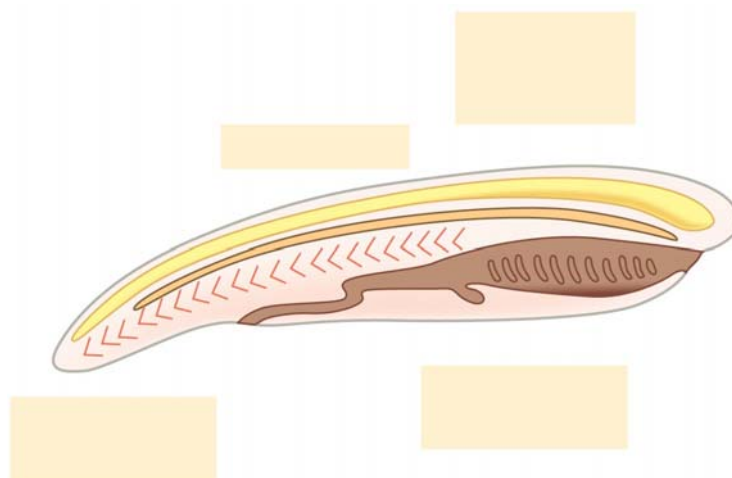


Name _____ Period _____

Chapter 34: Vertebrates

Concept 34.1 Chordates have a notochord and a dorsal, hollow nerve cord

1. We are *vertebrates*. What phylum do we belong to?
2. What other phylum might be considered our close relatives? Why?
3. Here is a figure showing the four key chordate characteristics. Label and explain each one.

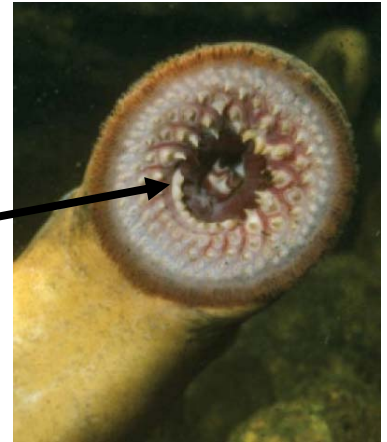


4. One of the important characteristics is a *notochord*. What is a *notochord*?
5. For us, as vertebrates, what remains of the *notochord*?
6. Chordates are the first group to show a *dorsal nerve cord*. Which embryonic layer forms the nerve cord?

7. *Pharyngeal gill slits* develop into what structures in the fishes?
8. In tetrapods, what do the *gill slits* become?
9. Vertebrates are not the only chordates. The *lancet* displays a number of chordate characteristics, and the ancestral chordate may have resembled a lancet. Describe a *lancet*.

Concept 34.2 Vertebrates are craniates that have a backbone

10. What is the oldest lineage of vertebrates? _____
They are *jawless* parasitic fish with a skeleton made of _____ . Look at the mouth! Lampreys have invaded the Great Lakes and damaged the fishing industry there.



Concept 34.3 Gnathostomes are vertebrates that have jaws

11. *Gnatho-* means “jaw,” and *-stome* means “mouth.” This group includes the sharks, fishes, amphibians, and reptiles. From what structure is it believed that jaws evolved?
12. What animals are in the clade *Chondrichthyes*?
13. What does the name *Chondrichthyes* mean? What material makes up their skeleton?
14. Why do sharks have to swim continuously?
15. The “fishes” with a bone skeleton are aquatic *Osteichthyes*. How do they breathe?

16. What is the function of a swim bladder?

Concept 34.4 Tetrapods are gnathostomes that have limbs

17. What does *tetrapod* mean?

18. What animals are in the class *Amphibia*?

19. What does the class name *Amphibia* mean?

20. Frogs have a life cycle with an aquatic larval stage, the *tadpole*. How do *tadpoles* breathe?

21. How do adult frogs breathe? (two ways)

22. Fertilization in amphibians is _____. The eggs lack a shell, and mortality is very high.

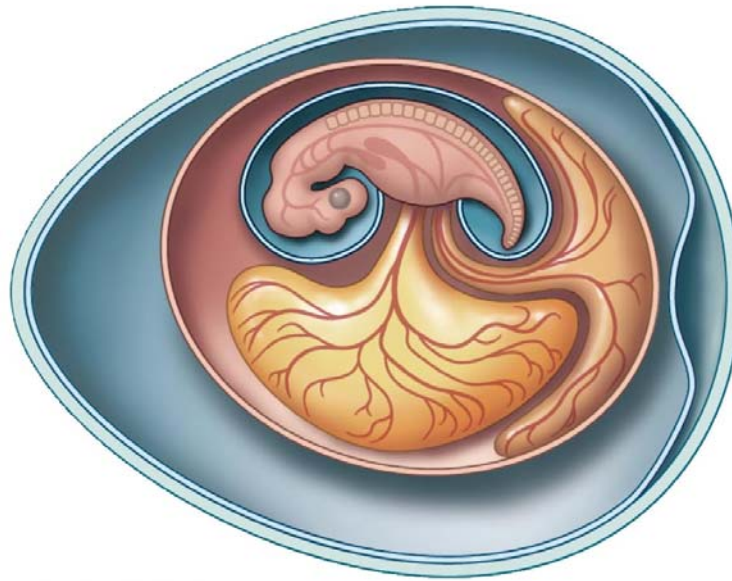
23. What factors tie *amphibians* to a life near water?

Concept 34.5 Amniotes are tetrapods that have a terrestrially adapted egg

24. What is an *amniotic egg*? How has it enabled animals to occupy a wider range of terrestrial habitats than amphibians can?

25. What groups have an *amniote egg*?

26. Label the four *extraembryonic membranes* seen in an *amniotic egg*, and explain the role of each one.



27. What animals are in the *reptile* clade?
28. Read the second paragraph about reptiles carefully, and then make a list of five characteristics of reptiles.

Reptile Characteristics

29. What is the body covering of a reptile? How does this enable it to live a more terrestrial life?

30. What is *internal fertilization*? How does this enable reptiles to reproduce on land?
31. Fishes, amphibians, and reptiles are *ectothermic*. What does this mean?
32. Birds are in the reptile clade. Which extinct group included their closest relatives?
33. Here is a short list of some reptiles. For each group on the list, give some important features that make them unique.

snakes

lizards

turtles

alligators and crocodiles

birds

34. What are four avian adaptations for flight?

Adaptations for Flight

Concept 34.6 Mammals are amniotes that have hair and produce milk

35. Make a list of at least five traits of mammals, including the two in the concept heading. Put an asterisk (*) next to the traits unique to mammals.

36. There are three groups of mammals. Contrast the groups based on how they bear young, and give an example.

Mammalian Group	Reproduction	Example
<i>Monotremes</i>		
<i>Marsupials</i>		
<i>Eutherians</i>		

37. As a human, you are in the class *Mammalia* and the order *Primates*. What features are unique to *primates* only?

Now you should be ready to test your knowledge. Place your answers here:
Testing Your Knowledge: Self-Quiz Answers

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____