Introduction

to Animals

What is an Animal?

- **Taxonomy:** Kingdom Animalia
- **Type of Cells:** Eukaryotic
- **Cellular Organization:** Multicellular
- **Reproduction:** Sexual / Asexual
- **Feeding:** Heterotrophic by ingestion (internal)

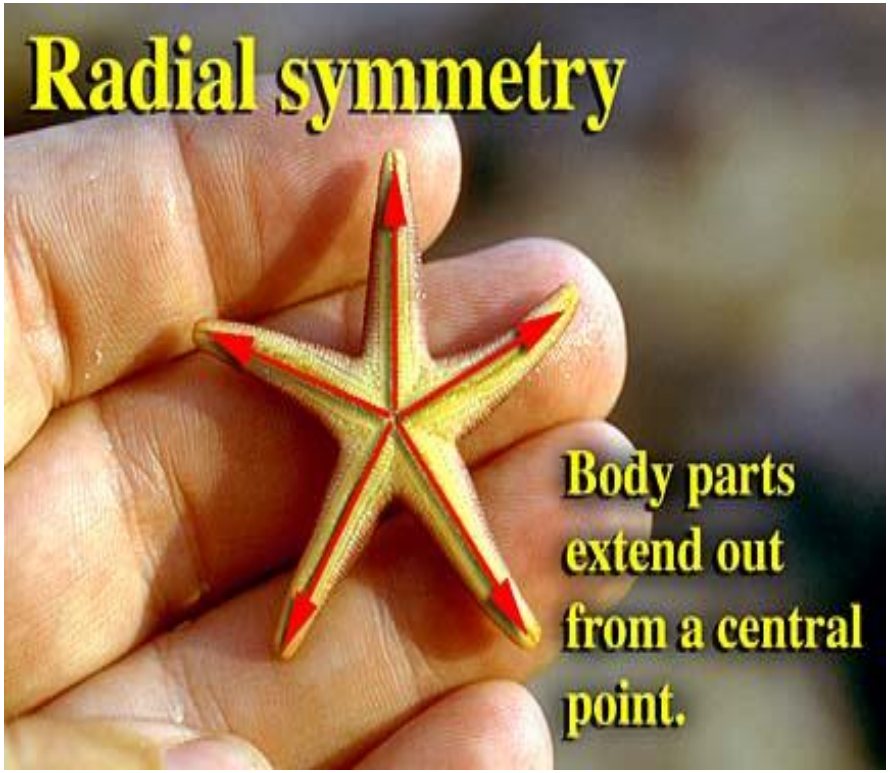
*cells do not contain cell walls

Animal Body Characteristics

- **<u>Body symmetry:</u>** the way body parts are arranged.
- **Types of Body Symmetry:**
  1. Radial
  2. Bilateral
  3. Asymmetrical

Radial

- The body can be divided into two identical halves by any plane that passes through the longitudinal (up and down) axis

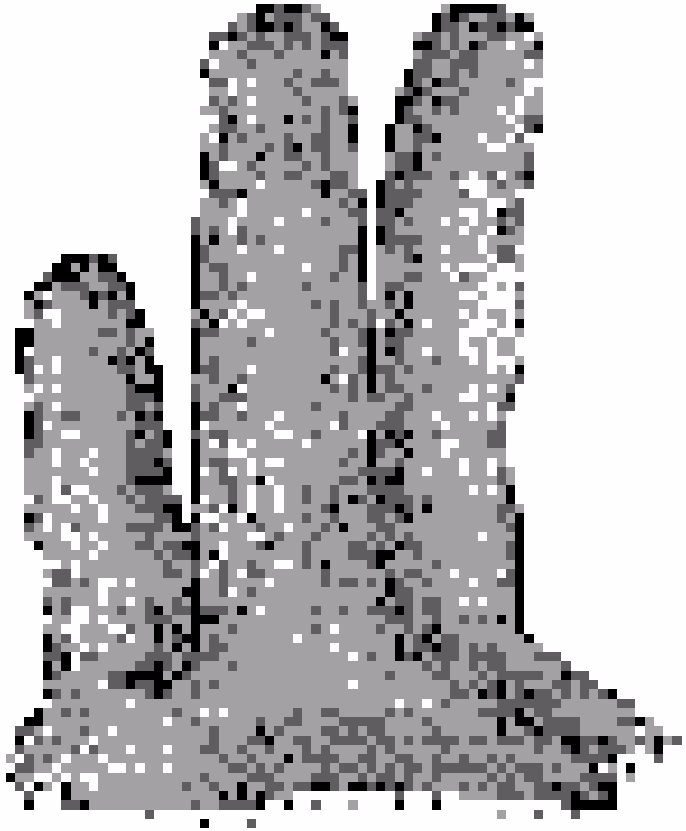


Bilateral

- The body can be divided into two identical halves by only one specific plane passing through the longitudinal axis

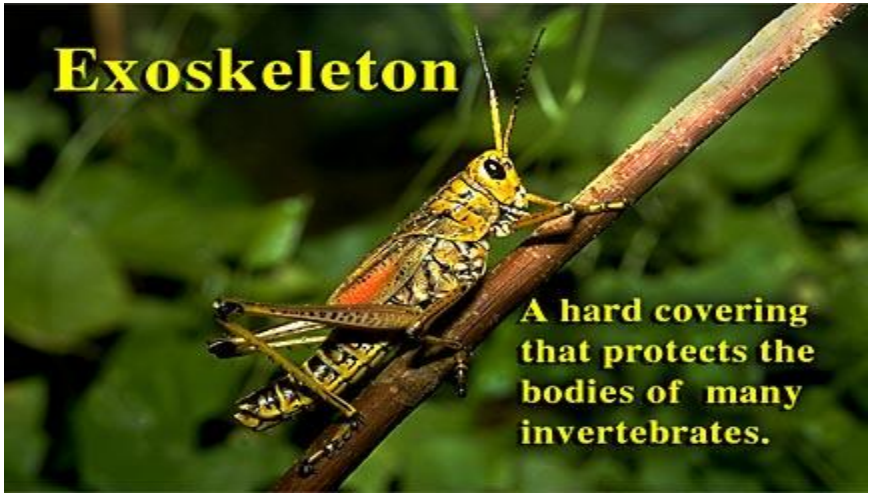
Asymmetrical

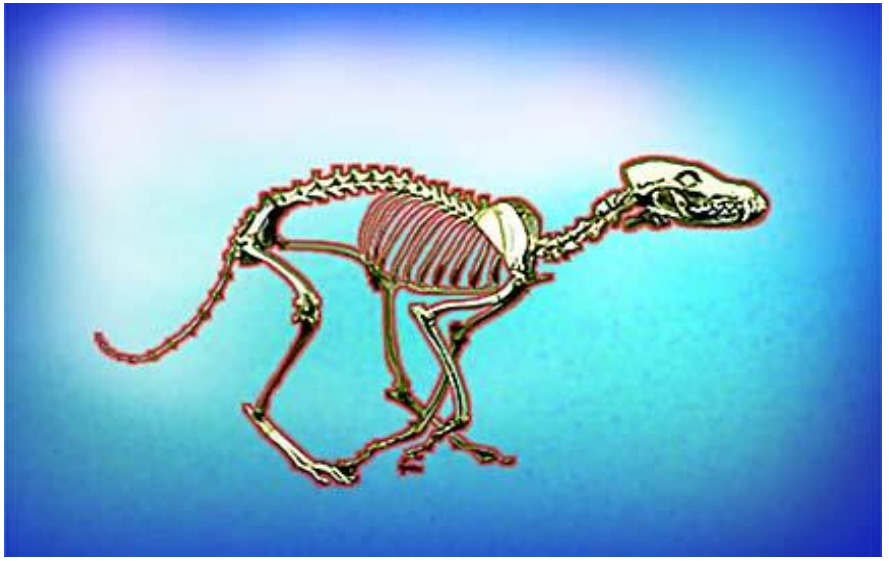
- The body has no definite shape and can not be divided into two identical halves



Animal Support and Protection

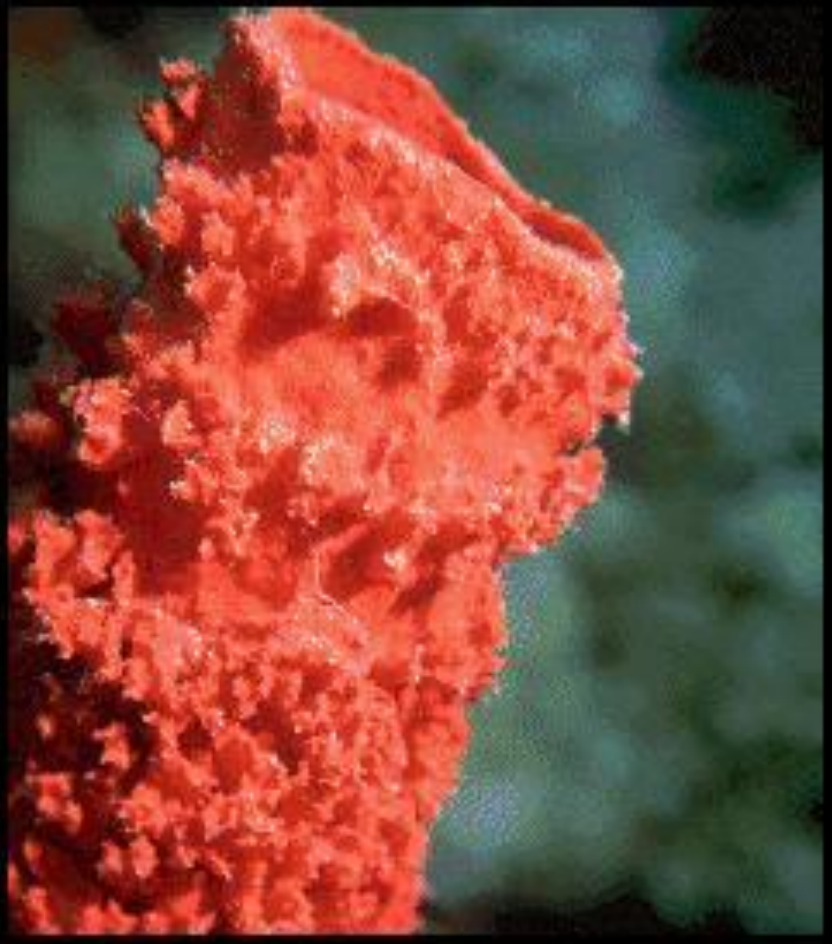
- **<u>Exoskeleton</u>**: hard protective covering on outside of body
- **<u>Endoskeleton:</u>** support inside the body





Animal Phyla

Introduction to Porifera

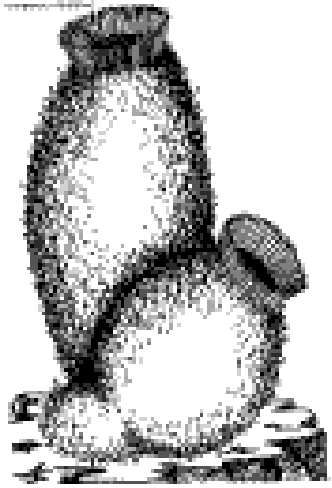


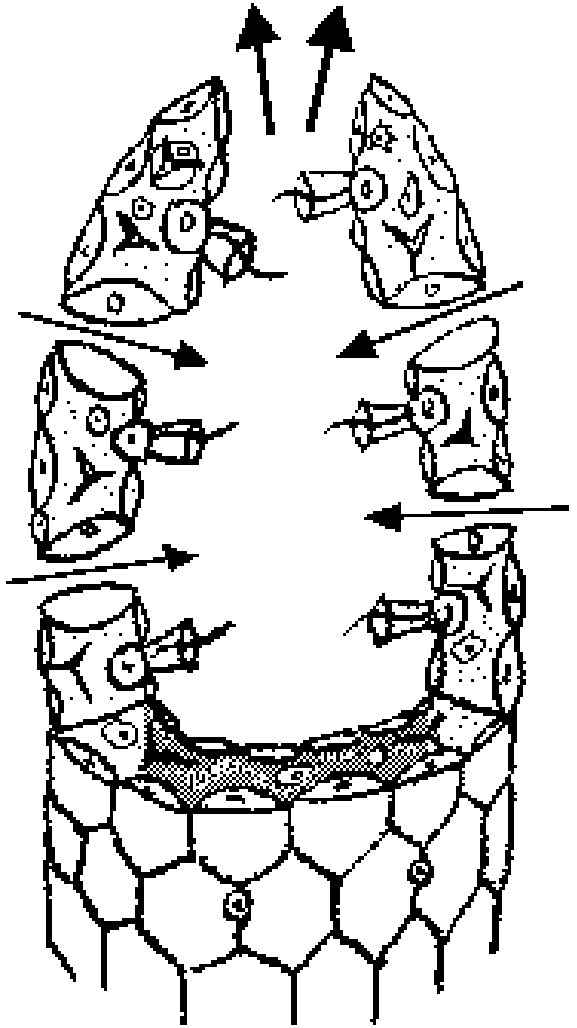
a.k.a. Sponges, but NOT the lufa in your shower !!

Phylum Porifera

1. **Common name:** Sponges
   - Porifera means “pore bearing”
2. **Habitat:** Aquatic
   - Live in water
3. **Locomotion:** Adult sponges are **sessile**
   - Stay in one place
4. **Feeding: filter feeders**
5. **Symmetry:** Asymmetrical

Examples of Porifera / Sponges





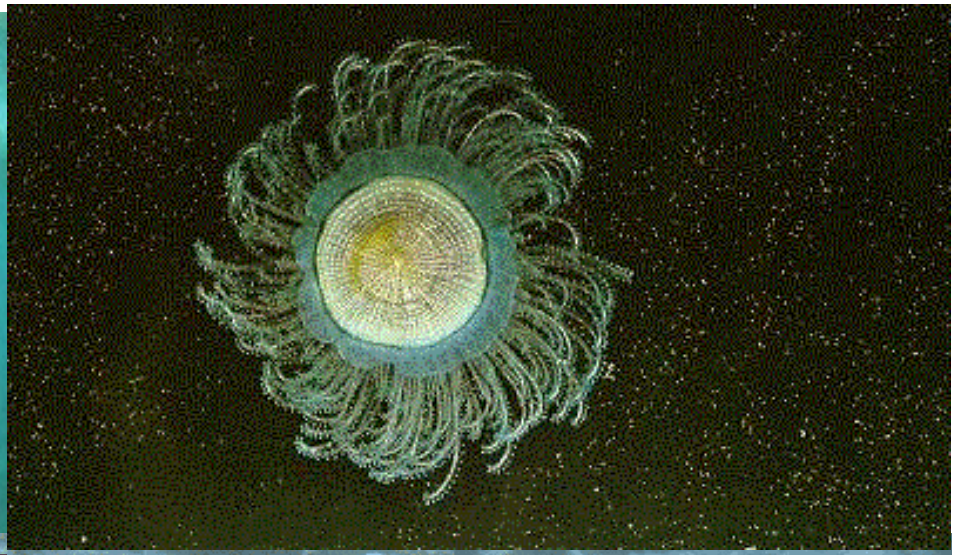
Phylum Cnidaria

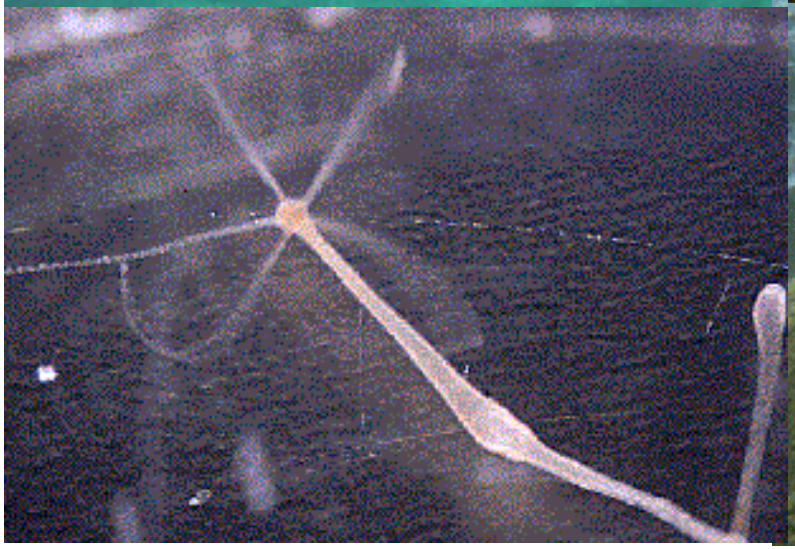
Phylum Cnidaria

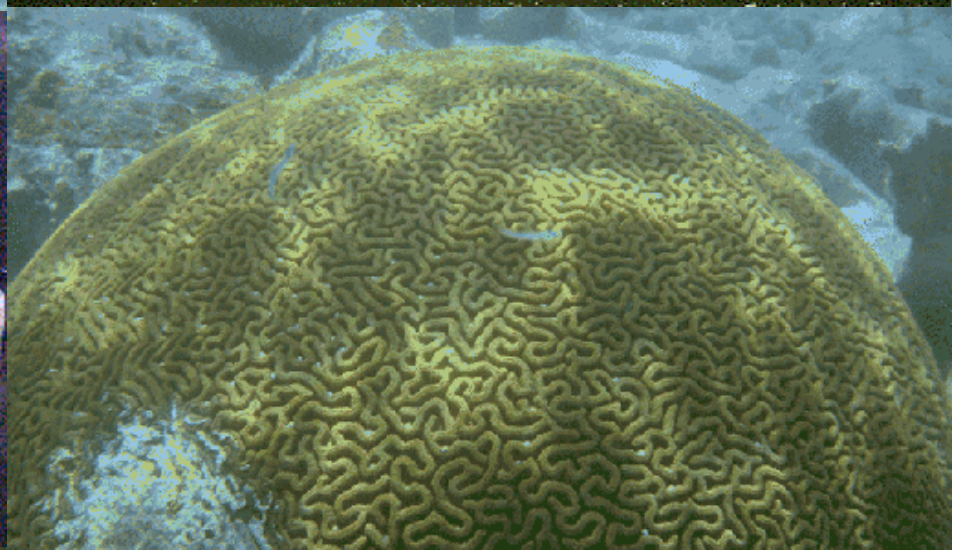
- **Common Names:** Jellyfish, Coral, Sea Anemones
- **Habitat:** Warm marine water (Caribbean)
- **Symmetry:** Radial
- **Protection:**

  Cnidarians can **sting** other animals. They do this using **<u>Nematocysts.</u>**

Examples of Cnidarians







“The Worms”

The term worm does **not** refer to a specific taxonomic group of animals!

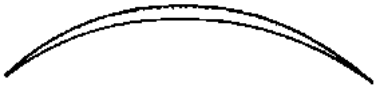
Or Candy!

The “Worm” Phylum’s

Platyhelminthes

Flatworms

Nematoda



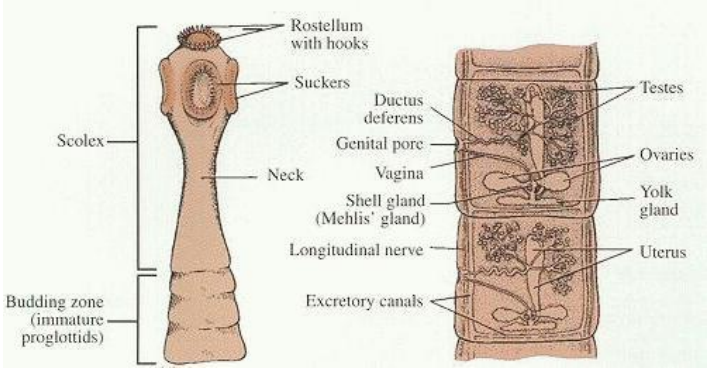
Roundworms

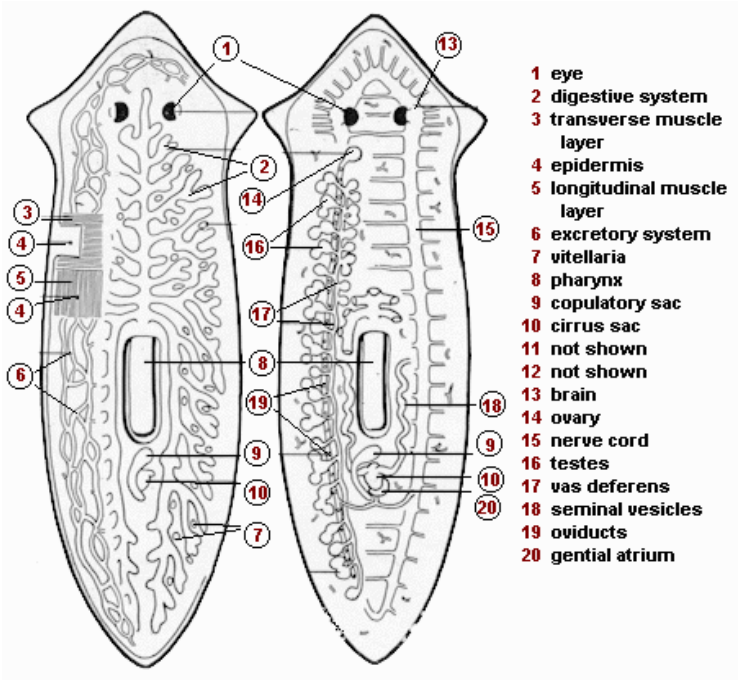
Annelida

Segmented Worms

P. Platyhelminthes

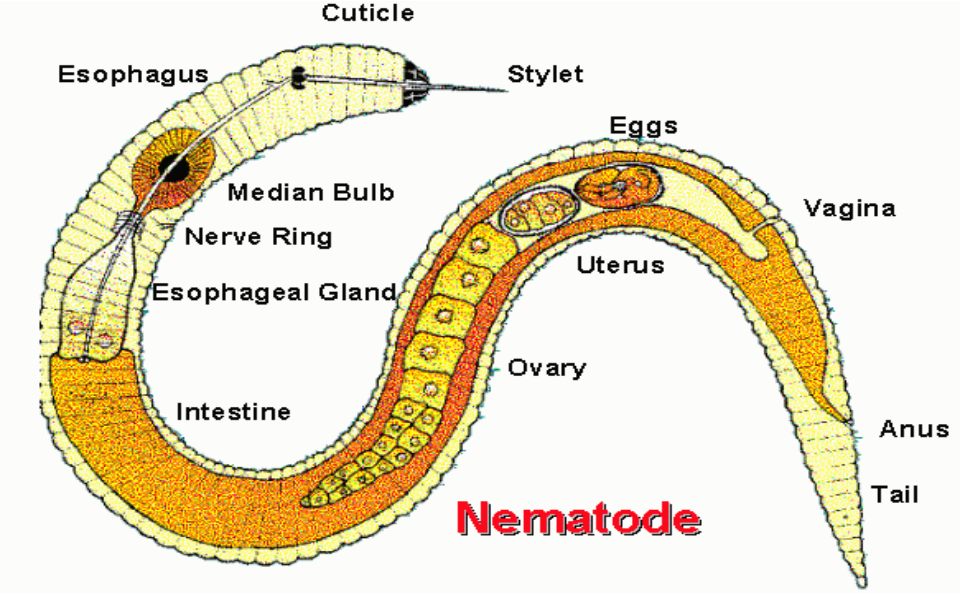
- **Common Name:** Flatworms (Tapeworms & Flukes)
- **Feeding:** Dead or slow moving organisms
- **Reproduction:** Hermaphrodites, Binary Fission
- **Fact:** Can regenerate!
- **Symmetry**: bilateral



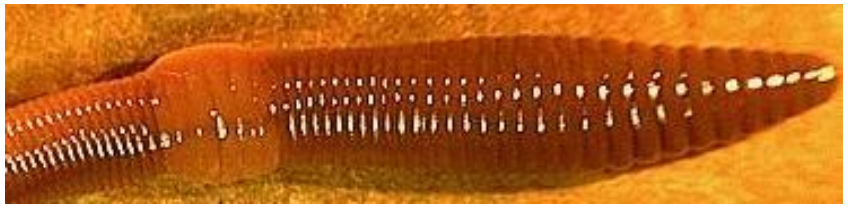


P. Nematoda

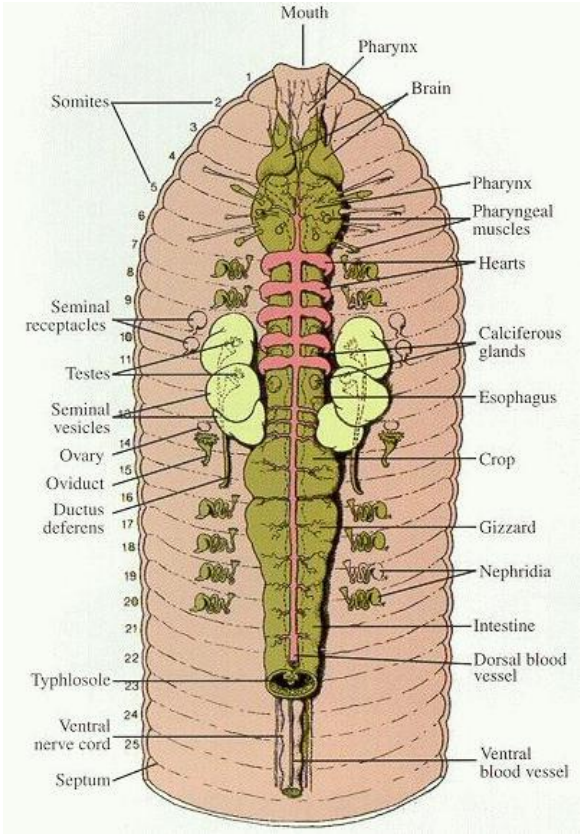
- **Common Name:** Round Worms (Hookworms & Pinworms)
- **Habitat:** Soil, animals and water
- **Fact:** Both free living and *parasitic*
- **Symmetry:** Bilateral
- **Body**: round with openings on both ends



P. Annelida



- **Common Name:** Segmented Worms (Bristleworms, Earthworms and Leeches)
- **Symmetry:** bilateral
- **Fact:** The term “Annelid” means “tiny rings” These tiny rings are the **segments** every Annelid worm is made up of.
- **Habitat:** everywhere except extreme cold and dry




ARTHROPODS!

P. Arthropoda

- **Common Names:** Shrimp, crabs, lobsters spiders, centipedes….. etc.
- **Symmetry:** Bilateral
- **Important Characteristic:** Jointed Appendages (jointed body parts) and Exoskeletons (hard outer covering)

Types of Arthropods

- C. Crustacean
- C Arachnid
- C. Insecta

C. Crustacea

- Lobster, Crab, Crayfish
- **Body**: have fused head and body called a <u>cephalothorax</u>

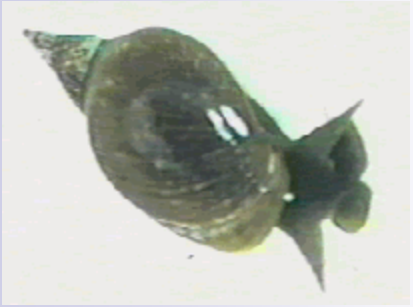
C. Arachnid

- Spiders, Ticks
- Eight jointed appendages

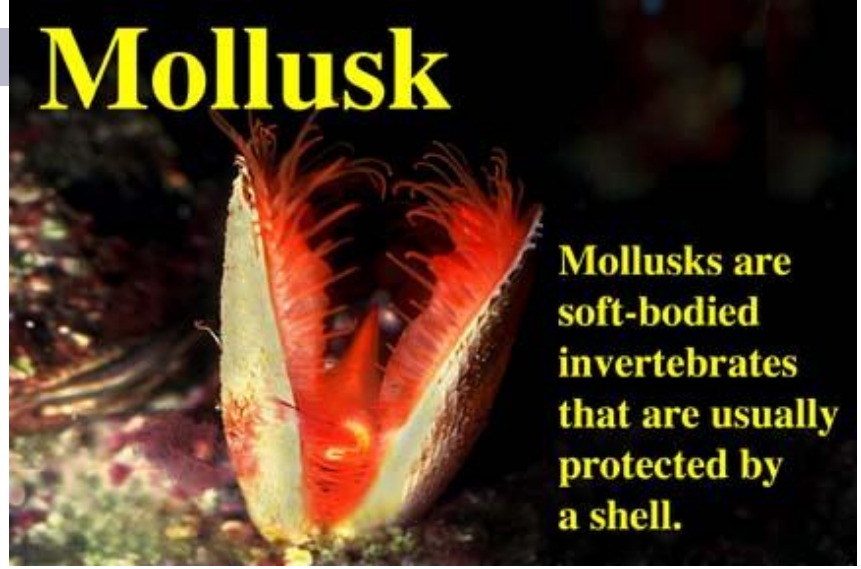
C. Insecta

- Fly, Bee, Grasshopper
- Go through metamorphosis
- Six jointed legs

Mollusks



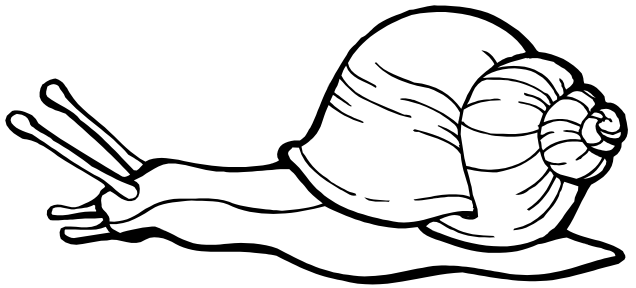
P. Mollusca



- **Common Name: Mollusks-**Snails, Clams, and Octopus
- **Symmetry:** Bilateral
- The phylum is divided into three diverse classes.
  - **C. Gastropoda**
  - **C. Bivalvia**
  - **C. Cephalopoda**

C. Gastropoda

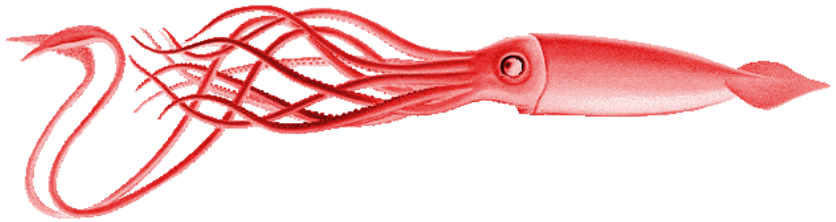
- **Gastropoda:** most members of this class have a one-piece, external shell or no shell.
  - Gastropods include **snails and slugs**



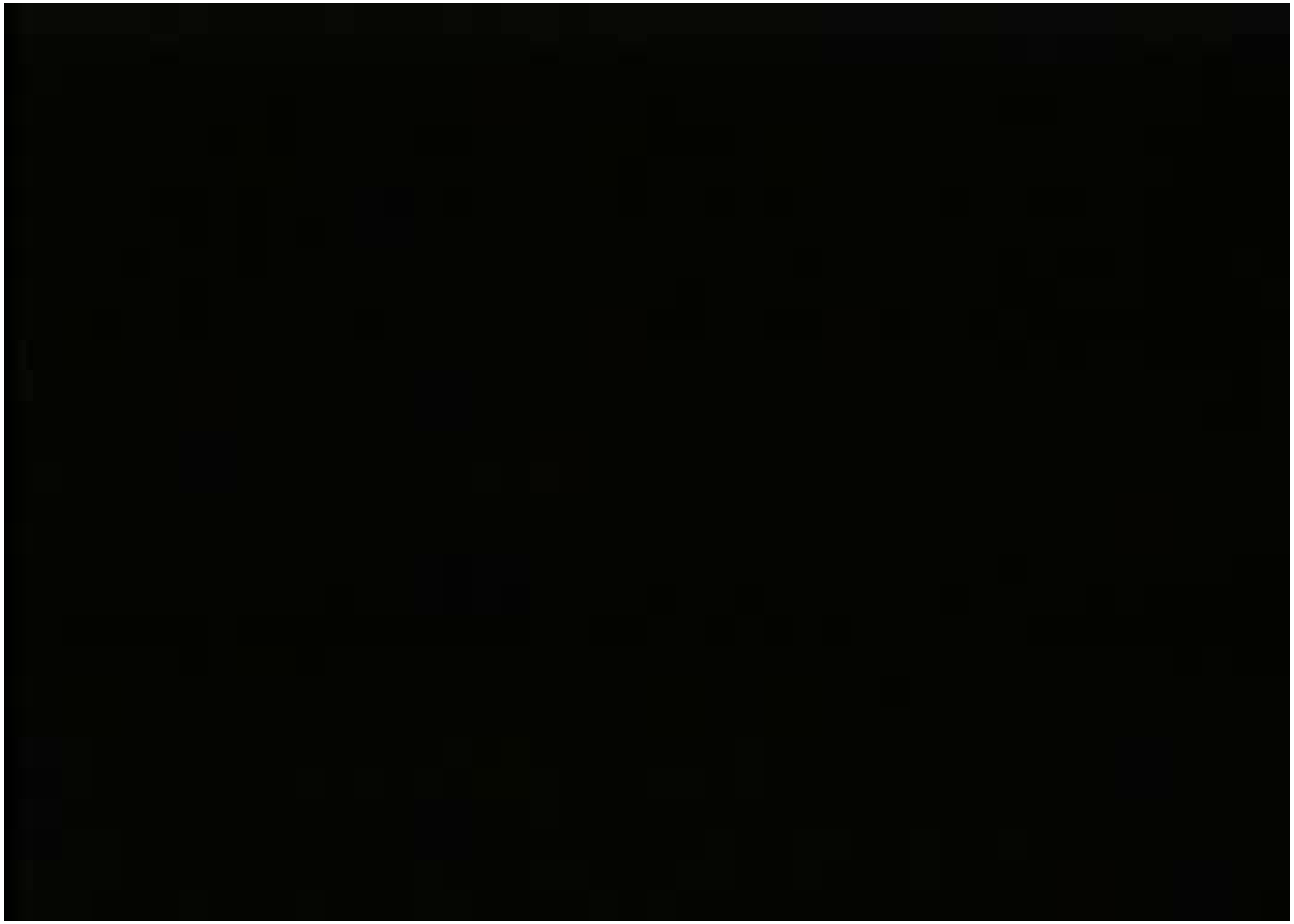
C. Bivalvia

- **Bivalvia:** these animals have an external shell that is divided into <u>two halves that are connected by a hinge</u>.
  - Bivalves include **clams, oysters, and scallops**.

C. Cephalopoda



- **Cephalopoda:** the most advanced group in the phylum.
- They have an internal shell supporting the body.
- **Fact:** many are complex and have tentacles with suckers
- Cephalopoda includes **Octopus and Squids**

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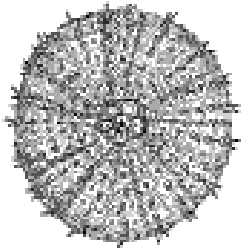
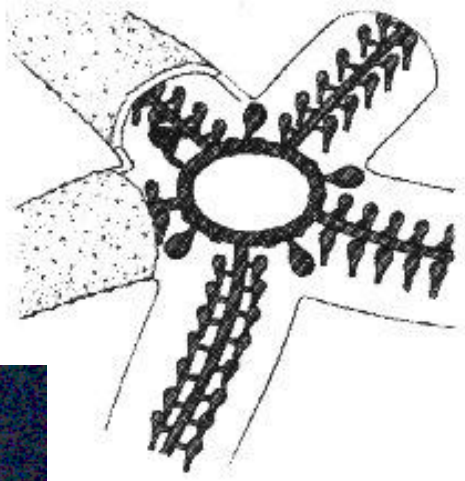
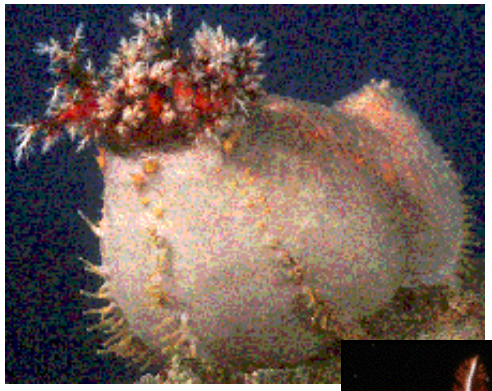
Echinodermata

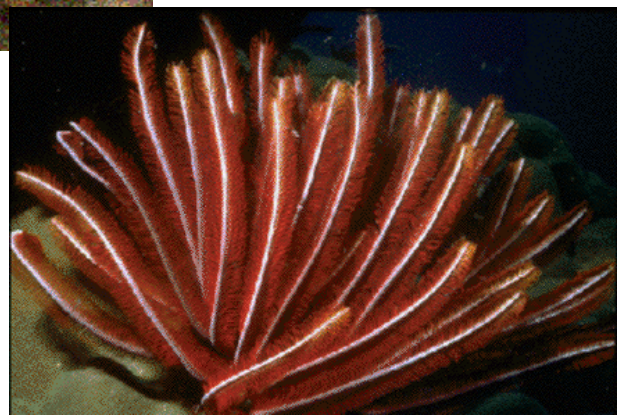
P. Echinodermata

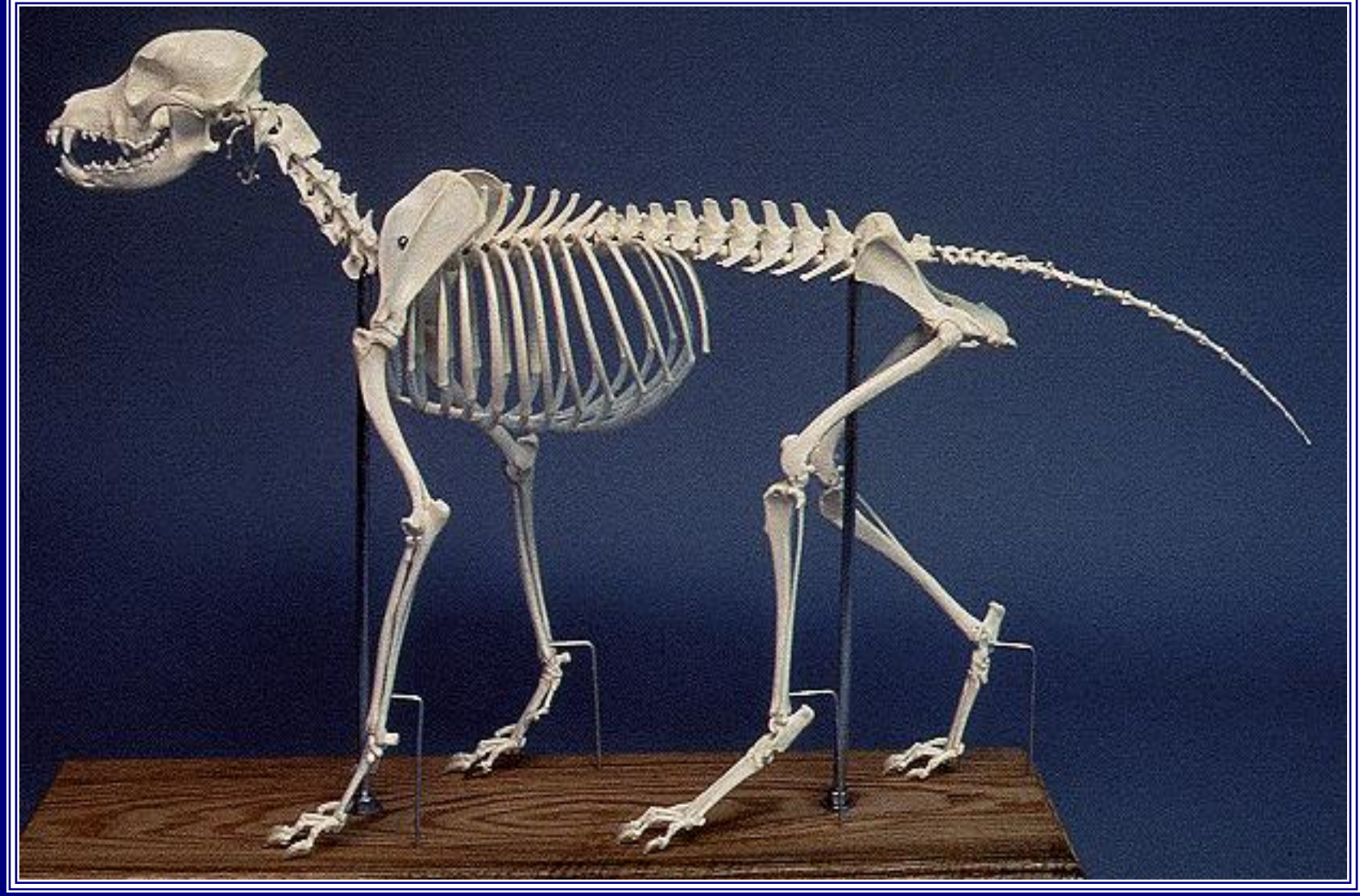
- **Common Names:** Starfish, sand dollars, and sea urchins
- **Habitat:** Marine (Salt water) environments
- **Symmetry:** Radial
- **Locomotion:** Use hydraulic (water powered) tube feet to move.











Phylum Chordata

Characteristics of the P. Chordata

- **All members of this Phylum have these characteristics at some time during their lives.**
  - **Notochord**
  - **Dorsal nerve cord**
  - **Pharyngeal pouches**
  - **Post-anal tail**
- **Symmetry is bilateral.**
- **This group includes *all* of the vertebrates and *some* invertebrates.**

How do chordates maintain homeostasis?

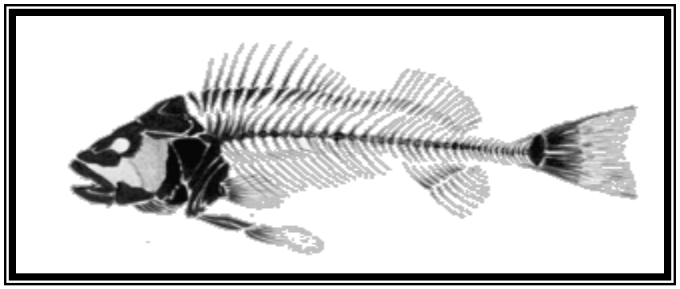
- **Ectothermic:** Body temperature is determined by the environment.
  - Can not maintain your own temperature! Needs a heat source.
- **Endothermic:** Body temperature holds at a constant level.
  - Body can create heat to maintain temperature!
- **Note:** DO NOT use the terms warm blooded and cold blooded! The blood temperature of a “cold blooded” lizard can be higher than that of a “warm blooded” human!

The “Vertebrates”

Sub Phylum Vertebrata

Characteristics of Vertebrata

- **Examples:** Fish, Sharks, Frogs, Lizards, Birds, Kanagroos, Dogs, Human
- The phylum is named because all these animals have vertebrae (a backbone).

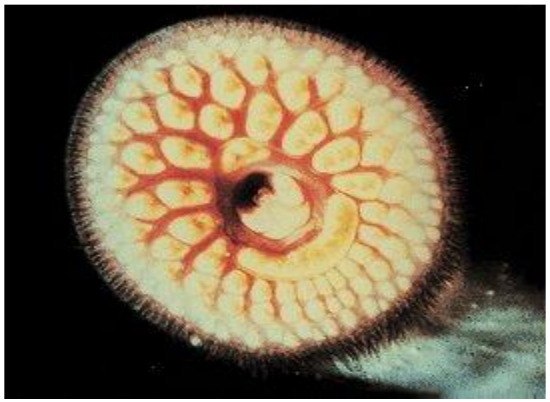


Classification

- Agnatha
- Chondrichthyes
- Osteichthyes
- Amphibia
- Reptilia
- Aves
- Mammalia

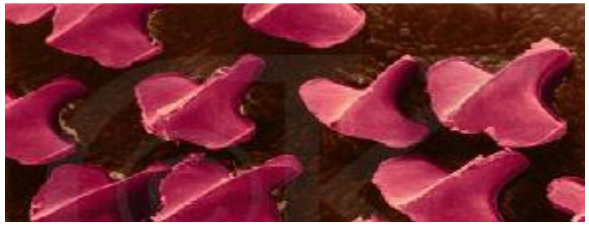
Class Agnatha

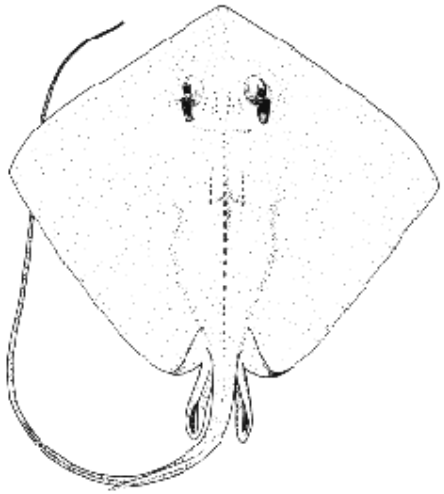
- **Common Name:** the jawless fish (lampreys and hagfish)
- **Class characteristics:**
  - Eel-shaped body
  - Cartilage skeleton
  - Unpaired fins
  - Ectothermic
  - Jawless mouth

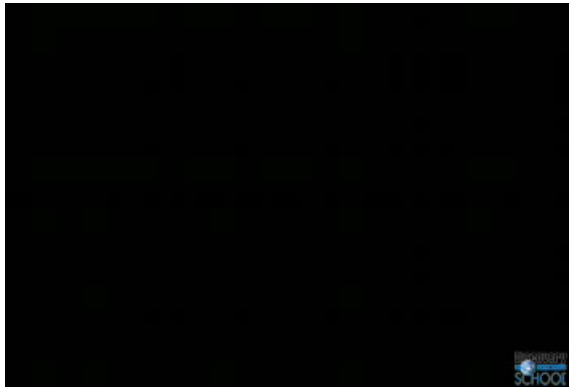


Class Chondrichthyes

- **Common Names:** the cartilage fish (sharks, rays, and skates)
- **Class characteristics:**
  - Cartilage skeleton
  - Placoid Scales (Do not grow with animal)
  - Rows of Teeth
  - Lateral Line system
  - Ectothermic



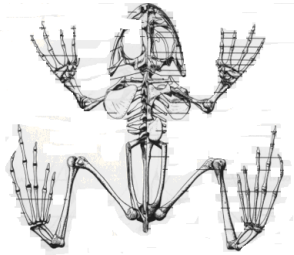




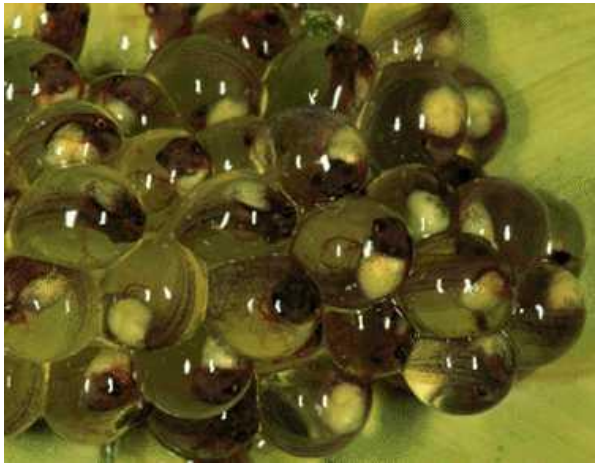
Class Osteichthyes

- **Common Names:** The bony fish (Perch, Tuna, Swordfish, Bluegill, Salmon etc.)
- **Class characteristics:**
  - Ectothermic
  - Bony skeleton
  - Breathe with gills
  - Scales
  - Swim bladder

Class Amphibia

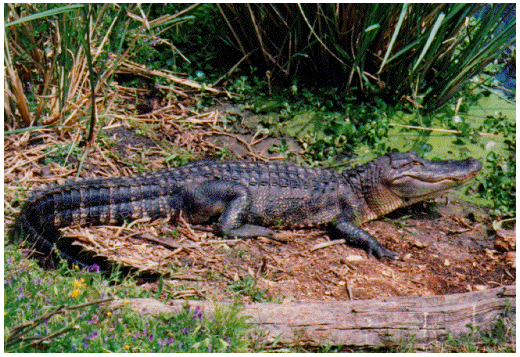


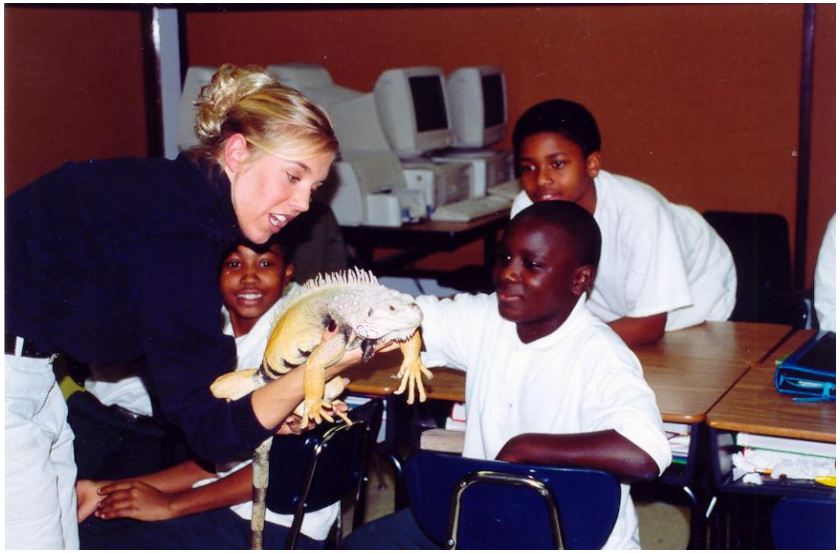
- **Common Names:** Frogs, Toads, Salamanders
- **Class Characteristics:**
  - Usually, as young they live in water, but as adults they live on land.
  - Go through a change called **Metamorphosis**
  - Have skin, no scales
  - Lay eggs in water
  - Ectothermic

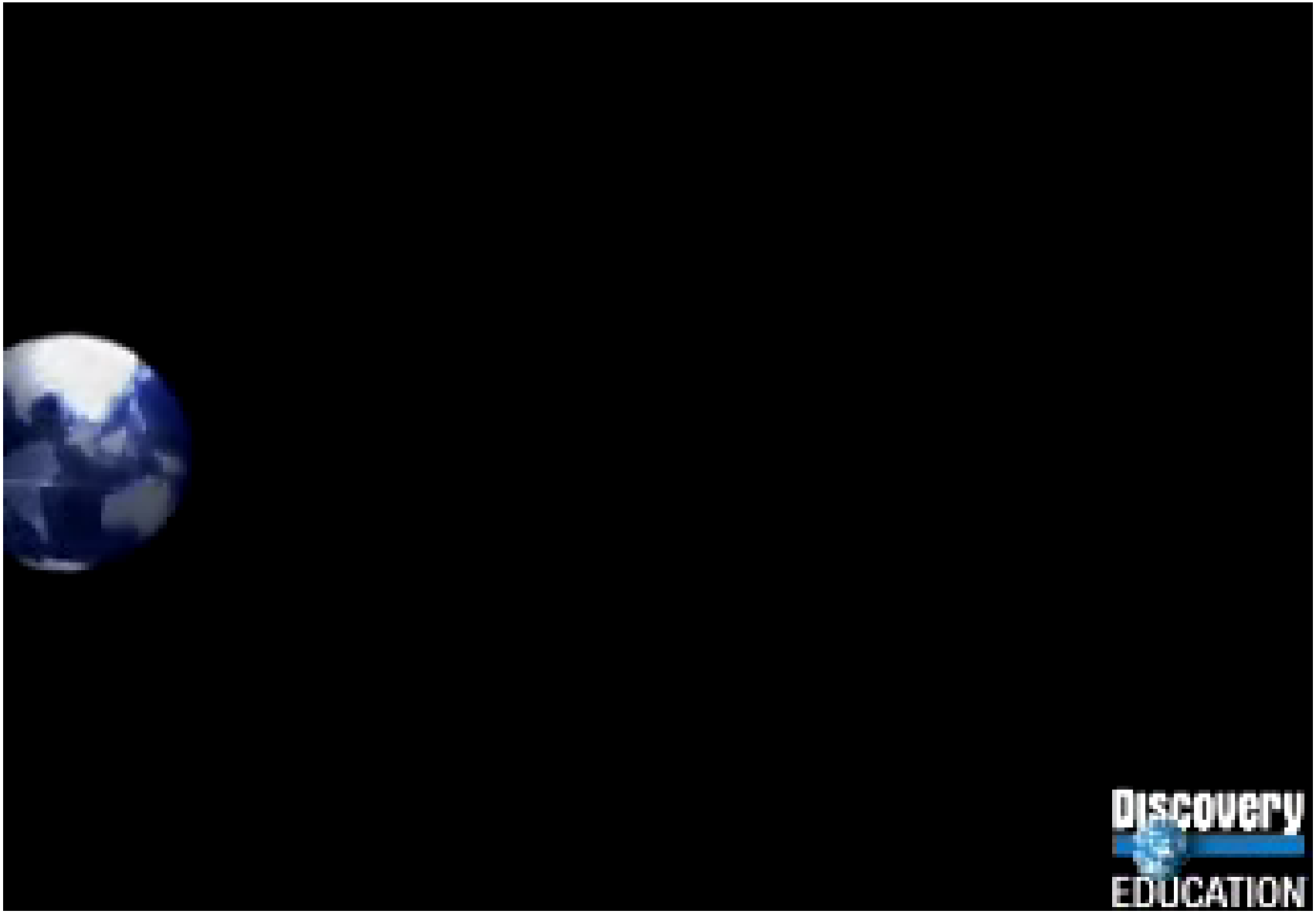


Class Reptilia

- **Common Names:** Alligator, Iguana, Turtles, Snakes, Monitor Lizards
- **Class Characteristics:**
  - Dry, leathery skin with scales.
  - Lay eggs on land (Amniotic Egg)
  - Ectothermic



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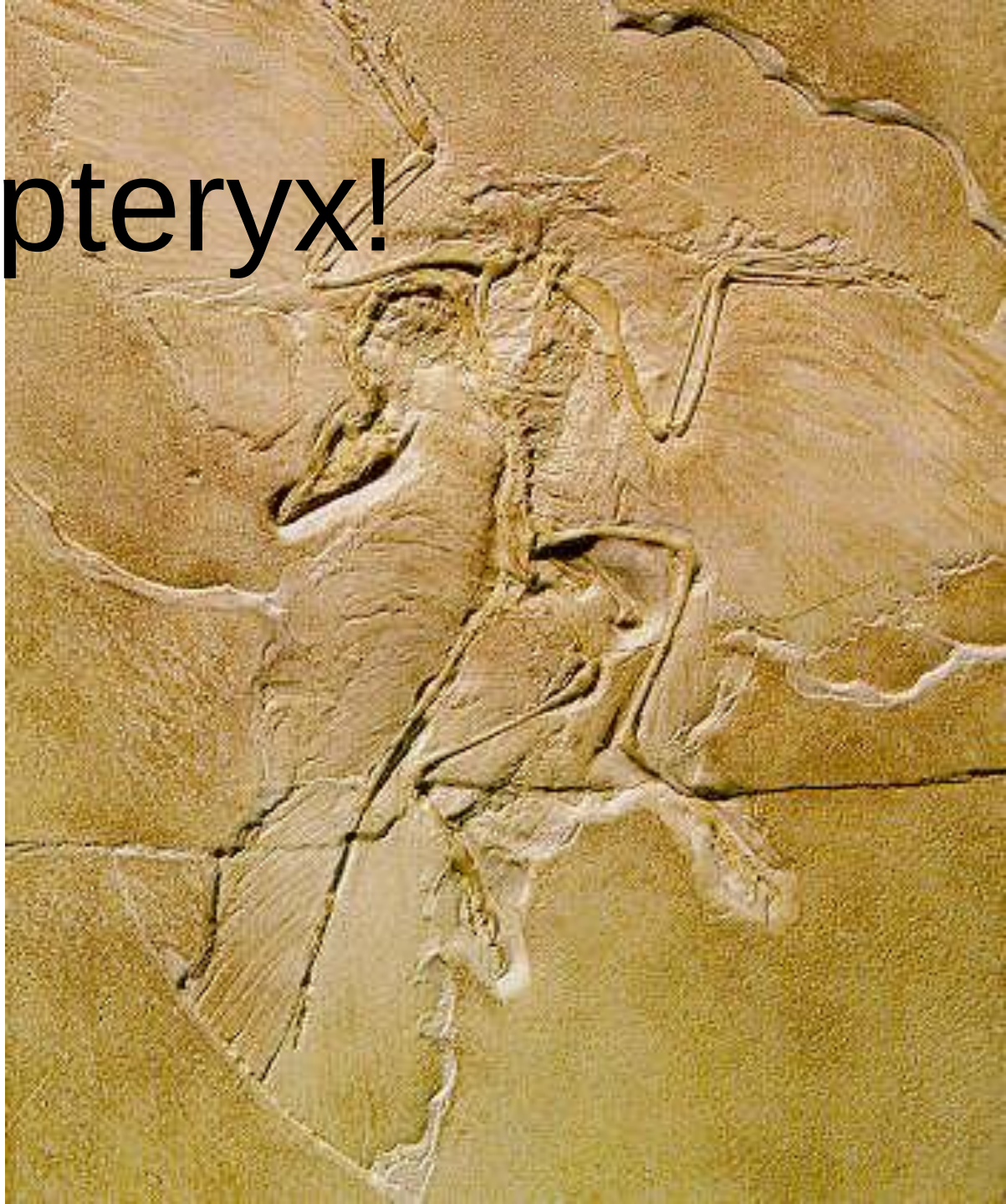
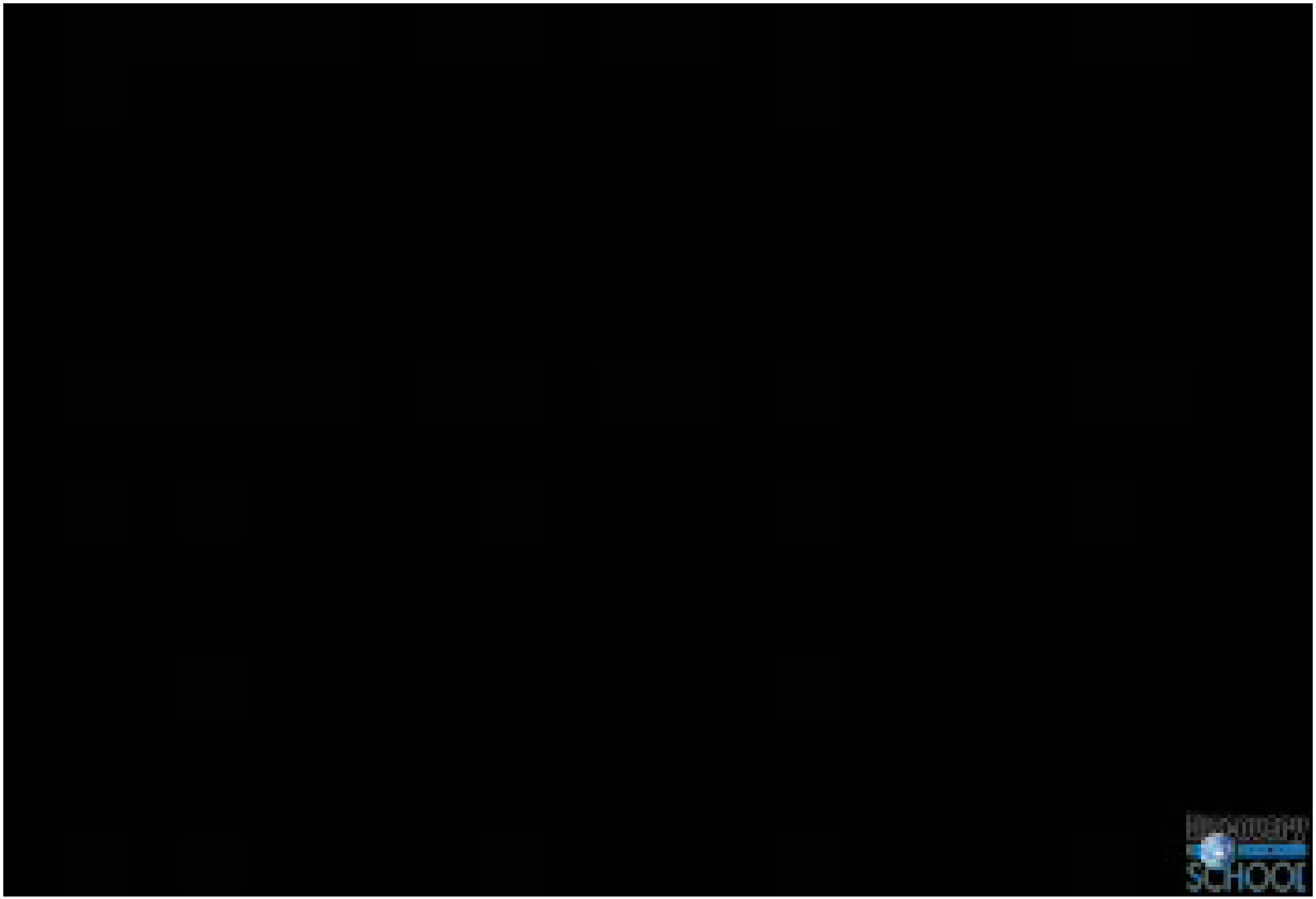
Class Aves

- **Common Names:** Birds (Eagle, robin, duck, penguin, seagull, pigeon, ostrich)
- **Class Characteristics:**
  - Body covered with <u>feathers</u>
  - Bones of the skeleton are <u>hollow</u>
  - <u>endothermic</u>

Archaeopteryx!

- The possible evolutionary link between Reptiles and Birds!






Birds
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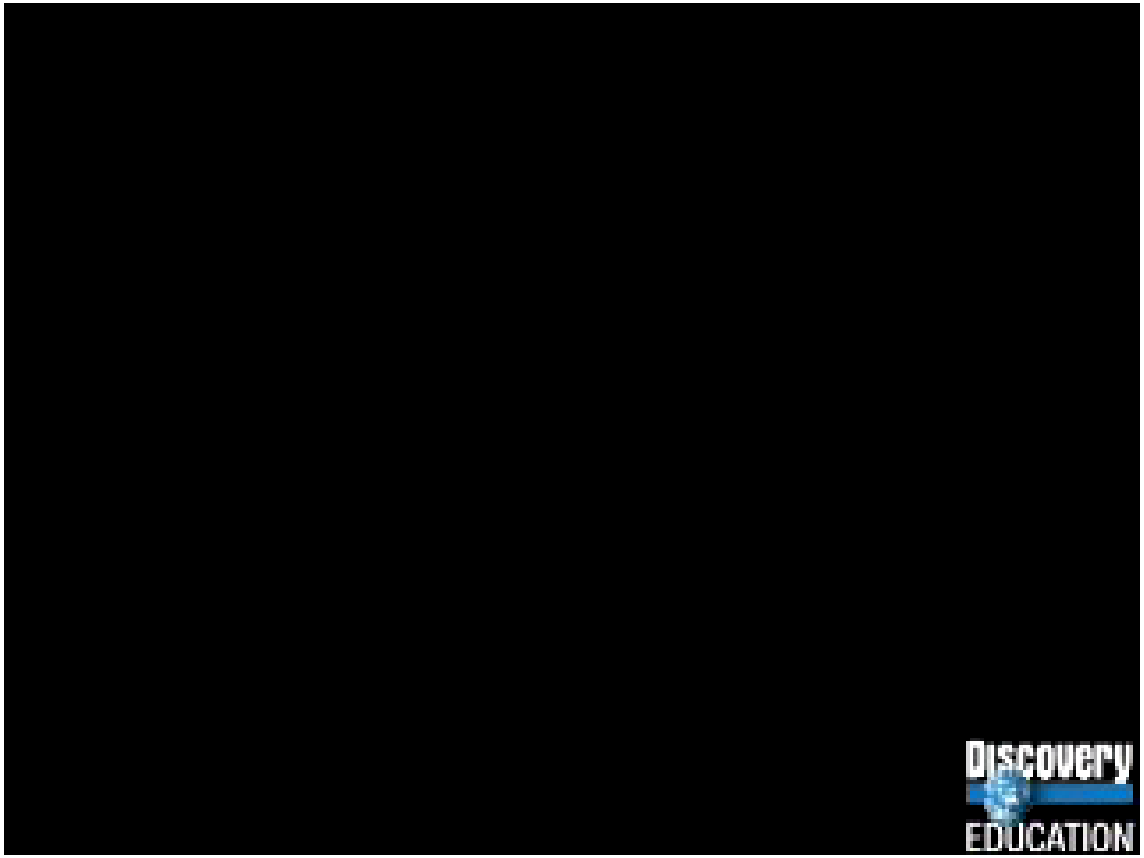
Class Mammalia

- **Common Names:** Mammals (Lion, Dog, Dolphins, Polar Bear, Otters, Human etc.)
- **Class Characteristics:**
  - Mammary glands to make milk for feeding young.
  - Hair
  - Endothermic
  - Three types of mammals. Each uses different method for reproduction.

Order Monotremata

- **Common Name:** Monotremes (Platypus)
- Egg Laying Mammals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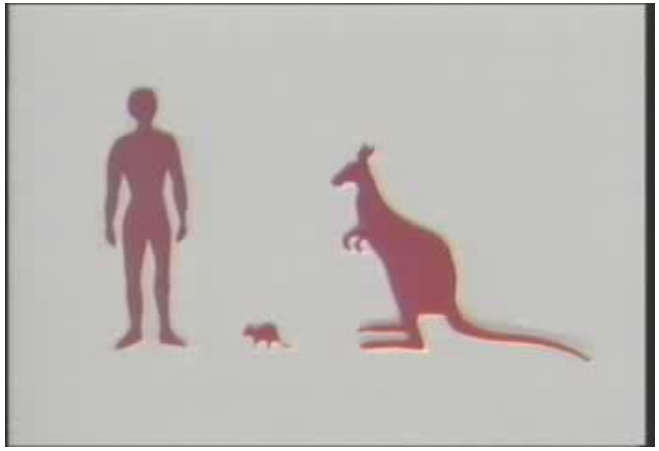
Order Marsupalia

- **Common Names:** Marsupials (Kangaroo, Koala, Opossum)
- These babies are born prematurely. They spend the rest of their development in the pouch of their mother feeding.



All Other Mammal Orders…

- Placental Mammals!
- **Common Names:** Whales, Giraffes, Elephants, Rodents, Bats, Gorillas, etc.
- This group makes up 95% of all Mammals!
- Young are <u>nourished by a placenta</u> in the womb during development.