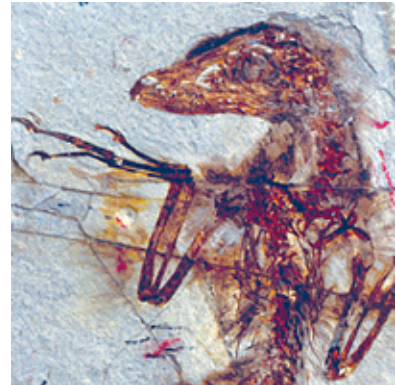


The Link Between Dinosaurs and Birds

Did dinosaurs really go extinct 65 million years ago? Overwhelming evidence suggests that one branch of the dinosaur family tree managed to survive, and that we see living dinosaurs every day. We call them birds. In this course, equipped with paleontologists' tools and techniques, you'll study the theropod group of dinosaurs (*Tyrannosaurus rex* and *Velociraptor* belonged to it) and determine which are most closely related to modern birds. You'll also look at how fossils are collected and prepared, and investigate how scientists uncover the evolutionary relationships between species.



Key Science Concepts:

- Overwhelming evidence indicates that **birds are a group of dinosaurs** (avian theropod dinosaurs) that escaped the massive extinction 65 million years ago.
- **Birds share many anatomical characteristics with their extinct relatives.** Many characteristics present in their theropod ancestors were modified to enable birds to fly.
- **Cladistics** is a method of classifying living things that reflects evolutionary relationships. It uses shared derived characteristics - features that evolve for the first time and are passed on to all the organisms' descendants - to establish relationships.
- **Paleontology calls on a mix of skills** that range from collecting and preparing fossils to analyzing them in a laboratory.
- **Behaviors** shared by birds and crocodiles (dinosaurs' closest living relatives), such as nesting and caring for young, were probably also engaged in by extinct dinosaurs. The fossil record supports some of these claims.
- Oxygen isotope data and the existence of feathered dinosaurs suggest that at least **some non-avian dinosaurs were warm-blooded.** (Since feathers predate birds, they must have had a function other than flight.)
- Intense volcanism and a meteor impact are two of the **leading explanations for the extinction** of the non-avian dinosaurs 65 million years ago.

Authoring Scientist:

Dr. Mark Norell is one of the leading spokespersons for the current research connecting the origin of modern birds to a line of feathered theropods. Mark leads the American Museum of Natural History's annual expeditions to Mongolia, making some of the most important paleontological discoveries: the first fossil of a theropod embryo; the first dinosaur fossil brooding a nest of eggs; fossils of several new species with birdlike features; and the richest fossil-gathering locale in the world, Ukhaa Tolgod.

