

PHYLUM CHORDATA

1. Phylum subdivisions:

- Subphylum Cephalochordata
 - Without backbones
 - Eg lancelets
- Subphylum Urochordata
 - Without backbones
 - Eg sea squirts, tunicates
- Subphylum Vertebrata
 - With backbones
 - Eg lampreys, sharks, fishes, amphibians, reptiles, birds, mammals

2. Chordata characteristics:

- a) Flexible notochord
- b) Dorsal, hollow nerve cord above the notochord
- c) Pharyngeal slits/pouches of anterior digestive tube (gills → lungs)
 - also post anal tail
 - notochord exists only in the embryo of most vertebrates

3. Subphylum Vertebrata: Classification

- Class Agnatha – lampreys
- Class Chondrichthyes – sharks
- Class Osteichthyes – fishes
- Class Amphibia – amphibians
- Class Reptilia – reptiles (snakes and lizards) (embryo surrounded by membrane & shell)
- Class Aves – birds
- Class Mammalia – mammals

- Birds and mammals are endothermic (warm-blooded) and can regulate body temperature regardless of external environment. Body heat arises from metabolism (breakdown of nutrients)

- Rest of the vertebrates are ectothermic (cold-blooded). Their body temperature varies with changes in external environment.

4. Vertebrate Characteristics:

- a) Vertebrae – surrounds nerve cords, segmented and flexible, protects nerve cord
- b) Endoskeleton – living tissue of cartilage and/or bone which grows with the animal, protects internal organs, and allows muscle attachment for movement
- c) Cephalization – brain with specialized sense organs enclosed in a skull for protection

- d) Closed Circulatory System – heart with 2-4 chambers, blood is contained in arteries, capillaries, veins
- e) Respiratory System – blood contains hemoglobin to pick up O_2 , CO_2
- f) Reproductive System – separate sexes, sexual reproduction with internal or external fertilization
- g) Excretory System – kidneys remove N-wastes and reabsorb H_2O

5. **Class Mammalia** (pg603-604) – split into 3 groups

- a) monotremes (egg laying – eg platypus & spiny anteater)
- b) marsupials (pouched mammals – eg kangaroo, koalas)
- c) placental (young nourished by placenta)

6. **Mammal Characteristics**

- Endothermic
- Possess hair for insulation
- Diaphragm – efficient respiratory system to bring in O_2 & remove CO_2 from body
- Mammary glands – produce milk to nourish young
- Specialized teeth – incisors (bite, cut); bicuspid (shred); canines (tear, grip); molars (grind, crush)