

HISTORICAL GEOLOGY

Geology 3020

LAB 7. MESOZOIC LIFE

PHYLUM CHORDATA

A chordate is an animal that has, at some stage in its life history, a stiff, elongate supporting structure, a dorsal hollow central nervous system, gill slits and a blood circulatory system. The supportive structure in primitive chordates is called a notochord. Vertebrates are simply those chordates in which the notochord is replaced by a series of cartilaginous or bony vertebrae. Fishes, amphibians, reptiles, mammals and birds are the primary vertebrates.

Notes: many pages in this exercise can be navigated to via links on previous pages; you may have to explore links to find answers to some questions.

Visit the University of California at Berkeley Museum of Paleontology (UCMP) Vertebrates Fossil Record page:

<https://ucmp.berkeley.edu/vertebrates/vertfr.html>

1. What is the first known vertebrate? In what period did it appear? Approximately how many years ago? What type of animal was it?
2. When did the first jawed fish appear (time period and years before present)?
3. What is the difference between cartilaginous and bony fish?

Visit the University of California at Berkeley Museum of Paleontology tetrapod page:

<https://ucmp.berkeley.edu/vertebrates/tetrapods/tetrafr.html>

The diagram indicates that Sarcopterygia (primitive lung-fish) gave rise to modern lung-fish (Dipnoi) and to tetrapoda, from which evolved amphibians and the Amniota (mammals, reptiles and birds).

4. Define tetrapod:

5. Why are fossils of the early tetrapod *Dendrerpeton* common in the Joggins Basin of Nova Scotia and what is their connection to fossil lycopod trees?

Visit the University of California at Berkeley Museum of Paleontology Amphibia page:
<https://ucmp.berkeley.edu/vertebrates/tetrapods/amphibintro.html>

6. What is the meaning of the name “amphibian”?
7. Give two reasons why amphibians must return to water to breed:
8. What feature of amphibians may make them particularly susceptible to pollution?

Visit the University of California at Berkeley Museum of Paleontology Amniota page:
<http://www.ucmp.berkeley.edu/vertebrates/tetrapods/amniota.html>

The Amniota are a group of animals that have some form of amniotic egg (an egg with shell and/or membranes to stop the embryo drying out). Somewhat surprisingly, mammals are included in this group.

9. Did early mammals lay eggs? Yes No
10. In most modern mammals, the amniotic egg has been modified into:
11. What is a monotreme? Give two examples.

Visit the University of California at Berkeley Museum of Paleontology Diapsid page:
<https://ucmp.berkeley.edu/taxa/verts/diapsida.php>

12. What is the main diagnostic feature of diapsids?
13. What modern animal group are diapsids?

Visit the University of California at Berkeley Museum of Paleontology Archosauria page:
<http://www.ucmp.berkeley.edu/diapsids/archosauria.html>

14. List 5 characteristics that distinguish archosaurs from other diapsids:

15. When did archosaurs appear (time period and years before present)?

16. What was unusual about the limbs and running style of the early archosaur Euparkeria?

Visit the UCMP Ischigualasto Formation page:

<http://www.ucmp.berkeley.edu/mesozoic/triassic/ischigualasto.html>

Some of the oldest-known dinosaur fossils have been found in the Ischigualasto Formation, Argentina.

17. What is the age (time period and years before present) of the Ischigualasto Formation?

18. Why is Herrerasaurus considered “not quite a dinosaur”?

19. What do the traits of Eoraptor suggest were characteristics of the first dinosaurs?

Visit the UCMP Ornithischia and Saurischia pages:

<http://www.ucmp.berkeley.edu/diapsids/ornithischia/ornithischia.html>

