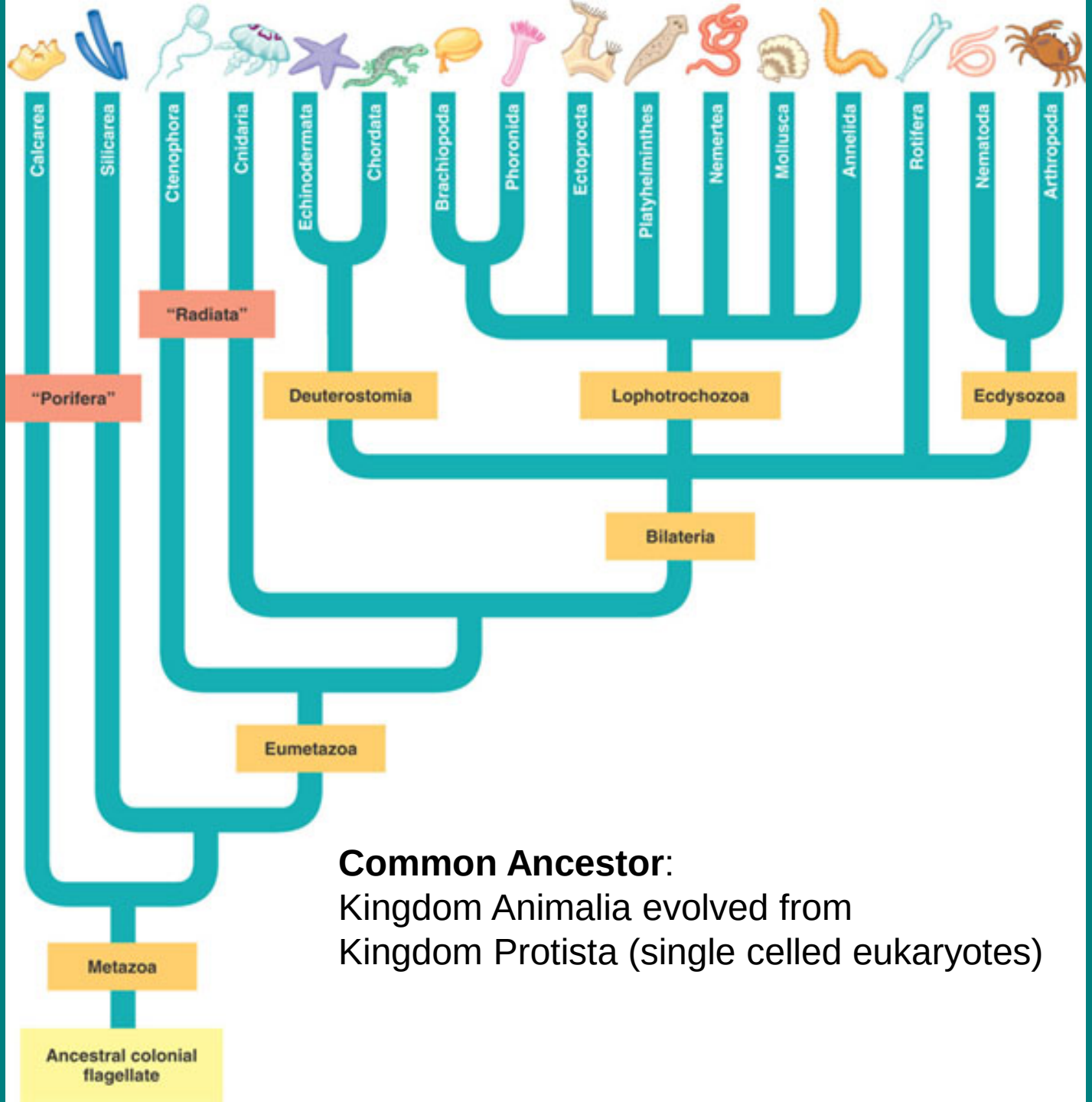
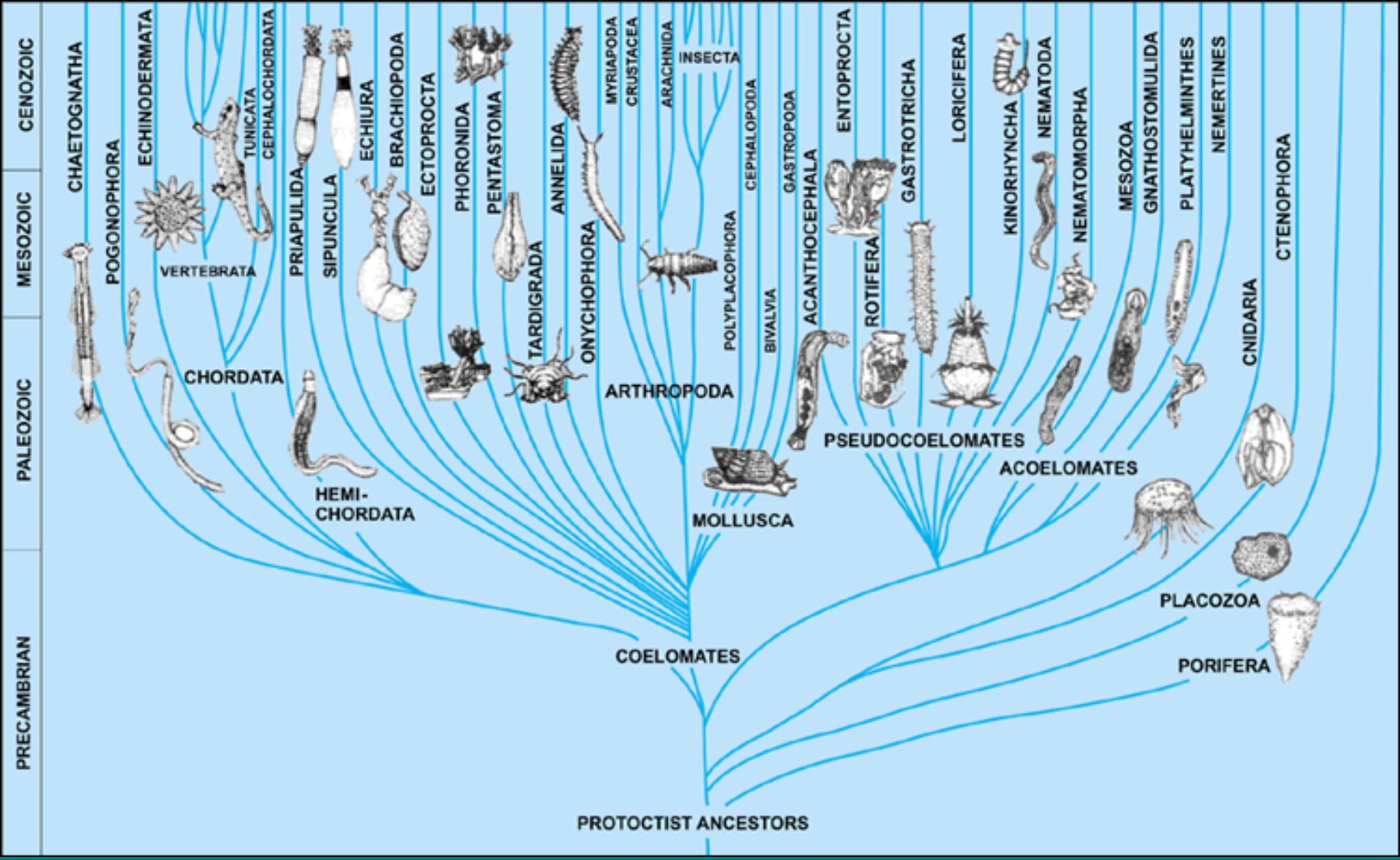
Biology 11

- Unit 4
  - Investigating Kingdom Animalia
    - Focus on the big evolutionary transitions
    - Invertebrates
      - Earth worm dissection
    - Vertebrates
      - Sea star
      - Frog dissection
  - 2 weeks long
    - Plus 3 dissection days after the exam
  - Exam – Friday, June 21st
    - There will be very little in class review – begin to prepare now

Kingdom Animalia



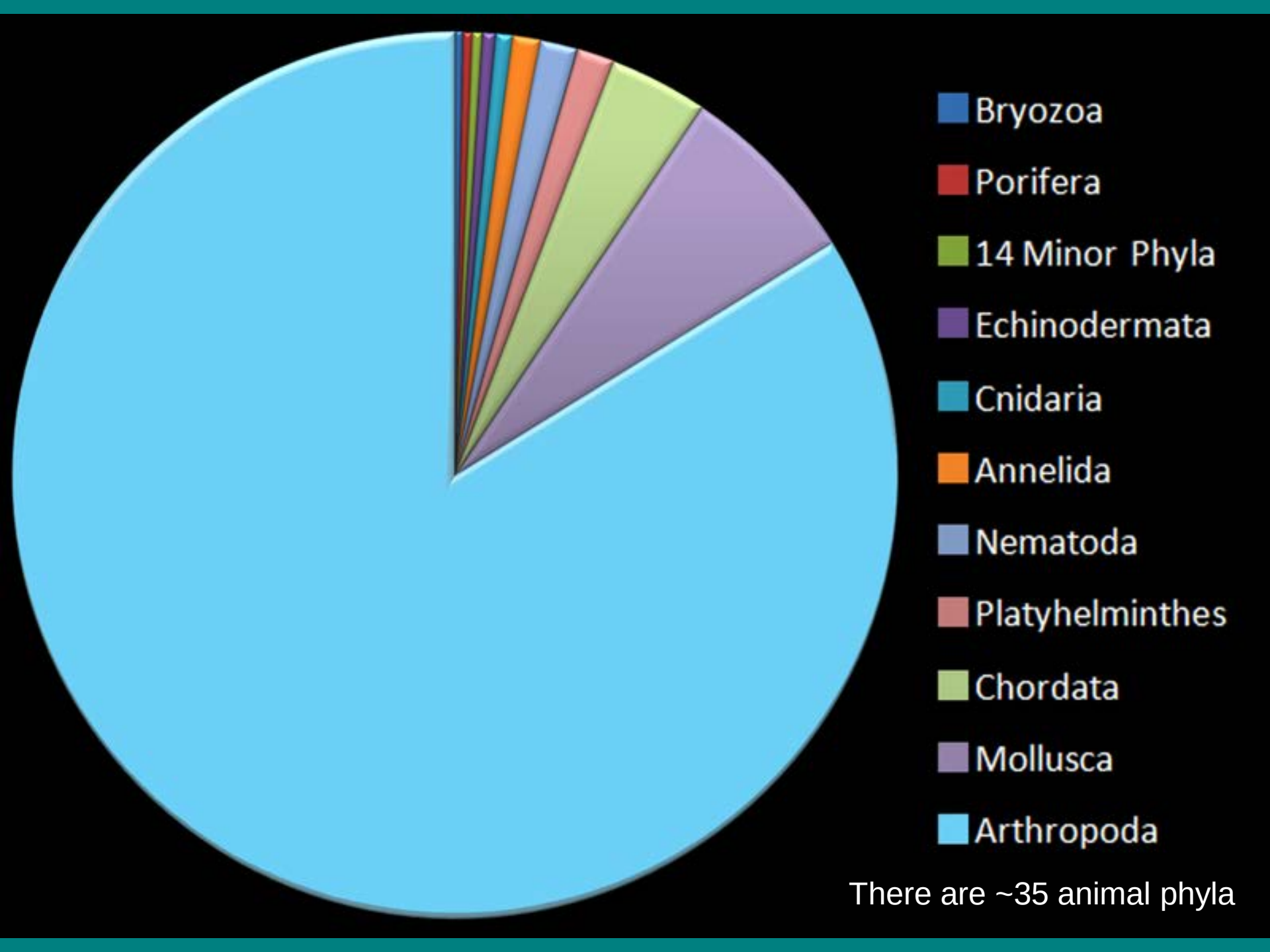
Common Ancestor:
Kingdom Animalia evolved from
Kingdom Protista (single celled eukaryotes)



The first animalia fossils appeared in South Australia. These fossils are interpreted as being early sponges. They were found in 665-million-year-old rock. Many scientists suggest that animals actually evolved up to one billion years ago.

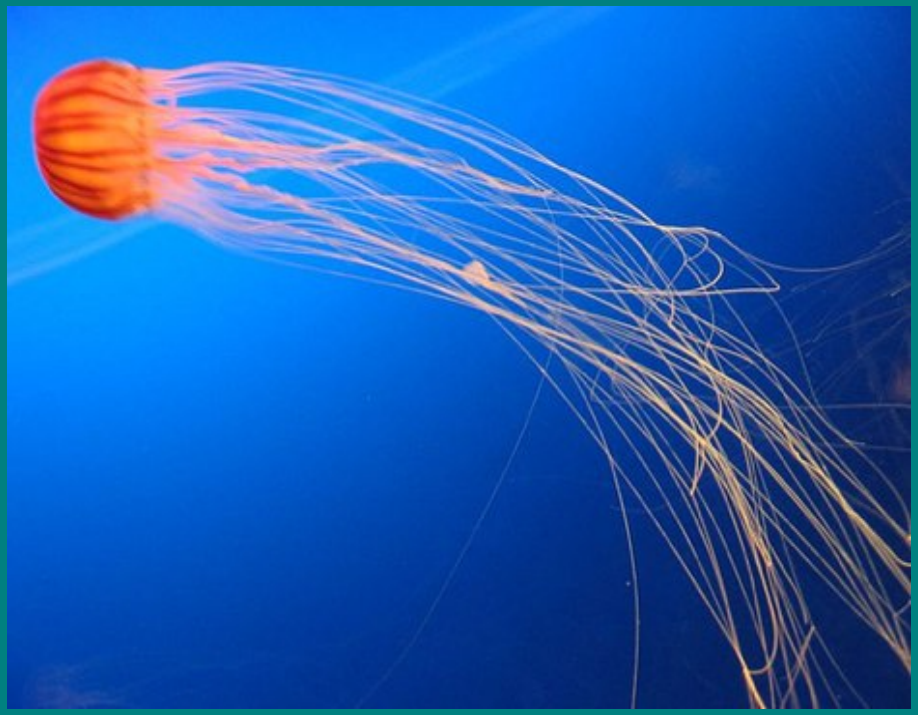
Characteristics of *all* Animals

- Multicellular eukaryotes
  - Most have ‘evolved’ tissues
- Heterotrophic
- Most are motile
- Nearly all reproduce sexually
- Ex/ sponges, jellyfish, insects, humans



There are ~35 animal phyla

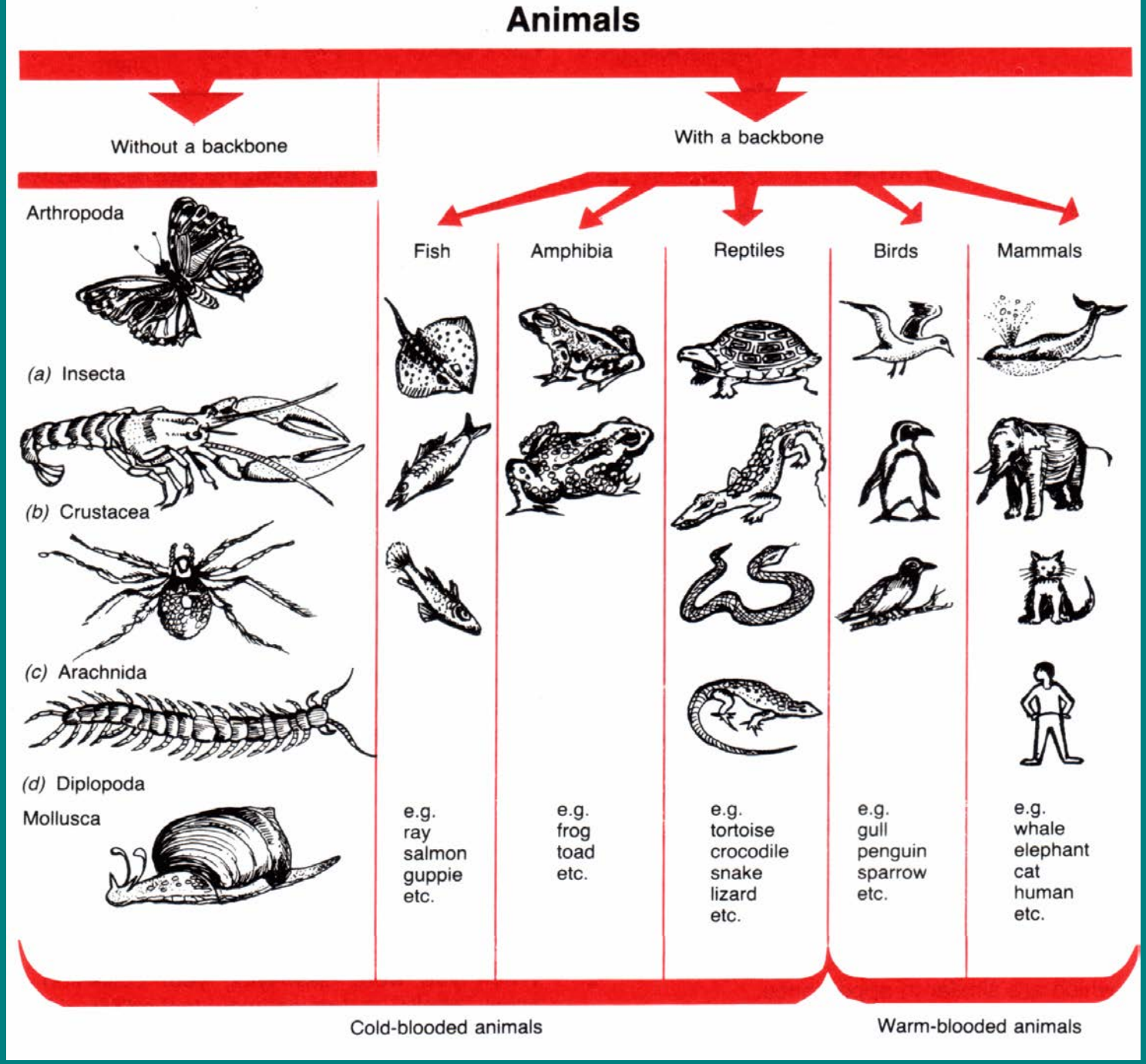
- Why move – think survival
- Motility allows animals to better satisfy their basic requirements for life
  - Can we remember the essential tasks of life?



Why heterotrophic?

- Is there an evolutionary advantage?
  - Carnivore
  - Omnivore
  - Herbivore

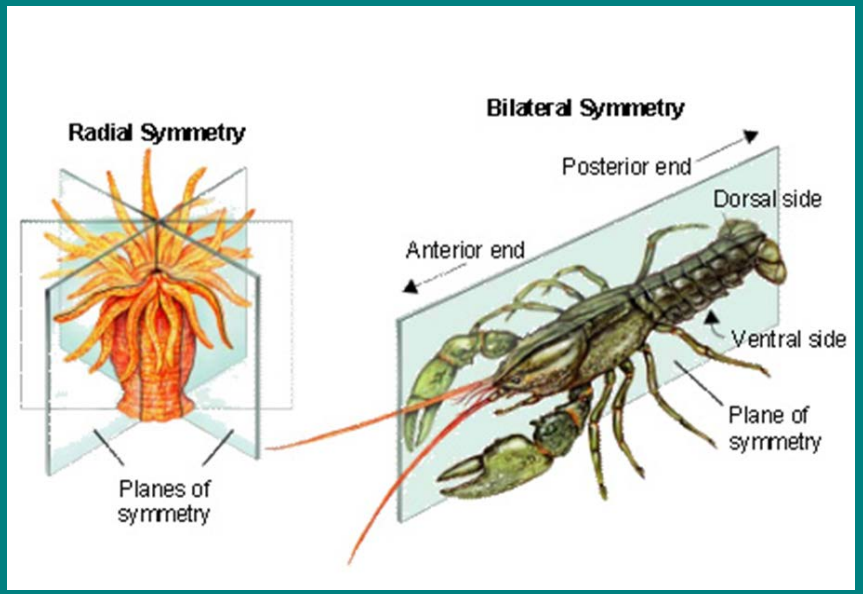
Animal Classification



Worms, sponges, mollusks, insects

Animal Classification - Symmetry

- Animals can be classified in numerous ways
  - i.e. symmetry type
- Symmetry can be
  - Bilateral
  - Radial

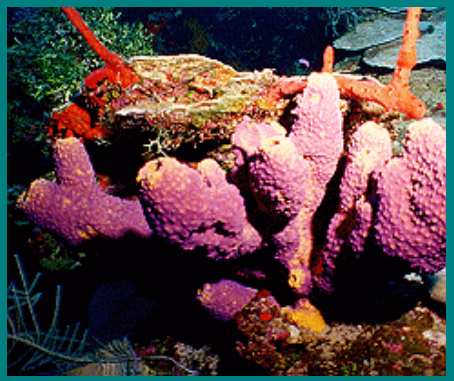


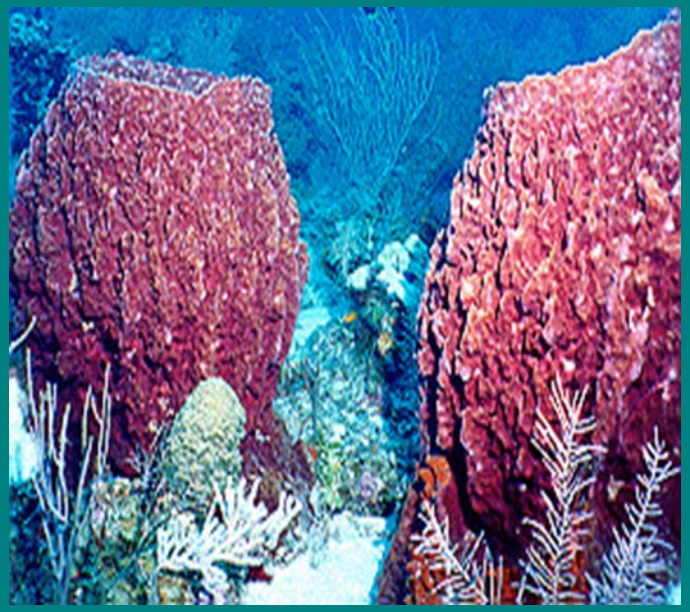
Invertebrate Sub Kingdoms

- Phylums (another categorization level) include:
  - Porifera (sponges)
  - Cnidarians
  - Worms

Phylum: Porifera

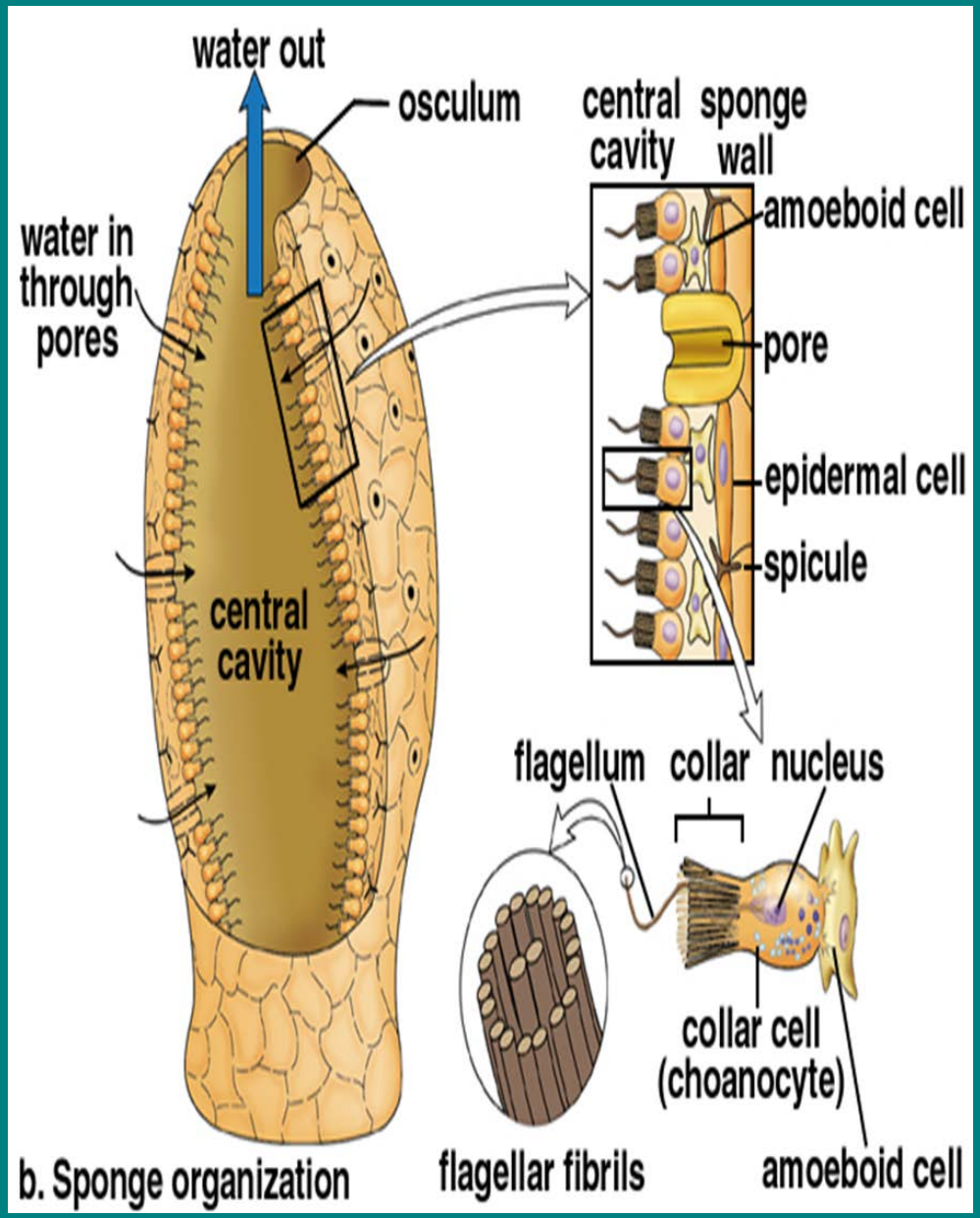
- Simplest form of animal
  - Phylum Porifera
    - Greek: “Pore Bearer”
  - Do not move
  - No ‘tissues’ or organs
  - No nervous system





How do Sponges eat & breathe?

- Collar cells on the inside of central cavity trap and digest food
  - Bacteria/protists
- Sponges get O_2 by diffusion

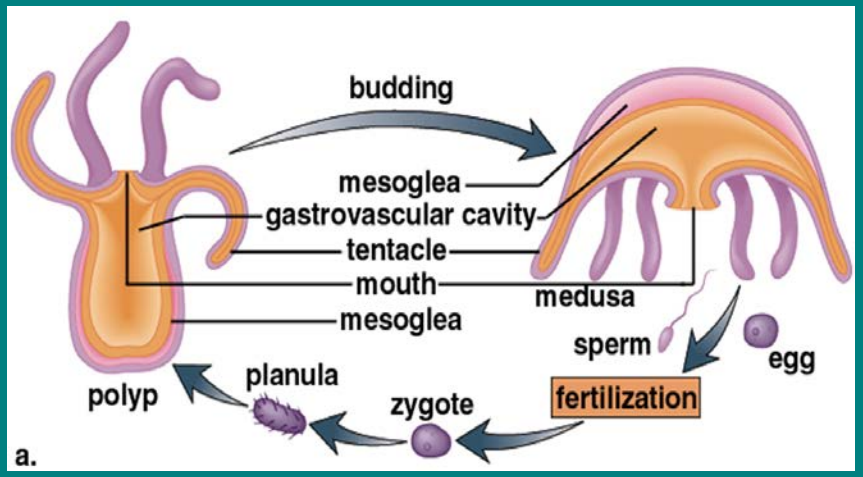


Phylum: Cnidarians

- “Net like”
- Carnivores
  - Use stinging cells
- Specialized tissues
  - No organs
  - More complex than sponges
- Radial symmetry

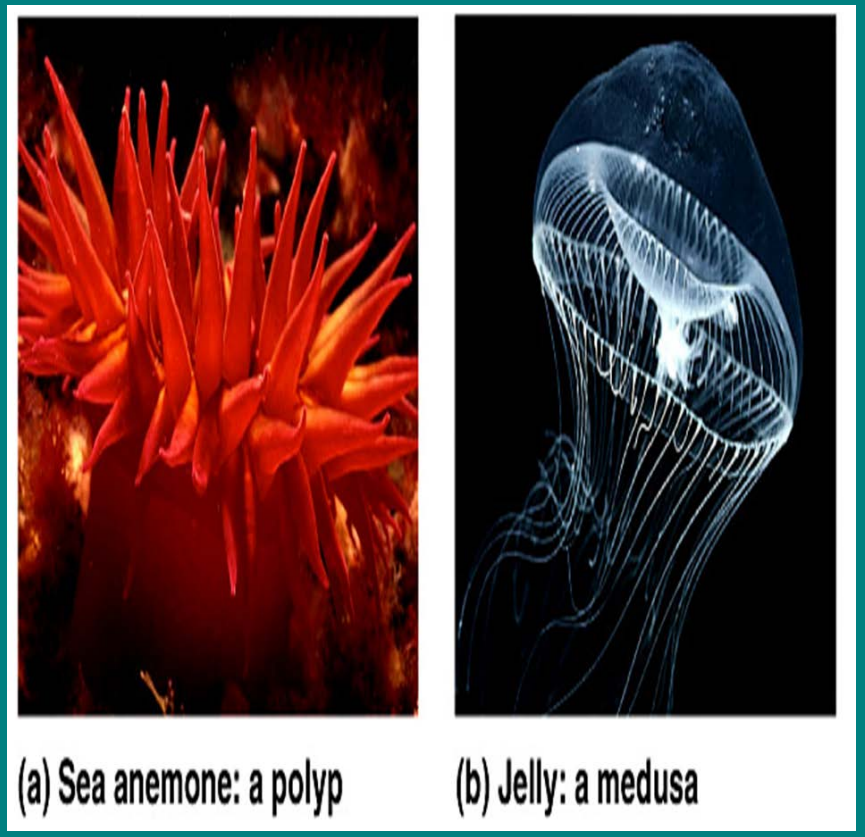
Phylum: Cnidarians

- Soft bodies have network of spikes
- Made of tough material, but no rigid bone-like structures
- Can reproduce asexually (budding) and sexually



Phylum: Cnidarians

- Body types used for classification
  - Polyp
    - Vase with a mouth at the top
    - Think: sea anemone
  - Medusa
    - Bowl shaped
    - Think: jellyfish

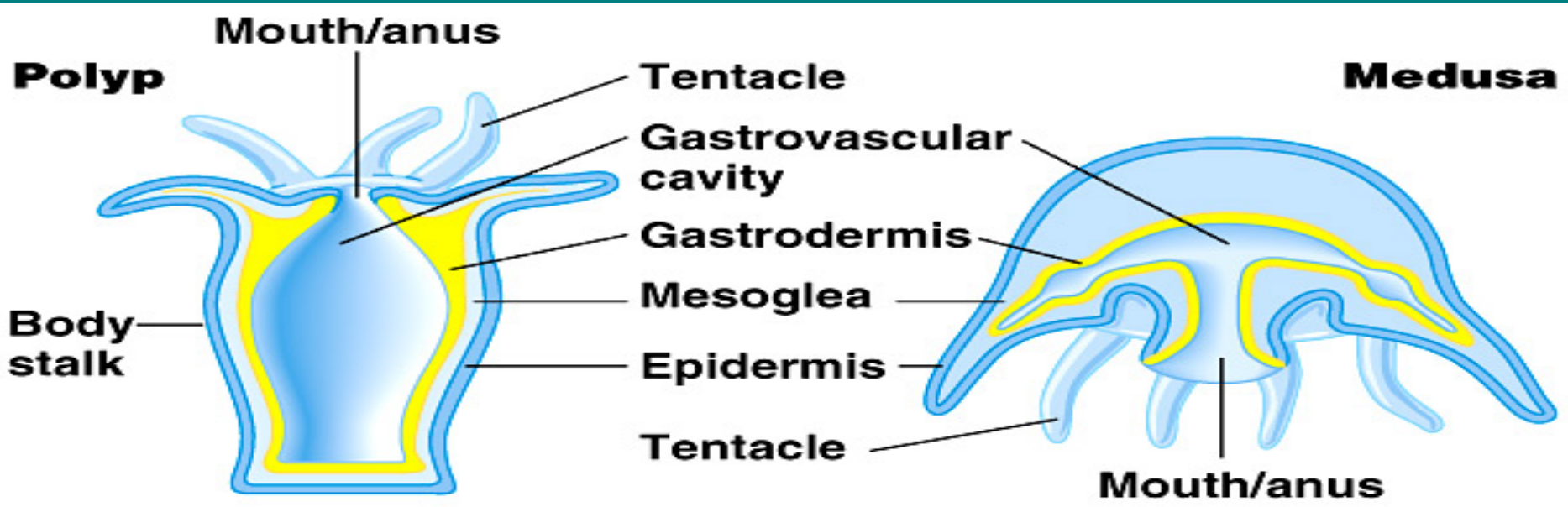


Cnidarians: Examples

- Jellyfish
- Hydras
- Sea Anemones
- Coral

Cnidarians - Digestion

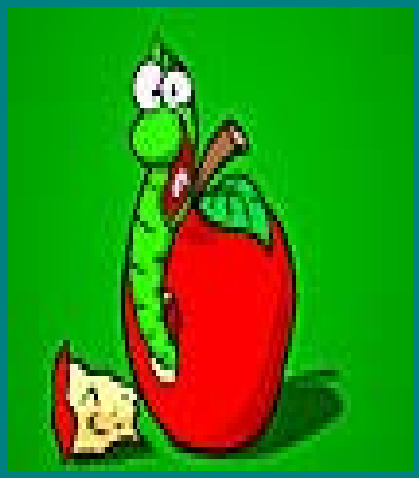
- Capture prey using stinging cells to inject venom
  - Paralyzes prey
- Pull prey into mouth
  - Digest in body cavity digestive system (i.e. one way in, one way out)



Worms

- Three worm phyla
  - Flatworms (Platyhelminthes)
  - Roundworms (Nematoda)
  - Segmented worms (Annelida)

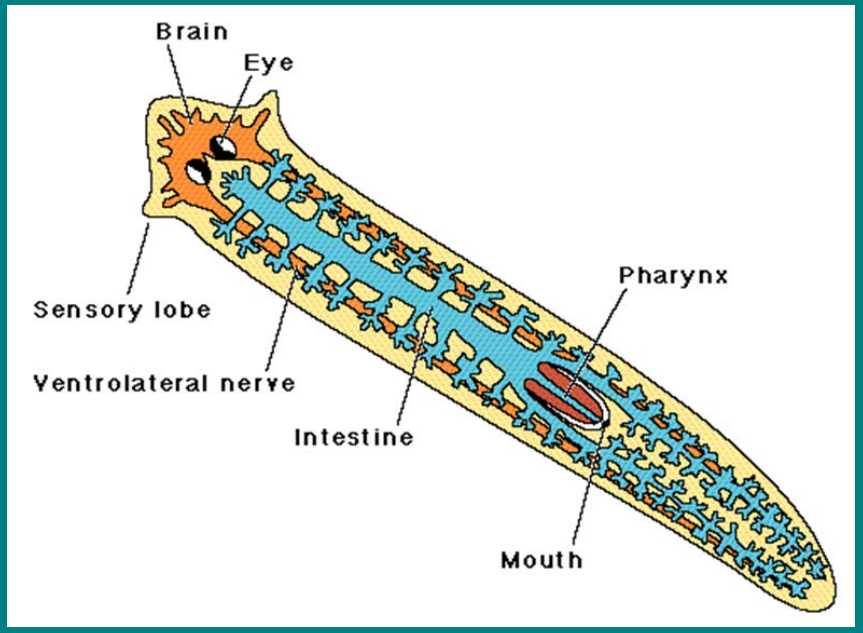
Worm Traits



- More complex
  - Tissues, organs and organ systems
- Bilateral symmetry
- Have a brain, react to stimuli, signs of intelligence
- Reproduce both sexually and asexually
  - Can replace parts by a process called regeneration

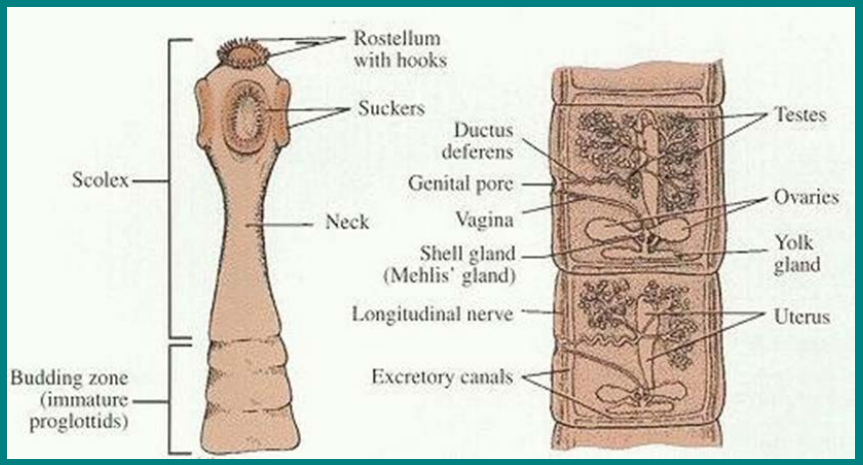
Flatworms

- Parasites
  - Steal food from host or eat host
    - i.e. tapeworms
- Those that are not parasites are scavengers
  - Feed off the remains of dead organisms
- Feed by inserting a tube into food which secretes chemicals to break down the food
  - They then suck it through the tube



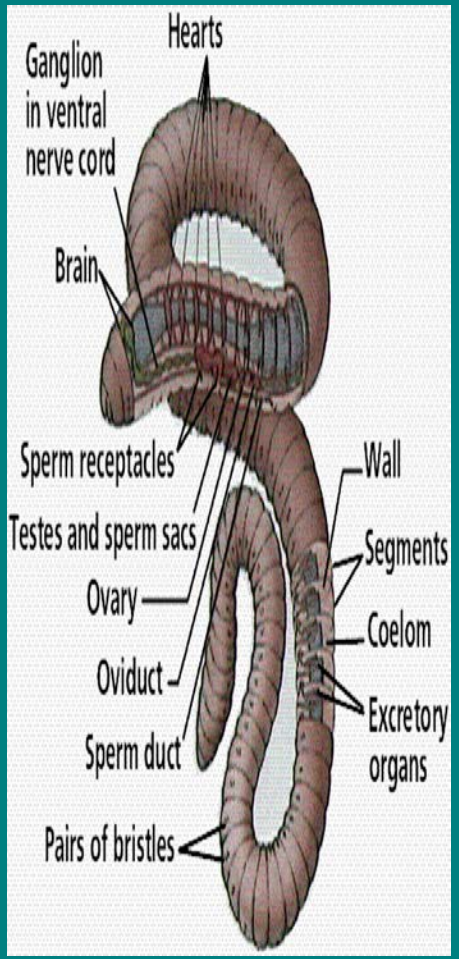
Roundworms

- Live in moist environments
- Some are herbivores, some carnivores, some parasites
  - Worms that dogs and cats get are parasites
- A tube-based digestive system
  - Similar to complex animals



Segmented Worms

- “Complex” worms
- Have linked sections called segments
- Scavengers
  - Earthworm
- Parasites
  - Leeches
- Closed circulatory system
  - Blood moves through system via vessels and a pump
- Nerve cords and digestive tube run through their bodies



Take Home Points

- Animals evolved from Protists
- All animals share certain characteristics
- We are dividing the Animal kingdom into two categories
  - Invertebrates (most of the animal kingdom)
    - Porifera
    - Cnidarians
    - Worms → 3 phyla
  - Vertebrates (small part of animal kingdom)

Shape of Life - Origins

- https://www.youtube.com/watch?v=8f4rXNYHm0g