

Cordates: We're All Family

Name: _____

- 2.a Students know the differences between the life cycles and reproduction methods of sexual and asexual organisms.
- 3.a Students know both genetic variation and environmental factors are causes of evolution and diversity of organisms.
- 5.a Students know plants and animals have levels of organization for structure and function...
- 5.c Students know how bones and muscles work together to provide a structural framework for movement.
- 6. Anatomy and physiology illustrate the complementary nature of structure and function.



Background information

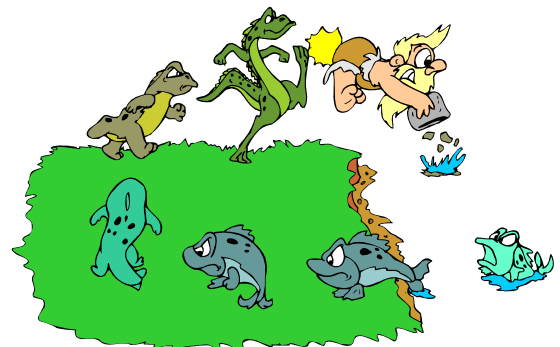
Fish are members of the **chordate** phylum because they display certain defining characteristics:

- a dorsal stiffening rod called the notochord
- a dorsal nerve cord
- pharyngeal gill slits
- a tail that extends beyond the anus.

However, fish are placed in the subphylum Vertebrata, because they also have skeletal features such as a backbone and skull. Vertebrates took a major step when they colonized land for the first time. Moving onto land was probably a result of competition in the marine ecosystem, in addition the availability of new terrestrial niches (special habitats/homes). One of the greatest evolutionary innovations of the Carboniferous period (360 - 268 million years ago) was the **amniotic egg**, which allowed early reptiles to move away from waterside habitats and colonize dry regions. The amniotic egg allowed the ancestors of birds, mammals, and reptiles to reproduce on land by preventing the embryo inside from drying out, so eggs could be laid away from the water. Primates evolved around 60 million years ago. One group of primates, the hominids, eventually lead to humans.

Check for understanding

1. Why are fish part of the chordate family?
2. What does it mean to be in the “vertebrate” family?
3. Why would sea life want to live on land?
4. What was so great about the evolution of the amniotic egg?
5. What group is related to the hominids?



Questions for after viewing the video:

1. What does the opening line “unity of life” mean?

2. What body part moves the nerve messages through the body?
3. What part of the fish helps it obtain oxygen under water?
4. Do human embryos have gill silts?
5. What part of the Amphioxus gives it a stiff shape and is the precursor to the backbone?
6. What do we humans have in our skeleton that is similar to a notochord?
7. Why are mammals like us called vertebrates?
8. Do simple creatures like Amphioxus have few or more genes than humans?
9. Explain mathematically how we got extra genes?
10. Why was the addition of more genes so important to the evolution of Chordates?
11. What adaptation allowed fish to become large predators?
12. What body part protects the soft brain so that fish could become top predators in the ocean?
13. Do fish have more or less genes than most land animals?
14. What chordate filters water for food?
15. What chordate asexually reproduces to form a long chain?
16. What chordate has a gelatinous home where the blue wispy animal feeds inside?
17. What animal evolved powerful jaws and legs and flourished on land?
18. What is special about the evolution of eggs?
19. What animal does not have limbs or legs but does have a tongue and can slither over land?
20. What does the King Cobra inject into the rat snake?
21. What adaptation does the King Cobra have for eating other snakes?
22. What vertebrates were the largest on land?
23. What crashed into the planet 65 million years ago wiping out the dinosaurs?
24. What small furry creatures came after dinosaurs?
25. What mammal has wings and eats cactus fruit in the movie?
26. Humans are members of what group of vertebrates?
27. What specific animal acts and looks most like us?
28. Give an example of how primates use tools.
29. Write 2 full sentences about what you learned about the evolution of chordates.
 - a.
 - b.

