

## STUDY GUIDE: Chordates

### KEY TERMS

notochord	Osteichthyes	monotreme
pharyngeal slits	bony fish	marsupial
dorsal, hollow nerve cord	lobed-finned fish	placental
Subphylum Urochordata(=Tunicata)	coelocanth	Primates
Subphylum Cephalochordata	ray-finned fish	prosimians
Subphylum Vertebrata	swim bladder	anthropoid
lancelet(=Amphioxus)	Amphibia	New World monkeys
segmentation(=somites)	Order Urodela	Old World monkeys
fish vs. tetrapods	Order Anura	Pongidae
Agnatha	Order Apoda	<i>Aegyptopithecus</i>
Placodermi	Reptilia	<i>Ramapithecus</i>
hinged jaws	Order Squamata	<i>Dryopithecus</i>
Chondrichthyes	Order Chelonia	brachiation
cartilaginous fish	Order Crocodylia	bipedalism
oviparous	amniotic egg	<i>Australopithecus</i>
ovoviviparous	ectothermic	<i>Homo habilis</i>
viviparous	endothermic	<i>Homo erectus</i>
	Aves	<i>Homo sapiens</i>
	Mammalia	
	stem reptile	

### QUESTIONS

1. Give three distinguishing features of the Chordata, list the three subphyla, and give an example of each.
2. Why are echinoderms thought to be more closely related to chordates than the other "invertebrate" phyla?
3. List the seven classes of **modern** vertebrates, and indicate the evolutionary relationships among them. State the order in which they appear in the fossil record.
4. Draw a phylogenetic tree for the fish and amphibians.
5. Draw a phylogenetic tree for the reptiles, dinosaurs, birds and mammals.
6. Some biologist refer to birds as specialized flying reptiles, dinosaur experts have also called birds living dinosaurs. Explain how these opinions can be supported; not supported.
7. What is *Archaeopteryx*?
8. The amniote egg was a major innovation of the reptiles. Describe the role of the amniote egg in the conquest of land by the vertebrates.
9. Give a possible explanation for the mass extinctions of the dinosaurs and other animals at the end of the Cretaceous. What explanation is most accepted today?
10. Describe the key innovations of each vertebrate class, and specify which of these were adaptations to overcome the difficulties of life on land.
11. What are the main characteristics of mammals?
12. What are the three groups(Subclasses) of living mammals? Where in the world are the first two groups most abundant?
13. List 3 or 4 characteristics shared by all primates.

14. Discuss current ideas of the evolutionary history of man. In doing so, describe some of the anatomical changes that occurred in the course of evolution from ape ancestor to modern human, and discuss the roles that bipedalism, tool use, and increased brain size may have played in human evolution. State the order in which the early hominids appear in the fossil record.
15. Draw a phylogenetic tree for the primates