

# WHAT IS A FOSSIL?

What comes to mind when you hear the word fossil? Do you picture a fossil like this *Tyrannosaurus rex*?

Can a woolly mammoth frozen during an ice age be a fossil?  
 Can hardened tree sap and the bugs caught inside be a fossil?  
 Can dinosaur poop be a fossil? Yes, yes, and yes!  
 Read this to figure out what is a fossil and what's not.

**FOSSILS** are more than just dinosaur bones! A fossil is any trace of life that is at least 10,000 years old. **BODY FOSSILS** are the remains of an animal. Fossils can also be the remains of a plant, bacteria, or fungus (fossilized mold, anyone?). They can even be things such as ancient footprints, animal tracks, burrows, and even dung (that's animal poop!). These kinds of fossils are called **TRACE FOSSILS** because they show us a trace of ancient life.

Sometimes body remains are preserved in a way that doesn't change them that much. For example, imagine a saber tooth tiger on the hunt 25,000 years ago. It tackles a horse, knocking both the horse and itself into a tar pit—never to escape. The animals are preserved in the tar pit for thousands of years until a **PALEONTOLOGIST** removes them from the pit. Only bones remain, but the bones have not changed. They are still made up of the same substances that they were made of when the animals were alive.

In other cases, the remains of living things are preserved but are chemically changed. These kinds of fossils tend to be much older. Imagine a *Stegosaurus* killed by a predator on the shores of a lake 150 million years ago. The soft parts of the dinosaur are eaten away by the predator and by bacteria. Most of the bones remain. The bones are quickly covered by **SEDIMENT**—that means dirt. Over time, the materials that make up the bones are gradually replaced by minerals found in the sediment around them. Over a long period of time, the bones are almost completely made up of the new minerals and are as hard as rock (because they are rock). The bones are now official fossils.

You may think that fossils are pretty common. We sure do have a lot of them in the museum! In reality, the chance of a living thing becoming a fossil is very small. The conditions required to make a fossil don't occur often and they only occur in certain environments, such as near the water. This means that almost all living things that have ever inhabited the earth leave no fossils or any other trace that they ever existed.

## KNOW THE LINGO!

**paleobiology**—the study of ancient life

**paleontologist**—a scientist who studies ancient life by examining fossils

**body fossil**—the fossilized parts of an animal, like bones

**trace fossil**—fossilized signs of life, like footprints, nests, or burrows

**coprolite**—fossilized animal poop

**sedimentary rock**—rock that is made from compacted particles of sand, dirt, and the remains of plants and animals; fossils are found in sedimentary rock



**TRY THIS AT HOME!**

**THINK LIKE A PALEONTOLOGIST.**

Take a look at the objects below. Are they fossils? How do you know? (Remember, **FOSSILS ARE THE REMAINS OF LIFE** more than 10,000 years old. They can be body fossils or trace fossils.) Now that **YOU KNOW ABOUT FOSSILS**, let's see if you can **IDENTIFY SOME!**

THIS IS A TRILOBITE THAT LIVED IN THE OCEAN OVER 250 MILLION YEARS AGO. IS IT A FOSSIL?



THIS IS A TOOTH FROM A TYRANNOSAURUS REX. IS IT A FOSSIL?



THIS IS AN ANCIENT ROMAN JUG. IS IT A FOSSIL?



THIS INSECT HAS BEEN PRESERVED IN AMBER (TREE SAP) FOR MILLIONS OF YEARS. IS IT A FOSSIL?



**WHICH ARE FOSSILS?**

CHECK OUT THIS DINOSAUR FOOTPRINT. IS IT A FOSSIL?



THIS PETRIFIED BACTERIA IS ABOUT 850 MILLION YEARS OLD! IS IT A FOSSIL?



THIS IS A DENDRITE STONE. THE FERN-LIKE PATTERN ON THE STONE IS MADE FROM MINERALS FLOWING THROUGH THE STONE. IS IT A FOSSIL?



THIS 40,000-YEAR-OLD, MUMMIFIED WOOLLY MAMMOTH BABY, NAMED LUBYA, WAS DISCOVERED IN RUSSIA IN 2007. IS IT A FOSSIL?



THIS IS T. REX POOP THAT HAS TURNED INTO STONE. IS IT A FOSSIL?



THIS IS PETRIFIED WOOD, AN ANCIENT TREE THAT HAS BECOME A ROCK. IS IT A FOSSIL?



Answers: Only two of these are not fossils. The pottery is an artifact—something made by people. The dendrite stone shows a naturally occurring pattern that forms on limestone rock. Neither are fossils. All of the other examples are fossils of living things. Can you tell which are body fossils and which are trace fossils?