Name _____ Date _____ Class _____

Study Guide

CHAPTER 14

Section 1: Fossil Evidence of Change

In your textbook, read about Earth's early history.

For each statement below, write true *or* false.

_____ **1.** Solid Earth formed about 4.6 billion years ago.

_____ **2.** Young Earth was hotter than it is today.

_____ **3.** Minerals in old rock suggest that Earth's early atmosphere had little or no free oxygen.

_____ **4.** The lightest elements in early Earth moved to the center of the planet.

_____ **5.** Gases in Earth's early atmosphere probably included water vapor, nitrogen, carbon dioxide, carbon monoxide, hydrogen sulfide, hydrogen, and ozone.

In your textbook, read about the geologic time scale.

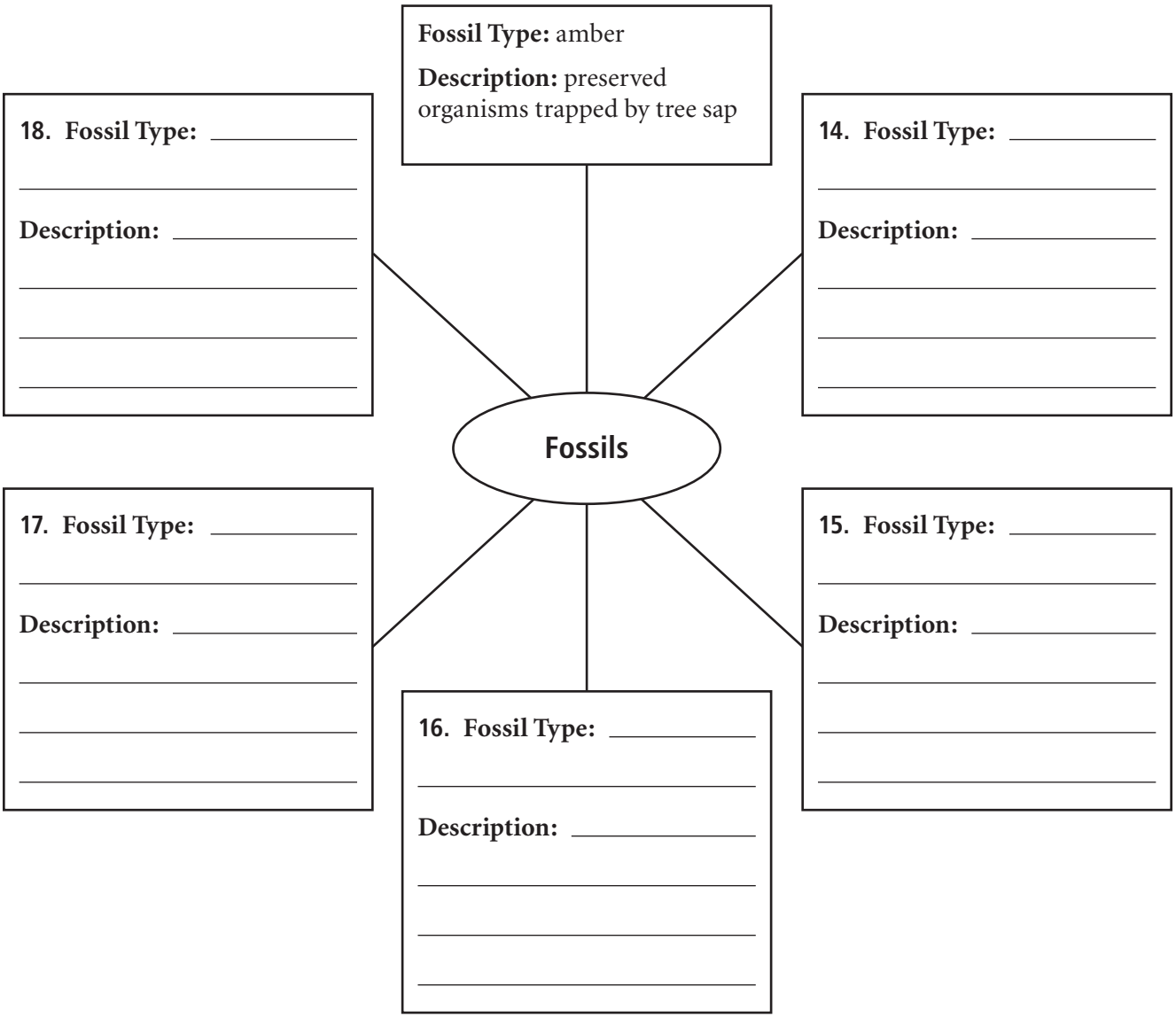
Complete the table by checking the correct column(s) for each statement.

Statement	Precambrian	Paleozoic Era	Mesozoic Era	Cenozoic Era
6. Autotrophic prokaryotes enrich the atmosphere with oxygen.				
7. Primates evolve and diversify.				
8. It is divided into three periods: Triassic, Jurassic, and Cretaceous.				
9. Many types of insects, land plants, and the first land vertebrates appear.				
10. Mammals appear.				
11. Dinosaurs roam the earth, and the ancestors of present-day birds evolve.				
12. Reptiles appear.				
13. Simple organisms, such as stromatolites, live in marine ecosystems.				

In your textbook, read about the different categories of fossils.

Complete the graphic organizer by writing a fossil type and a description in each square. Use these choices:

detailed mineral replicas
impression of an organism, can be filled with minerals
mummified or frozen remains
petrified or permineralized
trace fossils
footprints, burrows, fossilized feces
molds and casts
original material
replacement
wood pores filled with minerals



Name _____ Date _____ Class _____

Study Guide

CHAPTER 14

Section 2: The Origin of Life

In your textbook, read about ideas on the origin of life.

Match the definition in Column A with the term in Column B. The terms may be used more than once.

Column A

_____ **1.** Lynn Margulis proposed this idea to explain the origin of organelles.

_____ **2.** Energy from sunlight and lightning allowed the first organic molecules to form.

_____ **3.** Only living organisms can produce other living organisms.

_____ **4.** Life arises from nonlife.

_____ **5.** Prokaryotic cells were involved in the formation of eukaryotic cells.

_____ **6.** Francesco Redi performed a controlled experiment with flies and maggots to test this idea on the origin of life.

_____ **7.** Stanley Miller and Harold Urey simulated early atmospheric conditions to test this idea on the origin of life.

Column B

A. spontaneous generation

B. theory of biogenesis

C. endosymbiont theory

D. primordial soup hypothesis

In your textbook, read about the early ideas of origins.

Refer to the drawing of Francesco Redi's experiment. Respond to each statement.

8. Tell what Redi observed in each flask as the meat decayed.

_____

9. Recall what his experiment showed.

_____

In your textbook, read about the present-day ideas of origins.

Respond to each statement.

10. Name two places on early Earth where organic molecules could have been synthesized.

_____

11. Tell what was produced in the experiment performed by Miller and Urey.
State what the significance of this product was.

_____

12. Recall why a framework, such as a particle of clay, is necessary for protein assembly.

_____

In your textbook, read about the present-day ideas of origins and cellular evolution.

Use each of the terms below only once to complete the passage.

amino acids	**archaea**	**clay particles**	**coding**	**eukaryotic**
prokaryotic	**proteins**	**replication**	**RNA**	**template**

For life to exist, molecules called **(13)** _____ must form. These are made of chains of **(14)** _____ . They might have first formed when amino acids stuck to **(15)** _____ to aid their bonding. Clay might also have provided a protein molecule pattern known as a(n) **(16)** _____ . Today, scientists know that the **(17)** _____ for sequences of amino acids is provided by DNA or **(18)** _____ . This allows for **(19)** _____ of proteins. Scientists hypothesize that the first cells were **(20)** _____ and were similar to the **(21)** _____ that live in extreme climates today. Many scientists believe that **(22)** _____ cells evolved from these early prokaryotic cells.

In your textbook, read about cellular evolution.

Complete the table by checking the correct column(s) for each description.

Description	Prokaryotes	Eukaryotes
23. Lacking most organelles		
24. Have no nucleus		
25. Are larger cells		
26. Include archaea		
27. Contain organelles and complex internal membranes		