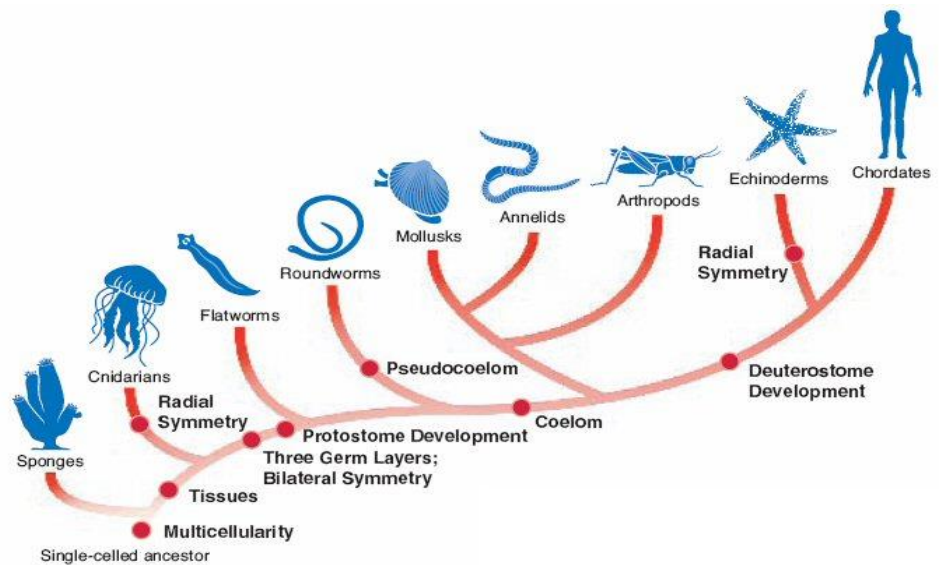# Animal PHYLA

What are the two things that you can "tell" when reading a Cladogram?

1. .evolutionary relationships

2. . common ancestors at the branching points

Everything after a dot has that characteristic

Invertebrate's vs Vertebrates

Animals without backbone vs animals with a backbone

Most animals are invertebrates

Only Phyla that has vertebrates is CHORDATA

Animal Trends – How do they help in terrestrial life?

- MULTICELLULARITY –specialization for specific functions otherwise one cell has to do all the functions

- HIERARCHY OF STRUCTURE – cells → tissues → organs

  o Tissues: groups of cells with a common structure and function

  o Organs: composed of different tissue types

- BODY SYMMETRY – none → radial → bilateral
  -Porifera is the only one without any symmetry
  -Radial Symmetry – Cnidarians only except Echinoderm adults
  -Rest are bilateral

- CIRCULATORY SYSTEMS
  o What do you need to circulate as an animal
    ▪ .multicellular organisms needs to be able to transport OXYGEN, GLUCOSE, and other materials to every cell in their body

- .have to get rid of waste from cell metabolism (products of cellular reactions)
  - o Simple Diffusion – Cnidarian

If you only have 2 cell layers thick, then all cells within easy reach of fluid and can use gastrovascular cavity for exchange

  - o Circulatory Systems
    - ▪ All animals have
      - • .blood – circulatory fluid
      - • .blood vessels – tubes
      - • .heart – muscular pump
    - ▪ Open Circulatory system

Blood does not stay in the blood vessels

      - • What are the limitations of an open circulatory system?

Not as efficient, this limits the animals size because it relies on diffusion once the blood exits the tubes and is in the sinuses

    - ▪ Closed circulatory system

Blood stays in blood vessels- more efficient

      - • What is the simplest phyla to have a closed circulatory system?
        Annelida- segmented worms

- • ANIMAL RESPIRATION
  - ▪ Why do animals respire?
    - • .get oxygen
    - • .get rid of carbon dioxide
  - ▪ Gas exchange in many forms
    - • A – cell membrane
    - • B – skin
    - • C –papule
    - • D –spiracles
    - • E –gills
    - • F –alveoli in lungs
  - ▪ Evolution of Gas exchange
    - • Aquatic Organisms
      External systems with lots of surface area exposed to aquatic environment
    - • Terrestrial
      -moist internal respiratory surfaces with lots of surface area
- • ANIMAL DIGESTIVE SYSTEMS
  - ▪ Why do animals digest?
    - • .get energy from the chemical bonds in food

- .get monomers (smallest unit) of carbohydrates, proteins, nucleic acids, and lipids to build more of the animal
    - Food Processing
        - Ingestions - eating
        - Digestion –breaking it down
        - Absorption taking in molecules
        - Elimination- anything not broken down is elminated
    - Types of digestion systems
        - Incomplete- mouth and anus are separate = sac
        - Complete- mouth, intestine, anus = tube
        - Advantage to complete digestive systems
            - Do not have stop eating until waste is eliminating
        - Gizzard –specialization of intestine with stones to help grind the food

- ANIMAL REPRODUCTION
    - Asexual
    - Hermaphrodites
    - Sexual
        - External
        - Internal

            - Why do land animals need internal fertilization
    - Development
        - External
            - In water
            - On land
            - Oviparous
            - Ovoviparous
        - Internal
            - Placenta
            - Viviparous

- Zygote → Blastopore → Gastrula
  - Protostomes
  - Deuterostomes

- SKELETONS
  - Hydrostatic skeletons
  - Exoskeletons
  - Endoskeletons
  - Endotherms vs Ectotherms
    - What is the evidence that supports if Dinosaurs were warm or cold blooded
  - Evolutionary trends for Land Animals
    - 1.
    - 2.
    - 3.

Porifera	Cnidaria	Platyhelminthes
- Lack all organs. - No Symmetry, no tissues, moves in larval form but not as an adult - Body wall with by pores thru which water enters. - Needle-like spicules provide support & protection. - Filter feeders with no respiratory, digestive, or circulatory systems - Ex. Sponges	- Radial Symmetry. - nervous systems (no centralized brain) - Single opening acts as mouth and anus. - Hydrostatic skeleton - No specialized organs for respiration, circulation or digestion - Tentacles have stinging cells (nematocysts). - Diploblastic (ectoderm & endoderm), 2 basic body forms: **Medusa** (mobile and umbrella-shaped). b) **Polyp** (tubular and sessile (non-motile)) . - ex. Jellyfish, sea anemonies	- Bilateral Symmetry (flattened bodies top to bottom) - Unsegmented bodies. - Have digestive and nervous systems. - Have mouth but no anus. - Gastrovascular cavity, no respiratory or circulatory system - Triploblastic (ectoderm, mesoderm & endoderm). acoelomates - Ex. Tapeworms and planaria
Nematoda	Annelida	Molluska
- Bilateral Symmetry - Many cause disease - First to have a "complete" digestive system - No respiratory system - Hydrostatic skeleton - Triploblastic pseudocoelomates - Ex. Ascaris, hookworms, pinworm, tichenella	- Bilateral Symmetry - Cylindrical, segmented bodies. - Bristles or appendages on each body segment aid movement or sensory input. - Digestive system is one-way (mouth to anus). - Has nervous, excretory & circulatory systems. 6) Body wall of 3 layers (ectoderm, mesoderm & endoderm).	- Soft (no skeleton), unsegment bodies. - Open circulatory system in most except predatory ones have closed (squid/octopus) - Body made of head, muscular foot, and organs (all). - Most with hard external shell (except slug, squid, octopi). - Gills (most) and complete digestive system - Most have **radula** (rasping tongue) - (except bivalves). - Triploblastic coelomates (ectoderm, mesoderm & endoderm). - Ex clams, snails, squid, octopus
Arthropod	Echinodermata	Chordata
- Jointed legs. - Exoskeleton of chitin (external). - Body segmentation.	- Bilateral larval stage, adult is radial - Name = rough skin - Gills/sin for respiration, open circulatory system, complete digestive system	- Notochord – in all embryos - Dorsal hollow nerve chord - Pharyngeal slits – for filter feeding – gills in fish, ears in humans

• Compound eyes. • Triploblastic • One-way digestive system. • Crustacea – 2 body parts, 8 legs, crabs, lobster etc. • Arachnida – 2 body parts 8 legs – spiders • Insecta – 3 body parts, 6 legs	• Deuterstome (1 of 2) • Most can regenerate • Ex. Sea cucumber, starfish, sand dollar	• Postanal tail – resorbed in human before birth • Ex. Cephalochodata, Urochordata, Vertebrata subphylums