

Invertebrates

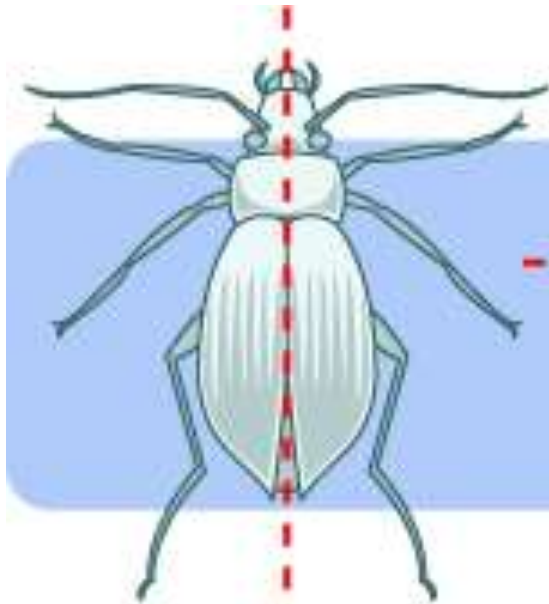
The spineless animals...

Invertebrates

- 97% of all animal species
- No backbones!
- Categorized by:
 - Body plans
 - Head, or lack of one
 - How food is digested/absorbed

Body Plans

- Bilateral Symmetry
- Radial Symmetry
- Asymmetrical



a beetle has
bilateral symmetry



a coral polyp has
radial symmetry



a sponge has
no symmetry

What kind of symmetry?

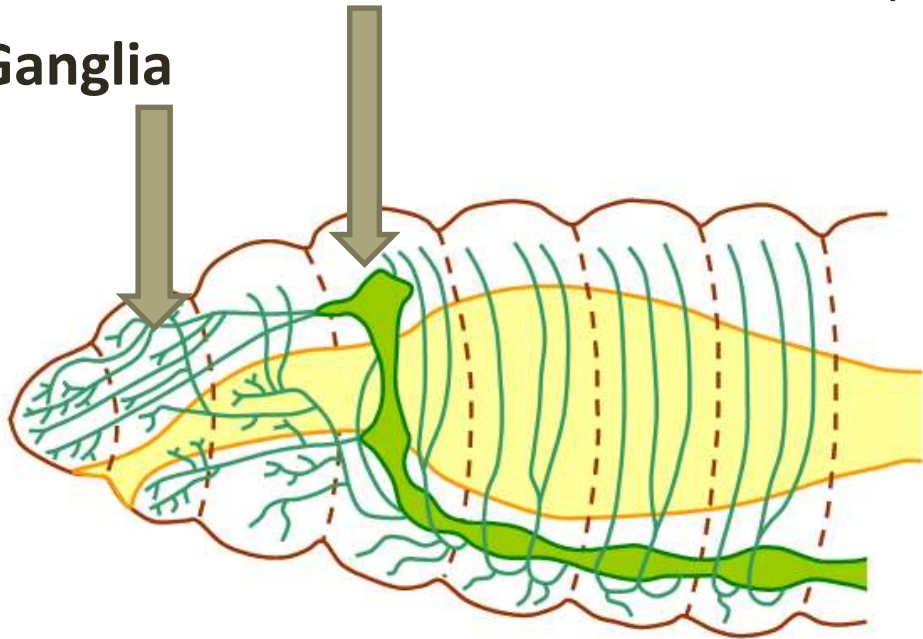






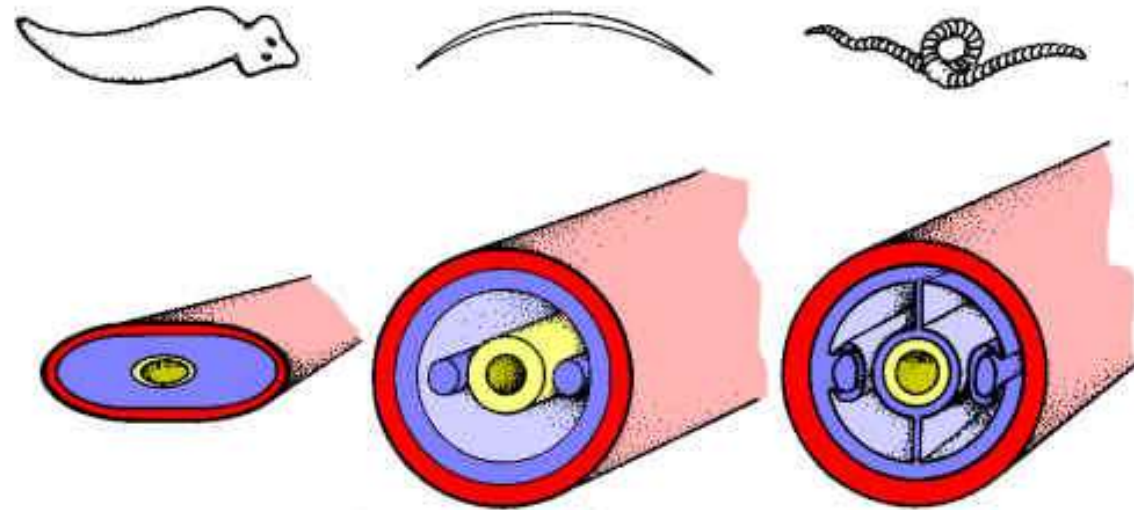
Do all animals have brains?

- Sponges= no brain
- **Nerves**- fibers carry signals to control body movements
- Animals with nerve cords= no brain/head
- **Ganglia**



Guts

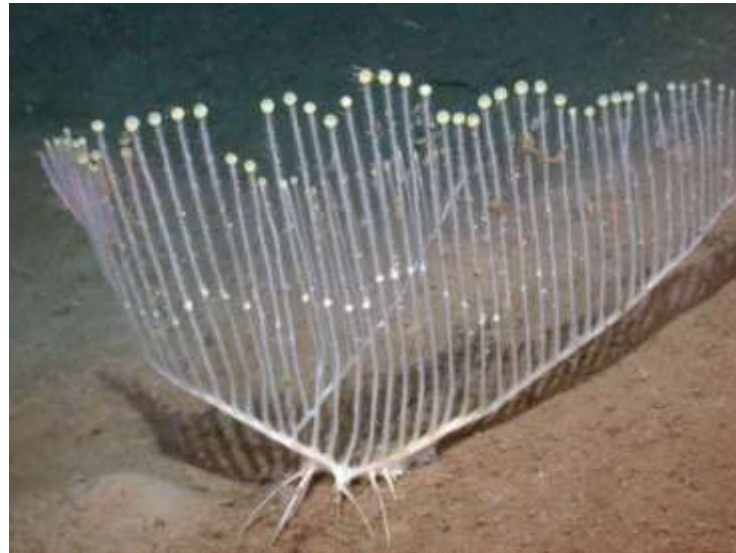
- Pouch lined with cells that release enzymes
- **Coelom**- space for a gut
- Allows gut to move food without body movement interfering
- Heart and lungs also in coelom, but separated from gut





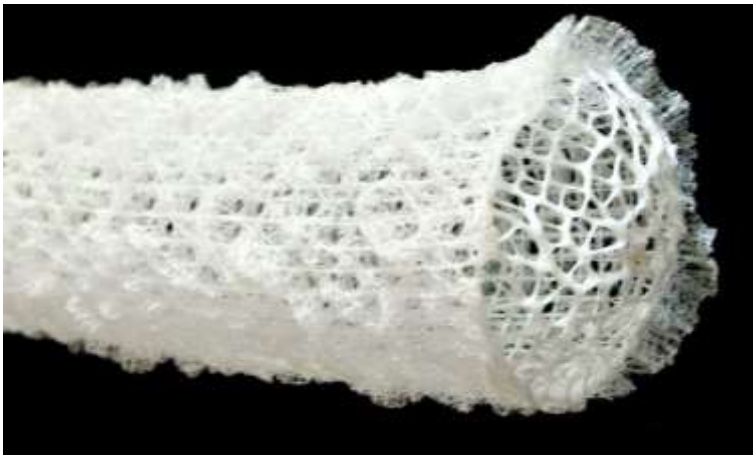
Sponges

The simplest animals

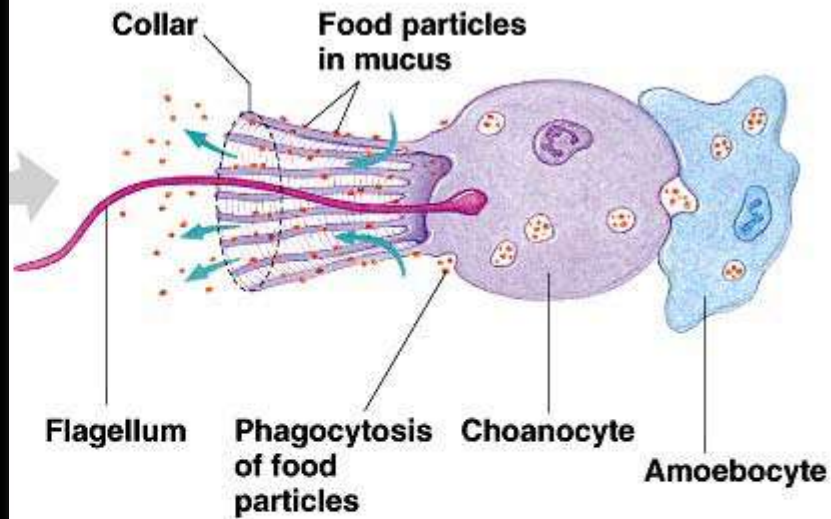


Phylum Porifera

- Live in water, mostly the ocean
- Skeleton made of *spicules*
- Divided into categories according to spicules
- Bath sponges
 - Spongin
 - Really soft
- Can reform when broken apart



How do they eat?



- Lots of holes, or pores
- Water pumped inside body
- Collar cells filter food out and digest
- No gut

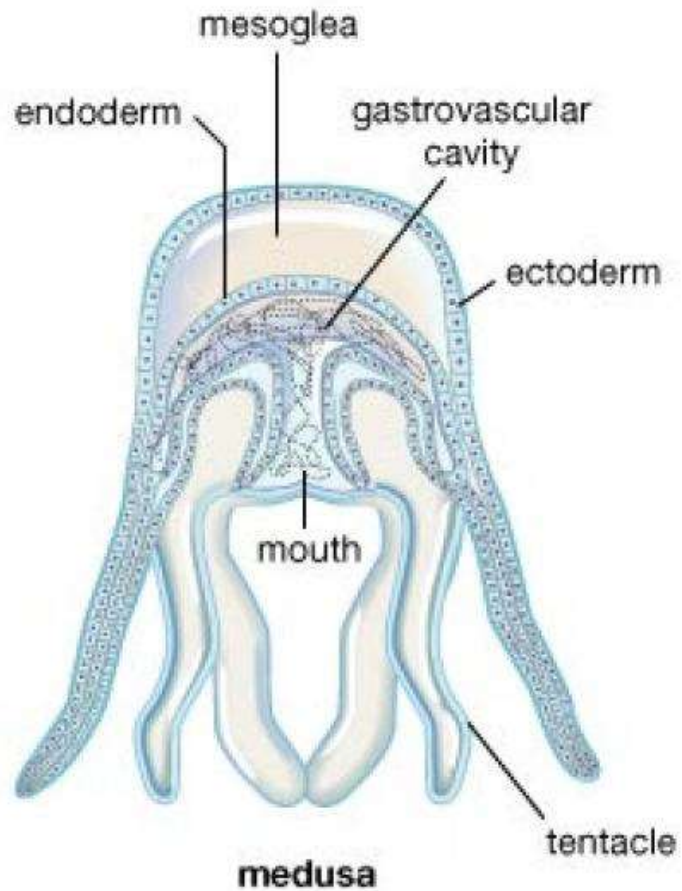
Cnidarians



- “nettle”
- Stinging cells
- Complex tissues, gut, nervous system
- Some can rejoin when separated

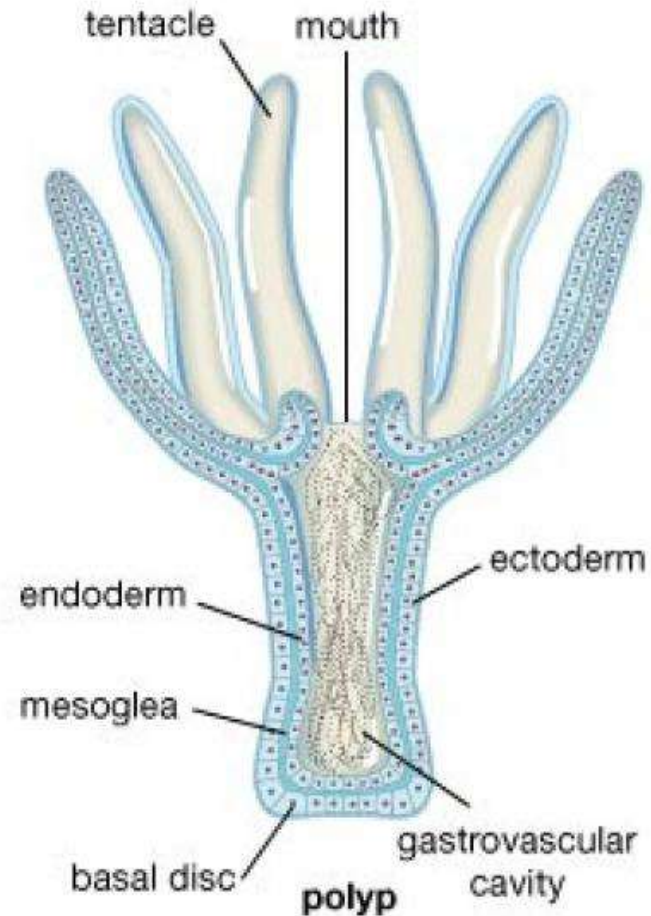
Medusa

- jellyfish
- swims



Polyp

- attached to a surface
- Most cnidarians live life as a polyp



Can be both at different times in their lives

Hydras



Sea anemones/
corals



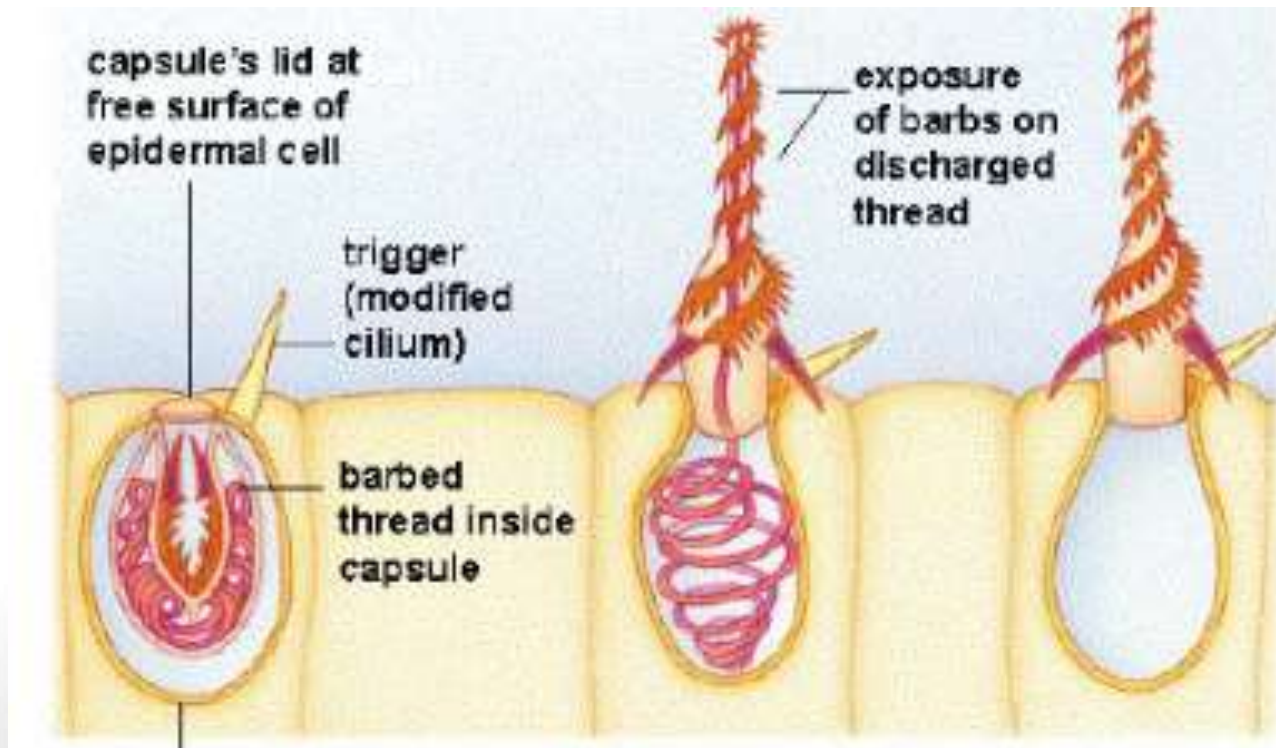
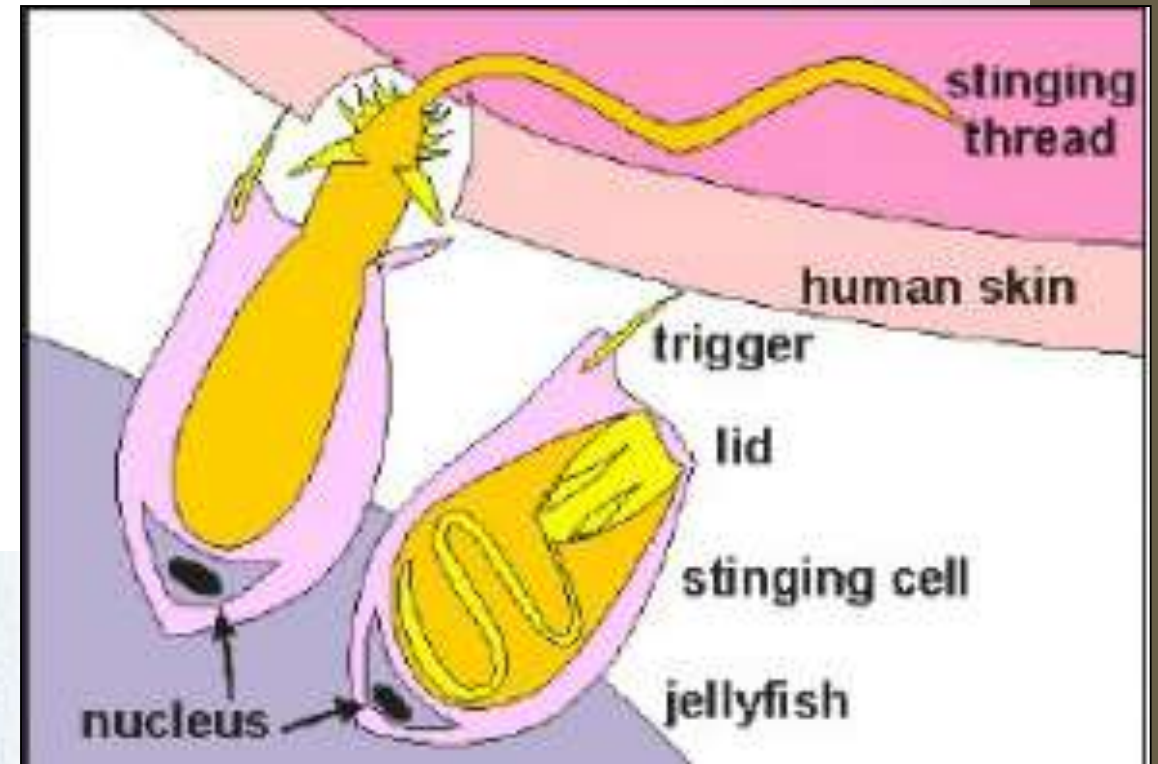
Jellyfish



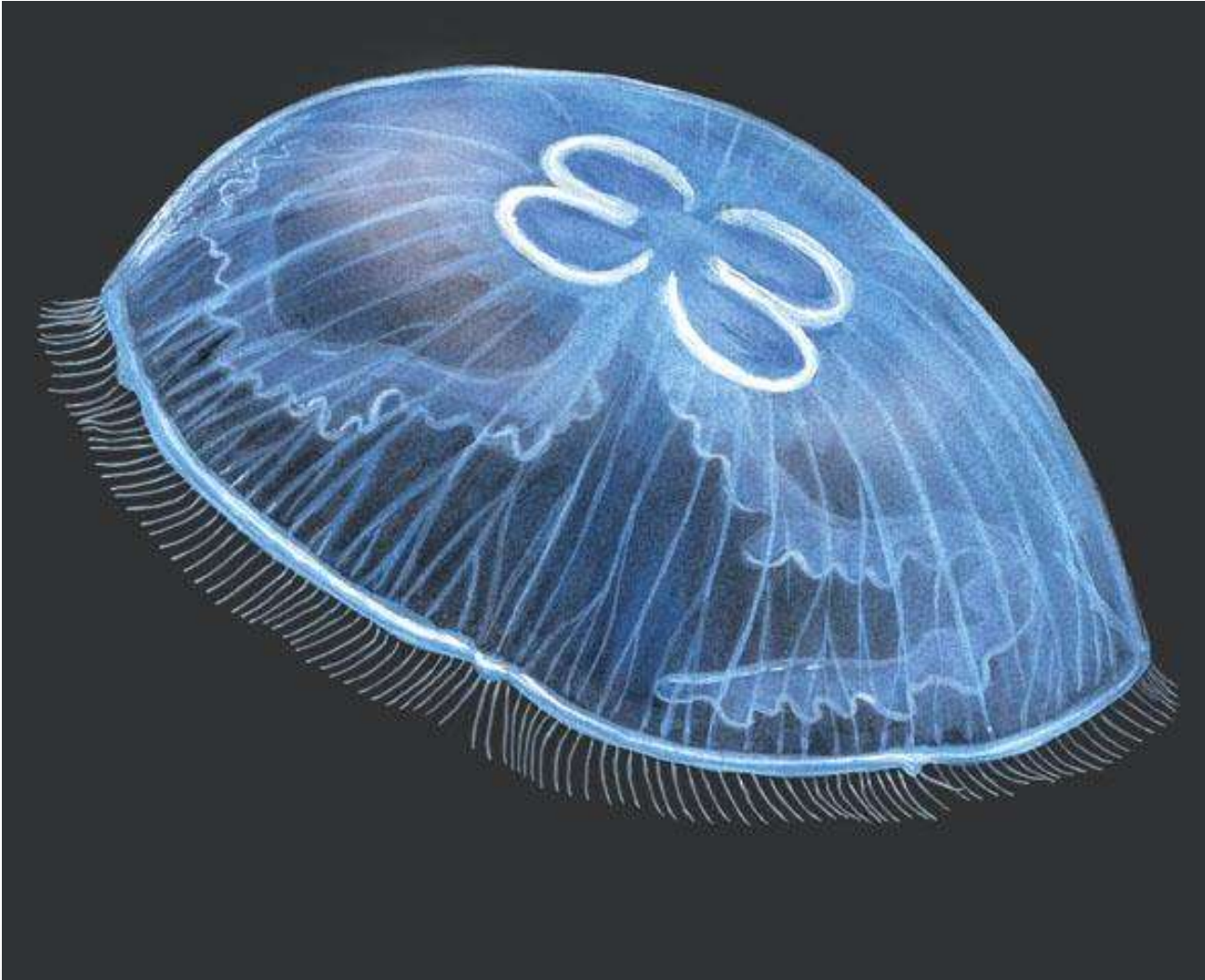


Nematocysts

- Long tentacles covered with stinging cells



What about a brain?



Nerve Net

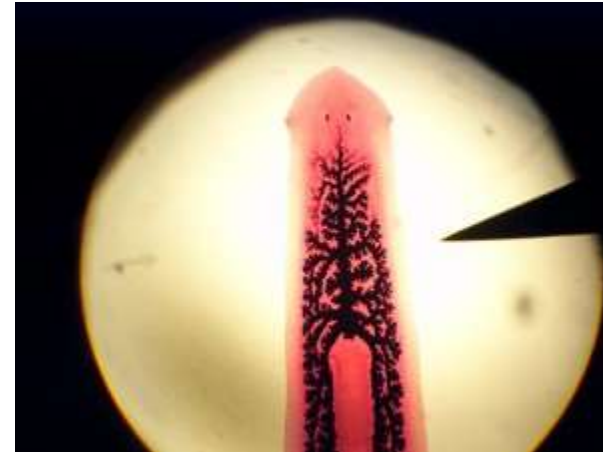
- Controls movement of body and tentacles

Nerve Ring

- In center of nerve net
- Coordinates swimming
- Like a spinal cord

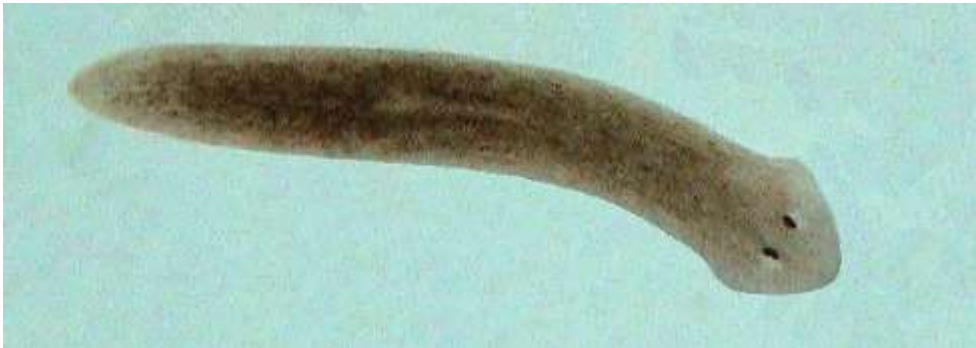
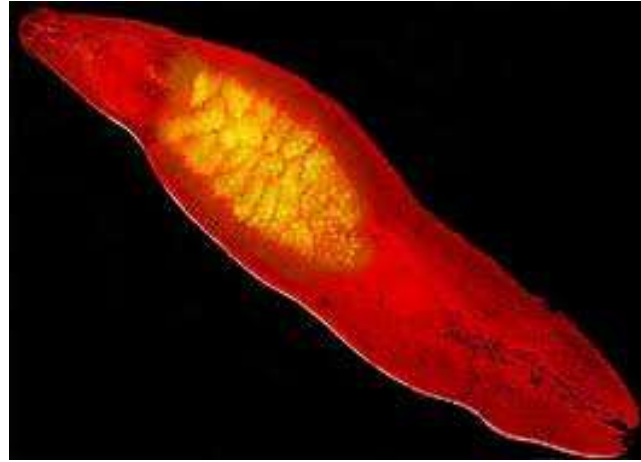
Flatworms

- Sensory lobes- detect food
- Eyespots- detect light



Flukes

- Parasite
- Live inside other animals



Planarians

- Water and land
- Predators

Tapeworms

- No gut
- Absorb nutrients from hosts' intestines
- Suckers/hooks to attach to host
- Special skin to resist digestion by host



Tapeworms, reaching up to sixty feet long, are the biggest parasites that live in humans.

Roundworms

- Break down dead plants/animals
- Help build soil
- Most are parasites
 - Pinworms
 - Hookworms

