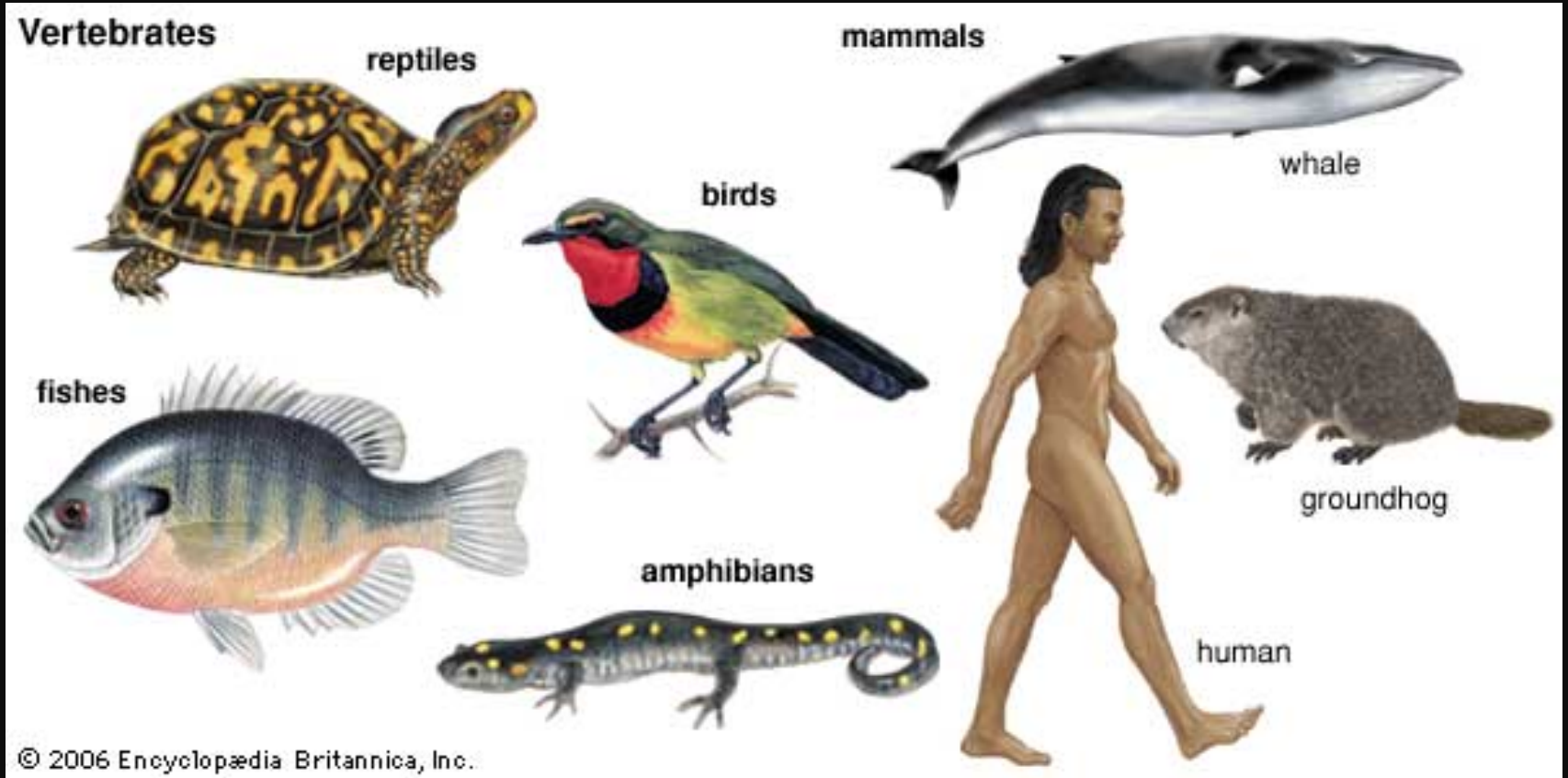


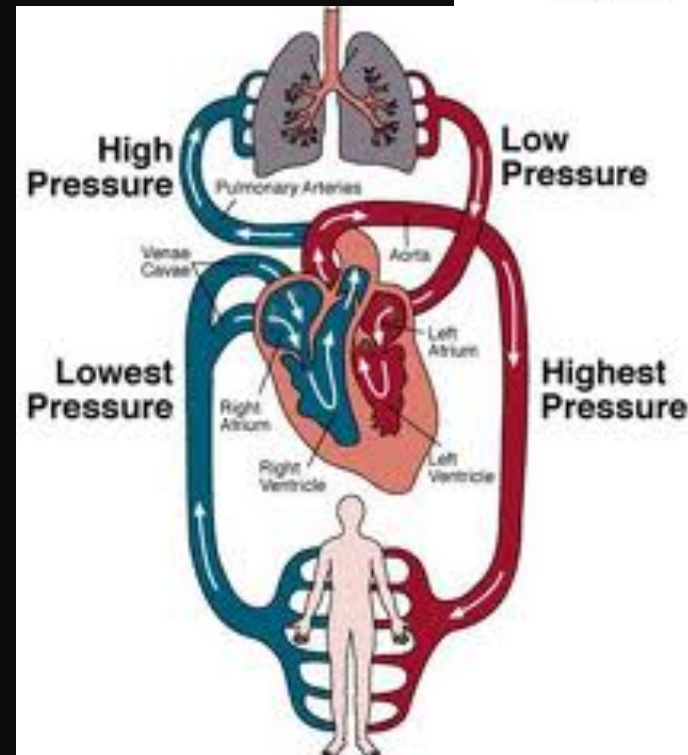
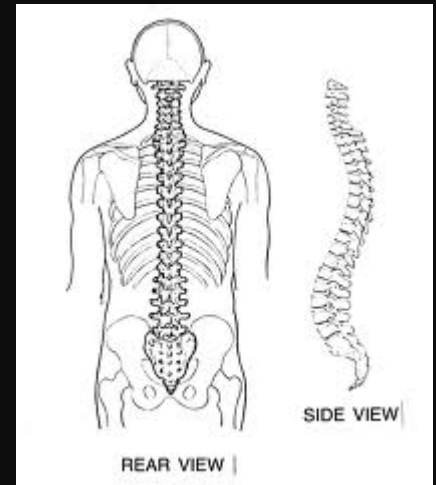
Vertebrates: Introduction



A: Classification – all belong to Phylum Chordata

B: Shared Characteristics

1. Have a backbone encases/protects the dorsal nerve cord (spine)
2. Two sets of paired appendages
3. Closed circulatory system (Blood in vessels) powered by a heart
4. Breathing apparatus (lungs or gills)



The Five Groups!

1. Fish



2. Amphibians



The Five Groups!

3. Reptiles



4. Birds



The Five Groups

5. Mammals



II. Fish

A. Definition:

1. Aquatic (live in fresh or salt water)
2. Have scales, fins and gills (in general; exceptions exist)
3. Ectothermic (cold blooded)



B: Members:

1. Three types:

a) Cartilaginous (sharks and rays)



b) Bony fishes (salmon, guppies, tuna, eels)



c) Jawless Fishes (Hagfish, lampreys)



Members:

1. Two basic types:

a) Salamanders/Newts



b) Frogs and toads



IV. Reptiles



A. Definition:

1. Adapted for life out of water (on land)
2. Scales on skin (prevents water loss); doesn't grow, and must be shed
3. Lungs for breathing
4. Eggs covered with leathery shell
5. Ectothermic (cold blooded)



Members:

- 1. Three basic types:
 - Lizards and snakes



– Crocodilians



– Turtles



V. Birds

A. Definition

1. Body covered in feathers
2. Front limbs modified into wings
3. Have beaks
4. Eggs covered in a chalky shell
5. Endothermic (warm blooded)





Members:

1. 27 groups of Class Aves!

2. Includes:

1. Owl
2. Eagle
3. Chicken
4. Penguin
5. Finch
6. Pelican
7. Duck
8. Etc.....



VI. Mammals

A. Definition:

1. Endothermic
2. Fur, fat layer under skin, sweat glands in skin all to regulate body temperature
3. Mammary glands to produce milk to feed young
4. Most are viviparous (young are born alive, not in egg)
5. Different kinds of teeth (to match food type)



Members:

1. Three basic types based on reproductive differences:

[Ted-Ed: Mammal Birth Types](#)

A. Placental Animals

- A. Young develop internally in uterus
- B. Primates, ungulates, rodents, cetaceans, carnivores



3. Marsupial mammals

- a) Young develop in uterus, but born early in development
- b) Crawl up mother's fur and into a pouch
- c) Attach to nipple, continue development
- d) Koala, opossum, kangaroo

[Ze Frank on Marsupials](#)

(PG-13: Coarse Language,
Suggestive Marsupial
Sexual references....you've
been warned!)



1. Monotreme Animals

- a) Young hatched from eggs
- b) Fed milk by mother
- c) Echidna, duck billed platypus



TED Ed Animations on Vertebrates

Why Do Cats act so Weird?

How Do schools of Fish swim in Harmony?

[How Smart are Dolphins?](#)

How Did feathers evolve?

Eli the eel. A mysterious migration.

Poison vs. Venom: What's the difference?

Penguins: Popularity, peril and poop.

Disapearing Frogs.

How do Geckos defy gravity?

I'm Batman.

Why elephants never forget.

The coelacanth: a living fossil of a fish.

How to speak Monkey.

The Survival of the Sea Turtle

[Why are Blue Whales so Enormous?](#)

[The Game Changing Amniotic Egg](#)

[Why are Sharks so Awesome?](#)

Bird Migration. A Perilous Journey

Why are Sloths so slow?

The Evolution of Animal Genitalia

[The 3 Different Ways Mammals give Birth](#)

Why Do Dogs Smell each Others Butts?

Why no Aquarium has a Great White

[How Smart are Orangutans?](#)

The Otherworldly Creatures in the Ocean's
Deepest Depths

Why do Whales Sing?

[Why are Fish fish-shaped?](#)

.....and lots of others, check
out the Ted-Ed link at the top!