

Unit 8: Biodiversity

Content Outline: Animal Characteristics (8.7)

- I. About 800MYA (In the Pre-Cambrian Era) multi-cellular animals evolved from the protist kingdom.
 - A. They would have evolved from a group of multi-cellular protists.
 - B. About 360 MYA animals (fish) begin to colonize land.
 - C. About 250 MYA Pangaea forms causing mass extinctions of fish and amphibians. (Reptiles survive dry climate.)
 - D. About 180 MYA Pangaea breaks apart.
 - E. About 65 MYA an asteroid collides with Earth causing mass extinction of reptiles/dinosaurs. (Mammals survive.)
- II. Animal Traits
 - A. They are all *multi-cellular heterotrophes by ingestion*.
 - B. Animal cells have *no cell walls*. (They are held together by junctions and collagen fibers.)
 - C. Most have muscle and nervous tissue for *movement and responding* to a changing environment.
 - D. They exhibit *diploid dominant life-styles*.
 1. Reproduce sexually using flagellated sperm (males) and non-motile eggs (females) that are *haploid*.
 2. Gametes fuse together to make *diploid* zygote.
 3. The zygote will continue to grow, by mitosis, and develop into the organism.
- III. Body Structure Evolution (**Grade** – means “organizational complexity”)
 - A. **Parazoa** (like animals) vs. **Eumetazoa** (true animals) (“para” means “like”; “eu” means “true”; “zoa” is “animal”)
 1. Parazoa are asymmetrical, have no true tissues, and are non –motile; BUT are heterotrophic.
 - B. **Radial** vs. **Bilateral**
 1. Two tissues(diploblastic...no muscle tissue), nerve net vs. Three tissues (triploblastic), nervous system
 - a. Three tissues – **Ectoderm** (Makes skin and nervous tissue.); **Mesoderm** (Makes Muscles, Bones, heart.); **Endoderm** (Makes the digestive organs/tract, liver, and lungs.)
 2. **Dorsal** (Back/top), **ventral** (front/bottom), **anterior** (toward the head), **posterior** (toward the tail)
 3. **Cephalization** (the accumulation of *senses* in the head region of an animal.)
 - C. **Acoelomates** - These are “without a cavity” animals. (They tend to be *very small* – diffusion/osmosis is main transport system.)
 - D. **Pseudocoelomates** - These are the *false cavity* animals (The space/cavity is *between two different tissues*.) (The fluid filled space acts as a *hydrostatic skeleton*.)
 - E. **Coelomates** - These are the *true cavity* animals. (The space *is within one tissue* – the mesoderm. It is for organ spaces and protection from the digestive tube.)
 - F. **Deuterostomes** (*Second* opening animals) vs. **Protostomes** (*first* opening animals)
 1. Look at Blastula shape.(Radial vs. Spiral)
 2. Anus (second opening) first development vs. Mouth (first opening) first development of the digestive tract.
 - a. It is what the *Blastopore* makes *first*.
 3. Deuterostomes are Echinoderms and Chordates (This includes humans...sorry.)
 4. Protostomes are Mollusks, Annelids, and Arthropods

Please help students “see” the various terms.
- IV. Organ Systems present in most animals
 - A. Nervous System – uses our senses to detect environmental stimulus and cues as well as control bodily function.
 - B. Muscular/Bone System – moving the organism about the environment.
 - C. Circulatory System – moving oxygen and nutrients through an organisms whole body.
 - D. Respiratory system – to perform gas exchange with the environment (O₂ in; CO₂ out)
 - E. Digestive system – to breakdown food to the cellular level for providing nutrients to the cells
 - F. Excretory System – to dispose of liquid nitrogenous waste