



Use this guide to check your knowledge and ensure you haven't missed any great content!

In Cincinnati Museum Center's *Dinosaur Hall*, you can discover massive plant-eating sauropods, fierce two-legged predators and awe-inspiring specimens. Explore our globally-significant fossil collections to learn more about dinosaur evolution, ecology and biology.

Who Studies Fossils?

Many scientists study Earth's history. Paleontologists study fossils, which can teach us about climate change, mass extinctions, evolutionary changes and biodiversity.

Check your knowledge!

What do paleontologists study? What tools do they use?

Extra challenge! What do you think it takes to become a paleontologist? If you were a paleontologist, what fossils would you choose to study?

How do Fossils Happen?

Not all living things can be fossilized. In fact, most organisms will not be fossilized. A plant or animal's environment has a major effect on whether it will turn into a fossil.

After an animal dies, it can be slowly covered by mud, silt and other sediment. Over time, this sediment builds up and hardens. Many fossils are entirely composed of rock, but others are a combination of rock and organic material, such as an animal's original bone or even soft tissue like skin or feathers!

Organisms that live in wet, muddy areas have a higher chance of being fossilized, while living things in dry environments are less likely to fossilize.

Some fossils are actually parts of once living things. Those fossils are called body fossils. Others are only imprints and traces of behavior left behind. Those fossils are called trace fossils.

How do Fossils Happen? (*continued*)

Check your knowledge!

Which do you think is more likely to become a fossil: a sauropod that died in a river delta, a snail on a mountain top, or a plant that died in the rainforest?

How do body fossils and trace fossils differ? Can you name an example of each?

Fossils in the Bigger Picture

Earth's surface is covered with tectonic plates that are constantly moving and shifting. To determine how old fossils are, paleontologists rely on different methods. One method is stratigraphy, the study of Earth's sedimentary layers. By examining what we find in different layers, we can get an idea of which organisms lived together, and which environments existed when. This practice helps us better understand how life has evolved on Earth.

The K-Pg boundary provides possible evidence of a mass extinction event that took place around 66 million years ago. If we use stratigraphy to examine the 3 layers of the boundary, we can see three different moments in time.

- **Vocabulary Words:**

1. **Meteorites:** These are when asteroids come close to earth and don't vaporize in Earth's atmosphere. They actually hit Earth!
2. **Extinction:** The end of an organism or species.
3. **Iridium:** A chemical element that is rare on Earth, but found commonly in space.
4. **Coal:** When dead plants are compressed together over millions of years, they create coal. An abundance of dead plants are needed to make any amount of coal.

Check your knowledge!

Consider the K-Pg boundary: what was on the bottom and what did it tell us? What was significant about the orange band in the middle? What don't we find in the top layer?

Jurassic Environment

Dinosaurs lived during the Mesozoic Era, which began around 250 million years ago and ended around 66 million years ago. The Mesozoic Era is divided into three different time periods: the Triassic, the Jurassic and the Cretaceous.

Many of the fossils found within CMC's Dinosaur Hall came from the American West from a layer of rock known as the Morrison Formation. 145-155 million years ago, Earth looked pretty different than it does today.

Check your knowledge !

What can we learn about the Jurassic environment from examining plant and invertebrate fossils?

Extra challenge! Do you remember seeing any fossils in the video that you can also find around you?

Our Fossils

CMC's dinosaur collection is home to a diversity of animals. Some dinosaurs are Sauropods, while others are Theropods. Sauropods are massive, long-necked, four-legged herbivores (plant-eaters) that dominated the Jurassic Period. Theropods were primarily carnivorous (meat-eating) dinosaurs that walked on their back legs and had a long thick tail that helped them balance. Theropods include the largest carnivores that have ever lived.

Check your knowledge!

Why might sauropods have been so large? How do paleontologists think theropods got their food?

Fossils near You

Cincinnati is home to some of the best fossils in the world, but you won't find any dinosaur fossils here. During the Mesozoic Era, Ohio was probably above sea level without many large river systems. If any dinosaurs were fossilized, they have been stripped away due to erosion.

While there may not be any dinosaur fossils, we can still find fossils here from the Ordovician Era, when Cincinnati was covered by a warm, shallow sea. Organisms such as trilobites, bryozoans, brachiopods, crinoids and cephalopods are common in this area.

Fossils near You (*continued*)

Trilobites are the oldest and most successful group of fossils found in the Cincinnati area and have been found on every continent except Antarctica. The *Isotelus*, a late Ordovician trilobite, is the state invertebrate fossil of Ohio. Its closest living relative is the Horseshoe Crab.

Check your knowledge!

Why was the Ordovician a good time to become a fossil? Can you name some common fossils we can find?

Extra challenge! What other fossils are found in the Cincinnati Region? How are they similar to living animals? Have you found any fossils?