

Laboratory 8

Fossils on the Internet Lab

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In this lab, you will visit several web sites to learn more about fossils. You will examine fossils at the University of California Berkeley Museum of Paleontology.

The lab consists entirely of Web Work. Your instructor may direct you to do this as homework, or to do it during lab time using the computers in the Geology Laboratory, or in a computer lab.

A. "Getting into the Fossil Record"

<http://www.ucmp.berkeley.edu/education/explorations/tours/fossil/9to12/intro.html>

Click the links at the bottom of the page to continue through the site. Some pages may require you to click on an image or answer a question before the link appears to guide you to the next page.

1. View the animation about getting into the fossil record, and write several sentences summarizing how a dinosaur can become a fossil.

2. The word "fossil" means what (from Latin)? _____
3. What are paleontologists? _____
4. Fossils can be body parts of ancient organisms, or they can be traces. Give five examples of traces.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

5. Which type of organism do you think is most likely to be preserved? One that gets buried quickly or one that gets buried slowly?

6. What are three biotic factors that can affect an organism after death?

- a. _____
- b. _____
- c. _____

7. What is an abiotic factor that can prevent the organism from becoming preserved, AFTER it has been buried?

8. What is a mold? _____

9. What is a cast? _____

10. What is a foram? _____

11. What is amber? _____

12. What type of animal might become preserved in amber?

13. Where in the US is a tar pit found? _____

14. What type of animal might become preserved in a tar pit?

15. Which is more likely to fossilize? Hard parts or soft parts?

16. Of all the organisms alive today, what percentage is most likely to be preserved as fossils?

17. What are three ways in which a fossil can be destroyed after it has formed?

a. _____

b. _____

c. _____

18. Which type of rock is most likely to contain fossils? Igneous, sedimentary, or metamorphic?

19. Why is a mammoth more likely to fossilize than a caterpillar? (From the Review Quiz).

B. Stories from the Fossil Record

<http://www.ucmp.berkeley.edu/education/explorations/tours/stories/middle/intro.html>

Paleoecology

20. What is paleoecology? _____

21. What are three abiotic factors of the ecosystem?

a. _____

b. _____

c. _____

22. What are Archaeocyathids? _____

23. What could explain finding fossils of sponges in the Nevada desert?

24. What does terrestrial mean? _____

25. Plants with smooth leaves grow in what sorts of climates?

26. In what climate do plants with leaves with toothed edges live?

- _____
27. List 2 common interactions between organisms.
- a. _____
- b. _____
28. What are the holes in the ammonite shell? _____
29. What animal made the holes in the ammonite shell? _____
30. What can fossil pollen and spores tell us? _____

Past Lives

31. Name a fossil animal with growth rings (from the website).
- _____
32. How many species of trilobites existed? _____
33. Which fossil animal is sometimes found curled up (from the website)?
- _____
34. Why did they curl up? _____
35. What was the evidence that the Maiasaurs cared for their young in the nest?
- _____
36. What was the evidence that hadrosaurs lived in herds with social behavior?
- _____
37. In the page on the whale forelimb, what happened to the REAR legs of the whale ancestor?
- _____

Geologic Time

38. What is superposition? _____
39. What is an index fossil? _____
40. What is the genus of the plant fossil that has been used to piece together the positions of the continents in the past? _____
41. When did *Glossopteris* live? _____
42. On what supercontinent did *Glossopteris* live? _____

Biodiversity

43. What is biodiversity? _____
44. What is the genus of the fossil bird? _____
45. Did *Archaeopteryx* have feathers? _____
46. Did *Archaeopteryx* have teeth? _____
47. What appears to be the closest living relative of the dinosaur?

48. When did trilobites become extinct? _____
49. What is one of the closest living relatives of the trilobite?

50. What percentage of all species that lived on Earth are now extinct?

51. A mass extinction occurred about 248 million years ago. This was at the end of what geologic period?

52. What are some of the factors contributing to the extinction?

53. What percentage of the animals went extinct 248 million years ago?

54. List three groups of organisms that became extinct about 248 million years ago.
- a. _____
 - b. _____
 - c. _____
55. List three groups of organisms that became extinct about 65 million years ago.
- a. _____
 - b. _____

- c. _____
56. What sorts of animals became extinct about 11,000 years ago? (list at least 3 types of mammals)
- _____
57. What was the most likely cause of the extinction 11,000 years ago? (list two factors)
- _____
- _____
58. When reef-building organisms went extinct, what became of the other organisms that inhabited the reef?
- _____
59. What appears to be the closest living relative of the eurypterid?
- _____
-

C. University of California Berkeley Museum of Paleontology - History of Life Through Time

<http://www.ucmp.berkeley.edu/exhibits/historyoflife.php>

60. What are the three domains of life?
- a. _____
- b. _____
- c. _____
61. Click on the link for Bacteria in the diagram.
- a. What do bacteria do, and why are they important?
- b. What is the age of the oldest fossil bacteria? _____
62. At the bottom of the Bacteria page, click on Fossil Record.
- a. What are cyanobacteria?

b. Name two layered structures that cyanobacteria form.

c. Explain how cyanobacteria build these layered structures.

Use the BACK button to return to the History of Life Through Time page.

63. Click on the link for Eukaryota in the diagram.

Which four groups of organisms are included in the Eukaryota?

- a. _____
- b. _____
- c. _____
- d. _____

64. Click on the palm tree.

Plants first appeared in the _____ but did not begin to resemble modern land plants until the Late _____.

Trees appeared by the end of the _____ Period.

Use the BACK button to return to the History of Life Through Time page.

65. Click on the link for Archaea in the diagram. When were the Archaea discovered?

66. What sorts of extreme environments do the Archaea inhabit?

Use the BACK button to return to the History of Life Through Time page.
Click on "Learn more about phylogeny and cladistics".

67. What is phylogenetic systematics?

Click on the NEXT button in the bottom right corner of the page, or click on "How to read an evolutionary tree".

68. What is a clade? _____

D. Geologic Time
University of California Berkeley Museum of Paleontology -
Tour of Geologic Time

<http://www.ucmp.berkeley.edu/exhibits/geologictime.php>

Click on "Learn about the history of the geologic time scale."

69. Explain the contributions of Nicholas Steno to geology.

70. What was William Smith's contribution to geology?

71. The beginning of the Phanerozoic is marked by what occurrence? (Read carefully. Many students jump to conclusions and miss this one.)

72. What are the three divisions (Eras) of the Phanerozoic Eon?

- a. _____
- b. _____
- c. _____

73. What do the following terms mean?

- a. "zoic" _____
- b. "Cen" _____
- c. "Meso" _____
- d. "Paleo" _____

74. What major group of animals dominated the Mesozoic Era? _____

E. Frequently Asked Questions about Paleontology

<http://www.ucmp.berkeley.edu/FAQ/faq.html>

76. What are coprolites? _____

77. What are the practical uses of paleontology? (Give at least three.)

78. How do paleontologists know how old fossils are?

79. Fossils that are most useful for correlation tend to be:

- a. _____
- b. _____
- c. _____
- d. _____