


# Module 9: Earth's History

## Topic 4 Content: Formation of Fossils Notes






### Introduction

#### Formation of Fossils

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There are a variety of ways in which fossils can form. In this interactivity, click on each of the thumbnail images in the panel to explore the types of fossils and their formation.



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## Module 9: Earth's History



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#### Tar

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##### Tar

Natural tar forms when oil deposits begin to rise up through the crust. Oil rises through the crust because it is lower in density when compared to the surrounding rock. Once it reaches the surface, the oil partially evaporates, causing the substance to thicken. This natural tar can collect in sinkholes or other depressions creating tar pits. When organic material gets into the tar, it becomes preserved because the tar protects the organic material from oxygen and normal rates of decay.



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The La Brea tar pits are located in Los Angeles, California. Since its discovery in 1906, 231 species of vertebrates, 159 species of plants, and 234 species of invertebrates have been recovered from the tar. Watch the video clip to learn more about how fossils are extracted from the sticky tar at La Brea.

## Module 9: Earth's History

### Topic 4 Content: Formation of Fossils Notes

#### Amber

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When trees release sap, organisms and organic material can become stuck inside the sticky material. Once caught inside, the organism will suffocate and die and become preserved almost perfectly. Over long periods of time, sap can harden and convert into amber, which is also an example of fossilized material. The image shows an ancient frog that is fossilized in amber.



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## Module 9: Earth's History

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#### Freezing

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Mammoths have been discovered almost perfectly preserved in glacial ice in Alaskan and Canadian regions. Just like a freezer, which can preserve meat and vegetables for many months before they are eaten for dinner, glacial ice preserves delicate features of an organism. In the case of the mammoths, soft tissue and hair was recovered due to the unique preservation abilities of ice. The image shows a mammoth's head that was extracted from ice still containing skin and hair.



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## Module 9: Earth's History

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#### Carbonization

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Also called a carbonaceous film, the carbonization method of fossilization occurs when the organism decays and leaves behind a film of carbon. Often times, this film preserves the shape and details of the original organism and looks like a pencil drawing on the rock. The image shows the carbon imprint of a leaf.



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## Module 9: Earth's History

### Topic 4 Content: Formation of Fossils Notes

#### Permineralization

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Permineralization is also known as petrification. In this process, minerals from the surrounding environment slowly replace the original organic material of the organism. These minerals replicate the original organism's structure and fine details. This occurs most often with bones and wood. This is the process that produces petrified wood. The image shows a large piece of petrified wood.



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## Module 9: Earth's History

### Topic 4 Content: Formation of Fossils Notes

#### Trace Fossils

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Trace fossils are indirect preserved remains of life. Instead of preserving parts of the animal, evidence of the organism's life is preserved. Examples include footprints, nests, coprolites (preserved excrement), egg shells, and burrows.



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#### Molds and Casts

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##### Molds and Casts

Molds and casts form together. A mold is a fossilized impression of the original organism. With this type of fossil, none of the original organic material remains. Only an impression, or the negative image, of the organism remains in the sediment or rock. The image shows the mold of a shell.

A cast forms when sediments fill a mold, creating a rock that looks like the original organism but is composed entirely of rock. Cast fossils replicate the size, shape, and details of the original organism.



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