

## KINGDOM ANIMALIA: PHYLUM CHORDATA: THE 7 VERTEBRATE CLASSES

All Vertebrates: have a backbone, endoskeleton, closed circulatory system, complex brain

### CLASS

### MAIN CHARACTERISTICS

### EXAMPLES

**Agnatha**

Jawless, cartilaginous skeleton, no paired fins, 2 chambered heart

lamprey & hagfish

**Chondrichthyes**

Jaws, cartilaginous skeleton, paired fins, gills, internal fertilization  
2 chambered heart, "tooth shaped" scales

sharks, skates, rays

**Osteichthyes**

Bony skeleton, jaws, external fertilization, swim bladder, operculum,  
"crescent shaped" scales, 2 chambered heart, paired fins

bass, trout, perch, tuna  
eel, sea horse, coelocanth

**Amphibia**

Appendages adapted for land, go through metamorphosis, respiration  
mainly through skin, skin smooth & moist, no claws, legs out to side,  
ectothermic, 3 chambered heart

salamanders, newts, frog,  
toads

**Reptilia**

Amniotic eggs, dry thick skin w/ scales, 3 chambered heart except  
crocodilians which have 4, legs under body, have claws, ectothermic

snakes, turtles, crocodiles  
lizards

**Aves**

Feathers, wings, endothermic, 4 chambered heart, thin/hollow bones,  
clawed toes & scaly feet, amniotic eggs, beaks adapted to diet

owls, sparrow, eagle,  
penguin, ostrich

**Mammalia**

Endothermic, hair, glands, diaphragm, young fed by mammary glands,  
highly intelligent, give birth to live young that have developed inside  
mother\*

Monotremes: egg laying mammals

duckbilled platypus & 2 species of ant eaters

Marsupials: pouched mammals

opossum, koala, wallaby, kangaroo

Placental Mammals: carry young in uterus

humans & most other mammals

- Gestation Period

## The Systems of the Animal Kingdom

Listed below are some of the characteristics of the invertebrate phyla for a handy review and study guide.

Phylum	Circulatory	Respiratory	Digestive	Reproductive	Excretory	Nervous	Skeletal	Muscular
Porifera	None	None	Collar cells and amoebocytes	Budding, Regeneration, and Gemmules	None	None	Spicules	None
Cnidaria	None	None	Gastrovascular cavity	Budding, Regeneration, Production of sperm and eggs	None	Nerve net found in the mesoglea	None	Muscle cells
Platyhelminthes	None	None	Mouth, pharynx and a gastrovascular cavity	Regeneration, Hermaphroditic	flame cells	Ladder-like nervous system	None	Muscle cells
Nemertea	None	None	Mouth, intestine, anus	Separate sexes	excretory tubules and excretory pore	Circular brain and several longitudinal nerve cords	None	Longitudinal muscles
Annelida	Closed system Aortic arches Dorsal and ventral blood vessels	Skin	Mouth, pharynx, esophagus, crop, gizzard, intestine, anus	Hermaphroditic	Nephridia 2 per segment	Ventral nerve cord with a small anterior brain	None	Longitudinal and circular muscles
Mollusca	Open System with a dorsal heart and sinuses	Gills	see Annelida	Sexual	Nephridia	Brain and ventral nerve cord	Some contain shells	Anterior and Posterior adductor muscles
Arthropoda	Open system with a dorsal heart and sinuses	Gills, Tracheal system, book lungs	see Annelida	Sexual: hermaphroditic, separate sexes, some parthenogenic	Malpighian tubules, green glands	Anterior brain and a ventral nerve cord	Exoskeleton made of chitin	Complex muscular system.