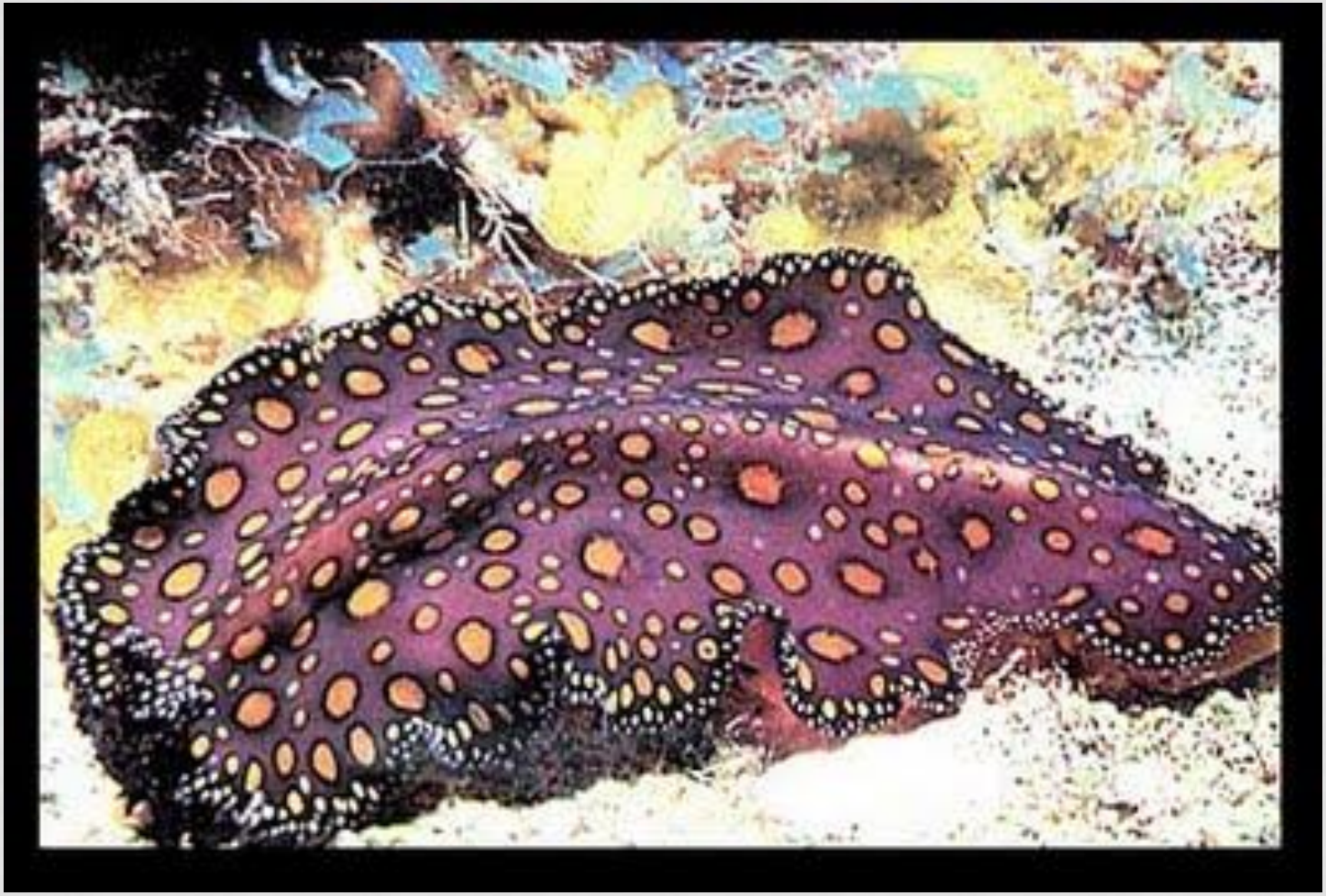
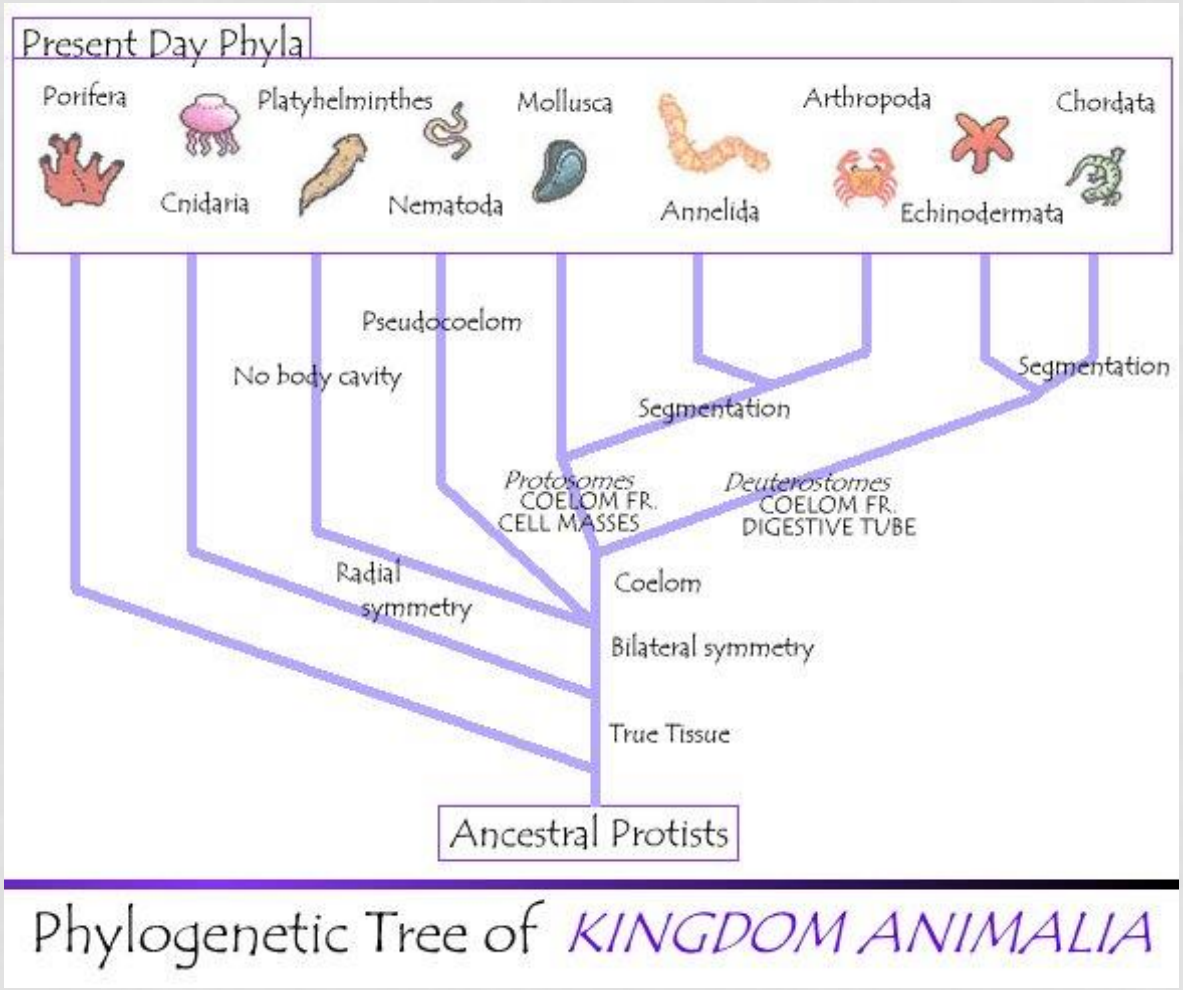
PLATYHELMINTHES

FLATWORMS



PLATYHELMINTHES

FLATWORMS



Phylogenetic Tree of *KINGDOM ANIMALIA*

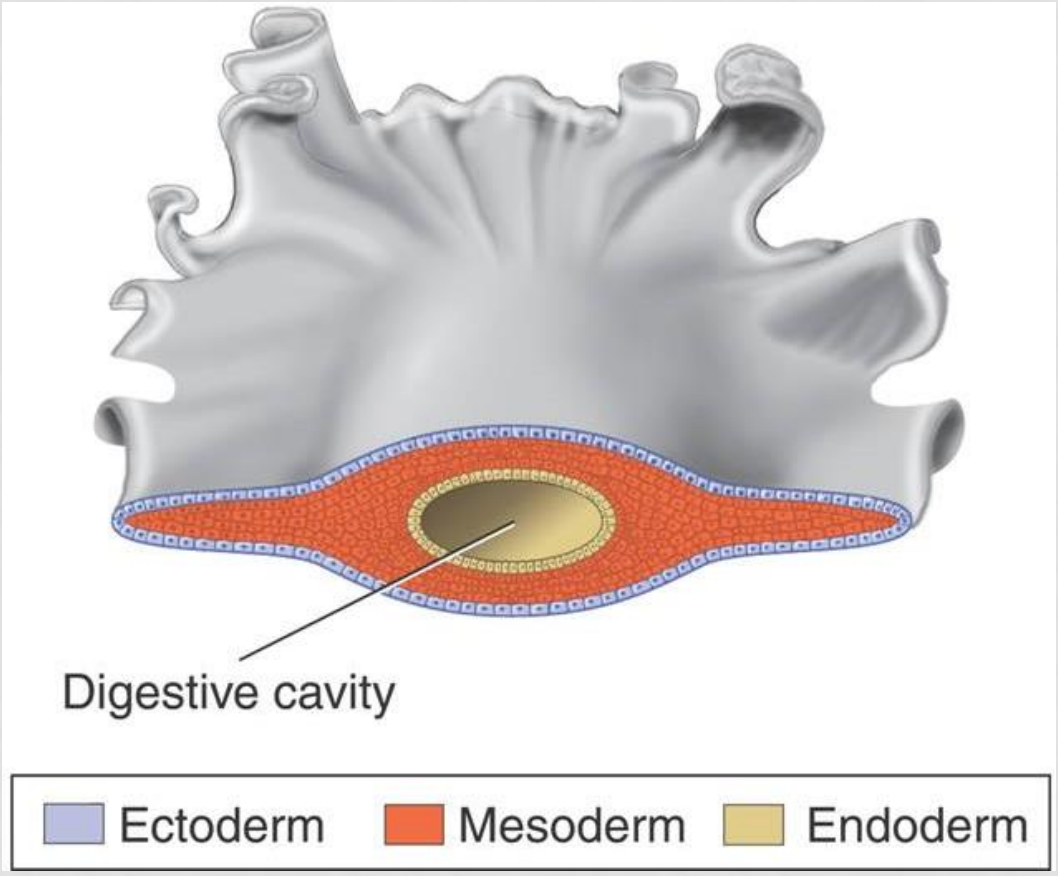
WHAT IS A FLATWORM?

- What Is a Flatworm?

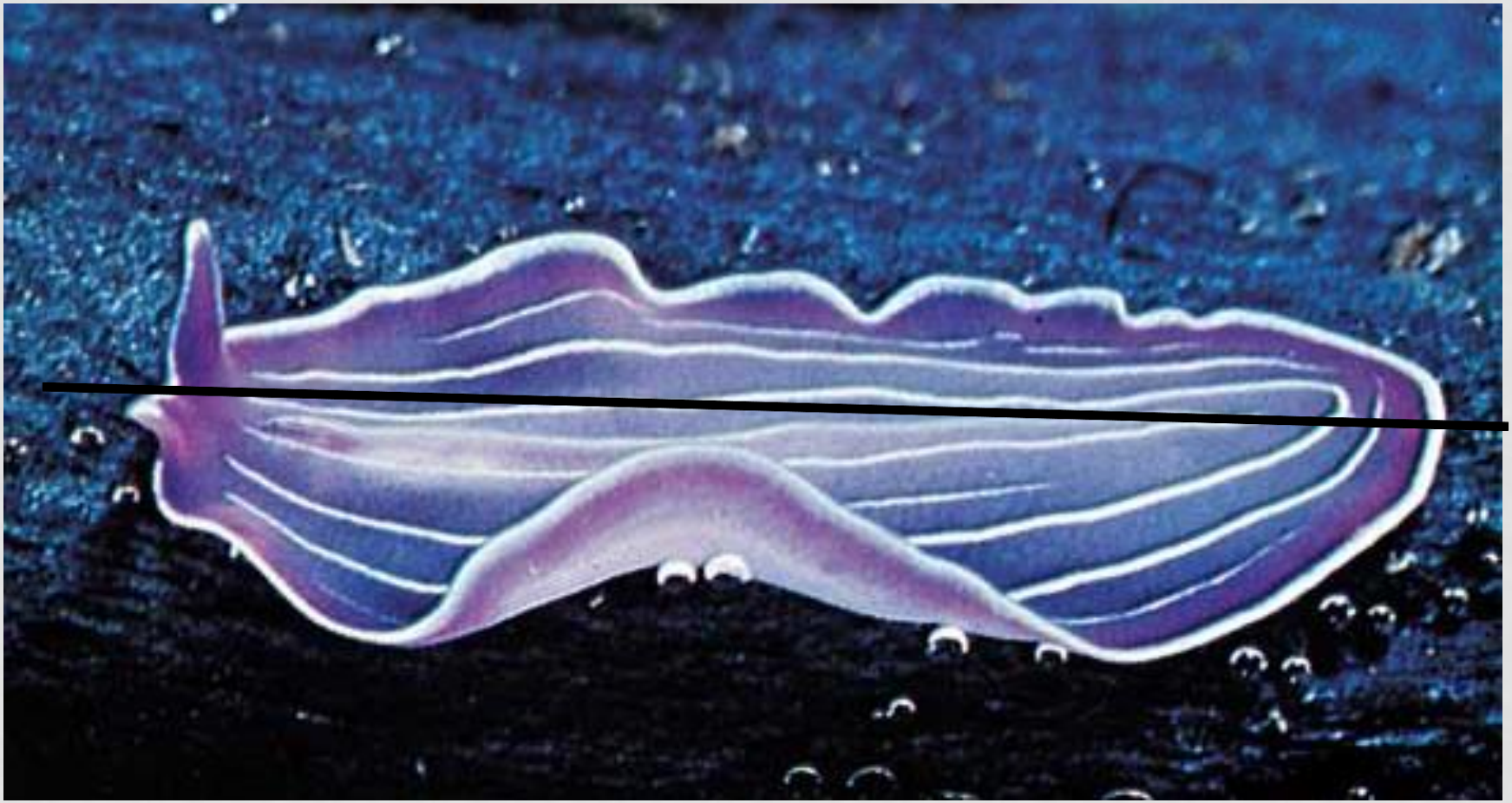
  - Flatworms are **soft**, **flattened** **worms** that have **tissues** and **internal** **organ** systems.

  - They are the simplest animals to have
    - **three** embryonic **germ** **layers** (aka: **triploblastic**)
      - **Ectoderm**, **mesoderm**, **endoderm**
    - **bilateral** symmetry
    - **cephalization**.

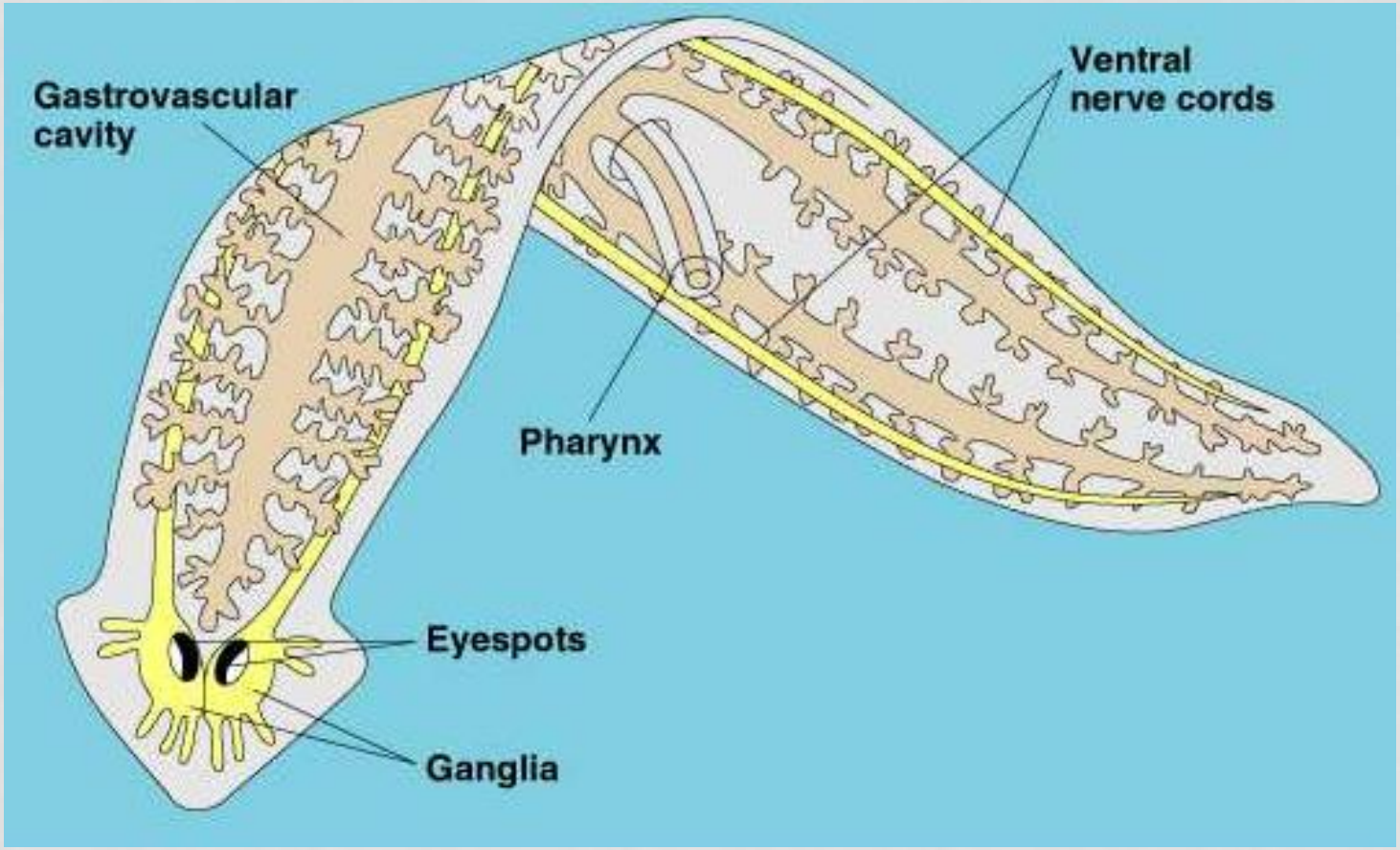
THE THREE GERM LAYERS



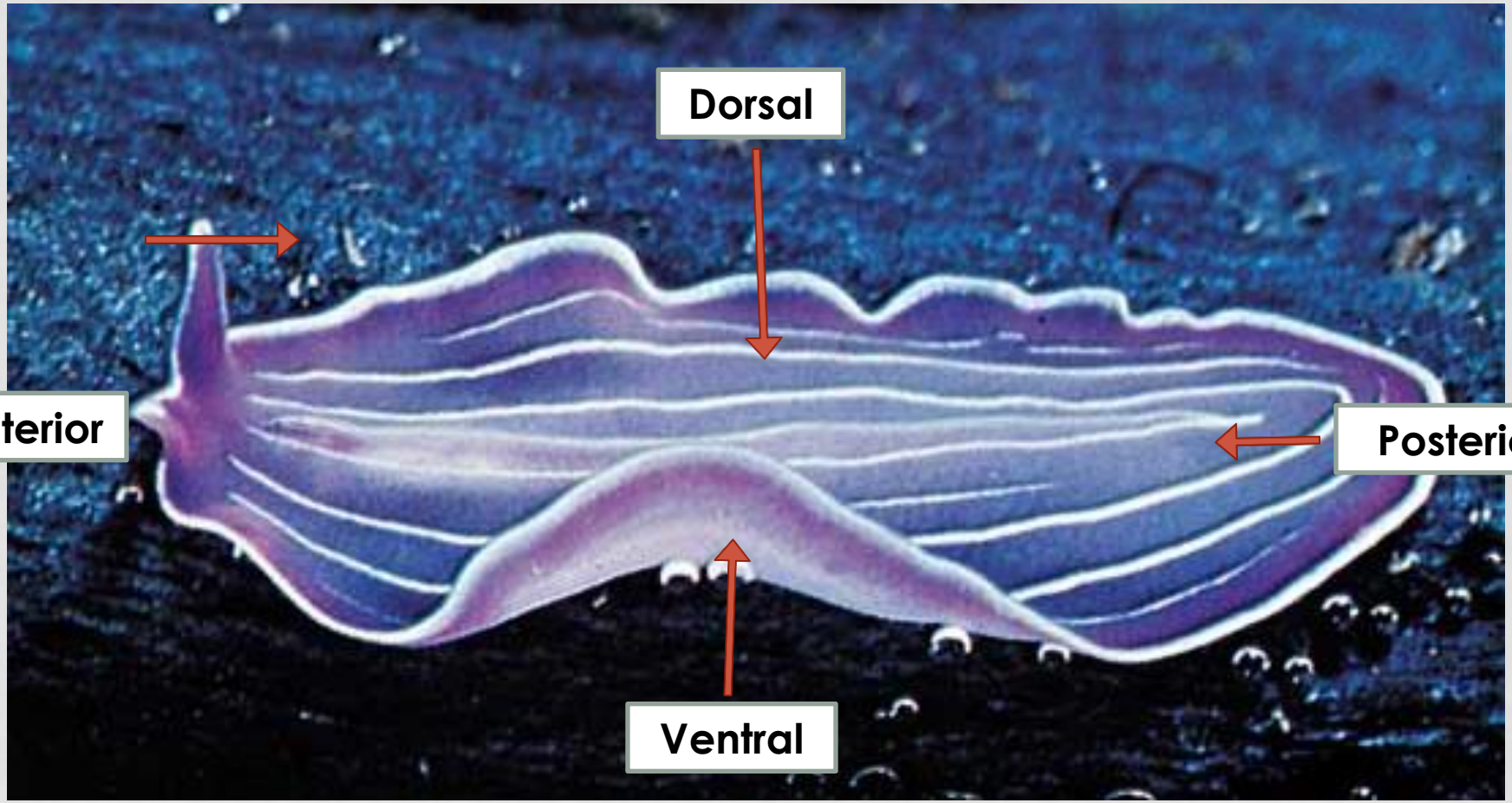
BILATERAL SYMMETRY



CEPHALIZATION

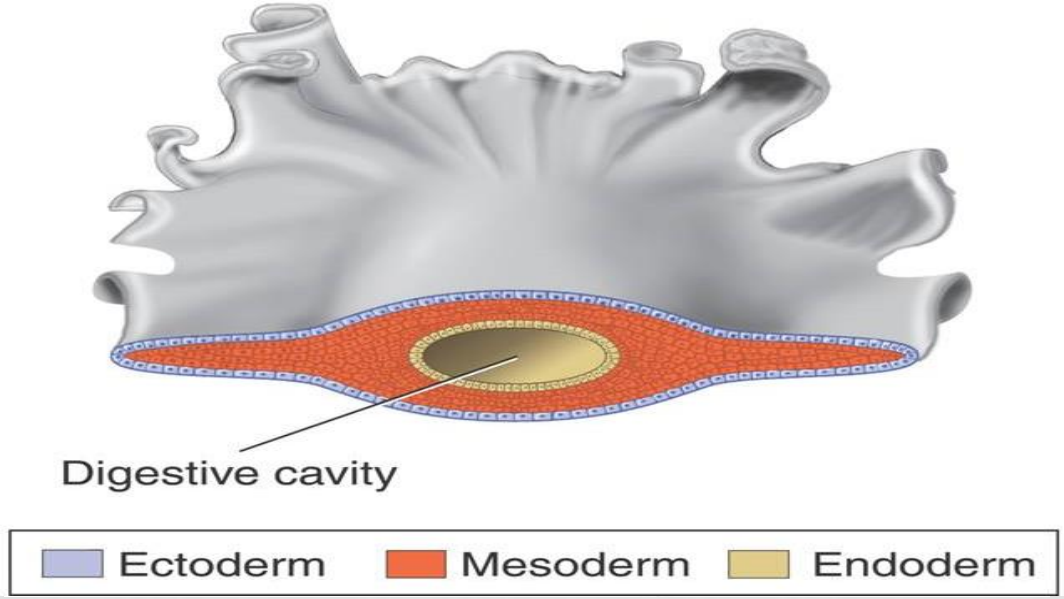


SURFACES



WHAT IS A FLATWORM?

- Flatworms are **acoelomates**, which means they have no **coelom**.
- A **coelom** is a fluid-filled body cavity that is lined with tissue derived from **mesoderm**.
- **The digestive cavity is the only body cavity in a flatworm.**



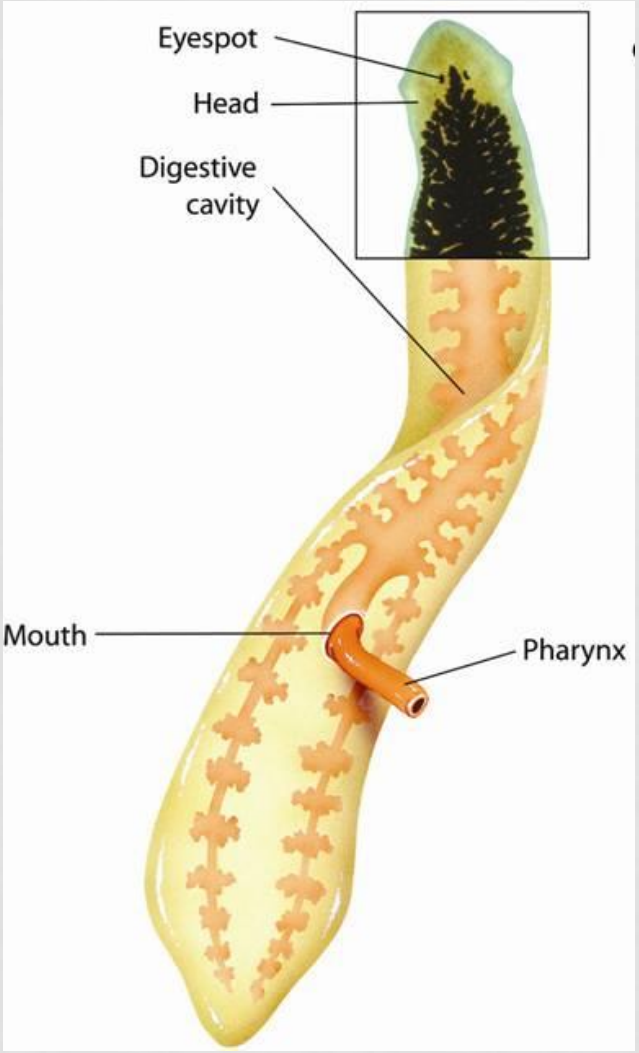
FORM AND FUNCTION IN FLATWORMS

- Form and Function in Flatworms
  - All flatworms rely on **diffusion** for **digestion**, **respiration** and **circulation**.
  - They **don't have** complicated organ systems, because they are flat!

DIGESTIVE SYSTEM

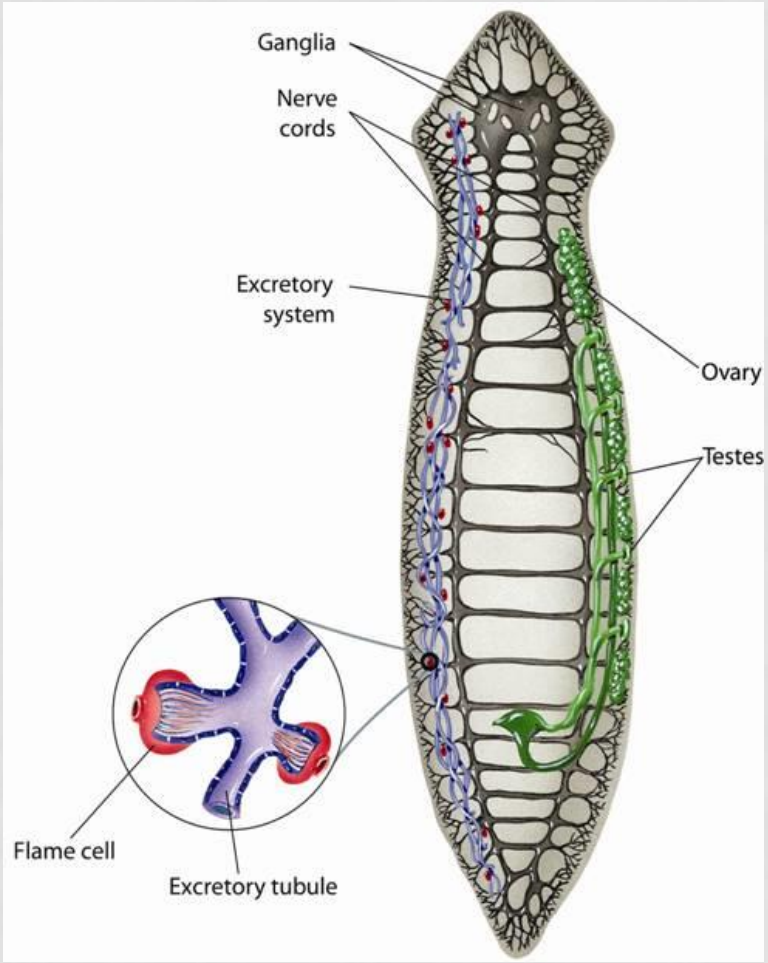
- Digestive Structures of a Flatworm

- The digestive cavity is branched throughout the body and opens to the outside through the pharynx, **one way in, one way out**
- Why?
  - How does an animal get **nutrients** around their body **without** a vascular system
    - **Diffusion**!



NERVOUS SYSTEM

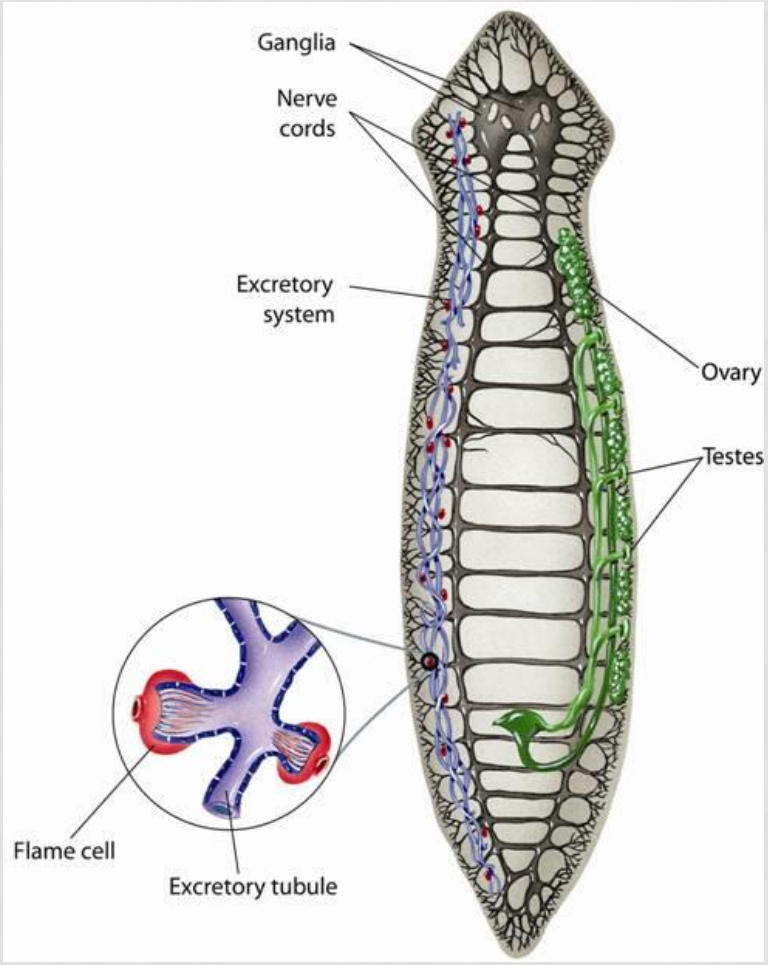
- The nervous system (in dark gray) consists of **ganglia** and **two nerve cords** that run the **length** of the **body**.
  - Ganglia: senses **light**, **chemicals**, and **pressure**
- **Some** flatworms have **eye spots**



SEXUAL REPRODUCTION

- The reproductive system (in green) has **testes** and **ovaries**, or **male** and **female reproductive organs**, along both sides of the body.
- Flatworms are **hermaphroditic**
  - How does it work?

https://www.youtube.com/watch?v=wn3xluIRh1Y

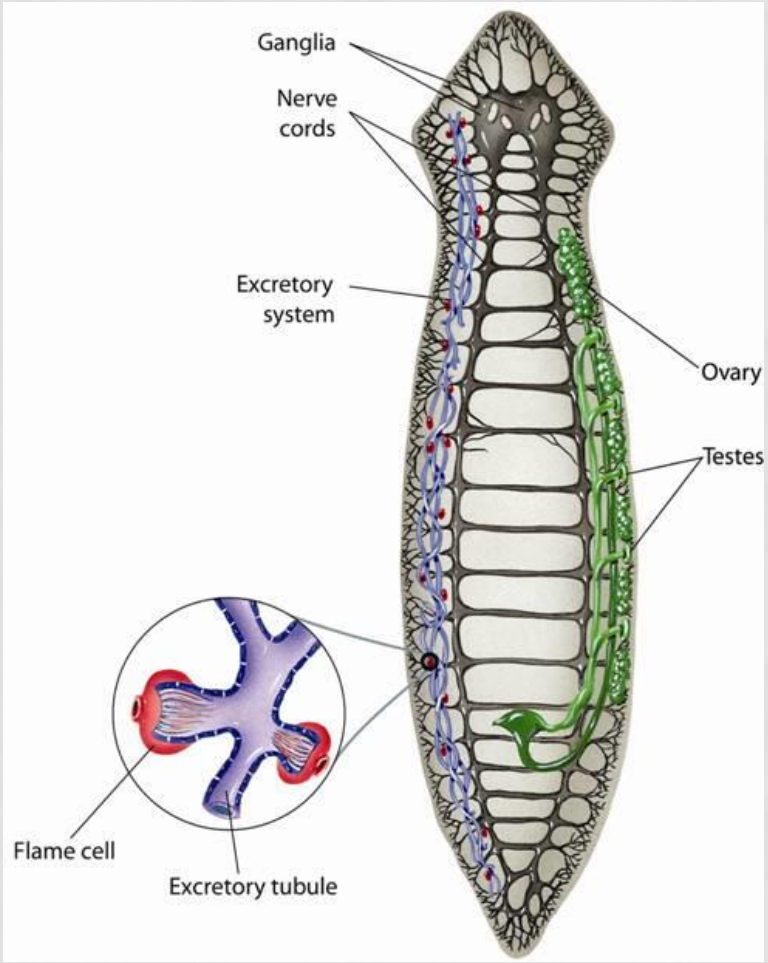


WHAT HAPPENS AFTER PENIS FENCING?

- **Both** worms **want** to be the **male**
- Sperm is **absorbed** through the **ectoderm** to fertilize the **egg**
- The **loser** bares the **burden** of **motherhood**
  - This worm will have to work harder to find food and resources while pregnant
- After giving birth, the **worm** will fight **again** to be the **male**

ASEXUAL REPRODUCTION

- **Asexual** Reproduction
- **By fission**
- Animal **splits** in **half**



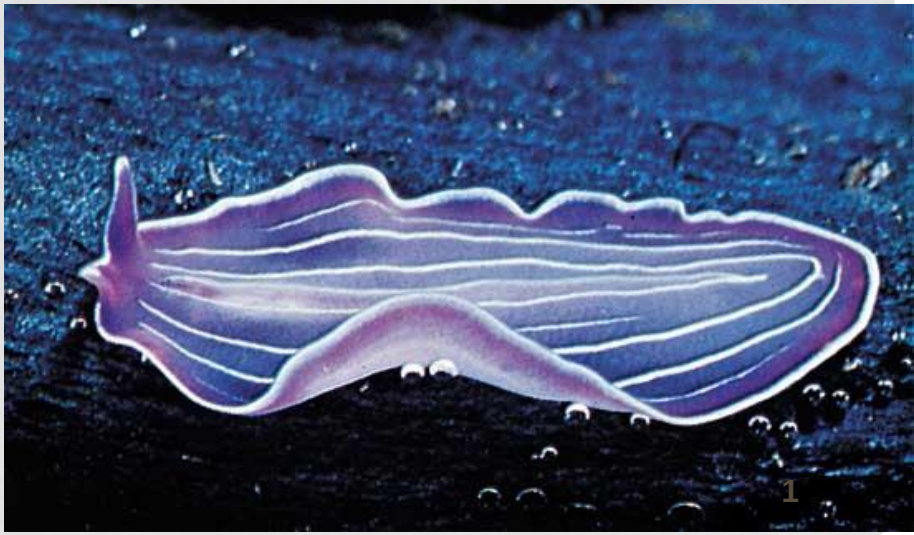
WHAT DO PLATYHELMINTHES LACK?

- They **do not** have a "**body cavity**"
- They **do not** have a **respiratory** or **circulatory** system

GROUPS OF FLATWORMS

- Turbellarians

  - Turbellarians are **free-living** flatworms. **Most** live in **marine** or **fresh water**.
  - Most species **live** in the **sand** or **mud** under **stones** and **shells**.



TURBELLARIA

- Movement
  - **Free-living flatworms move in two ways.**
  - **Cilia** on their epidermal cells help them glide through the water and over the bottom of a stream or pond.
  - **Muscle cells** controlled by the nervous system allow them to twist and turn.

PARASITE

- An **organism** that **lives in** or **on another** organism (its host) and **benefits** by deriving nutrients at the **host's expense**.

PARASITES

- **Most parasitic worms** do **not** need a **complex digestive system**.
- They **obtain nutrients** from foods that have **already been digested** by their **host**.

GROUPS OF FLATWORMS

- **Trematoda**

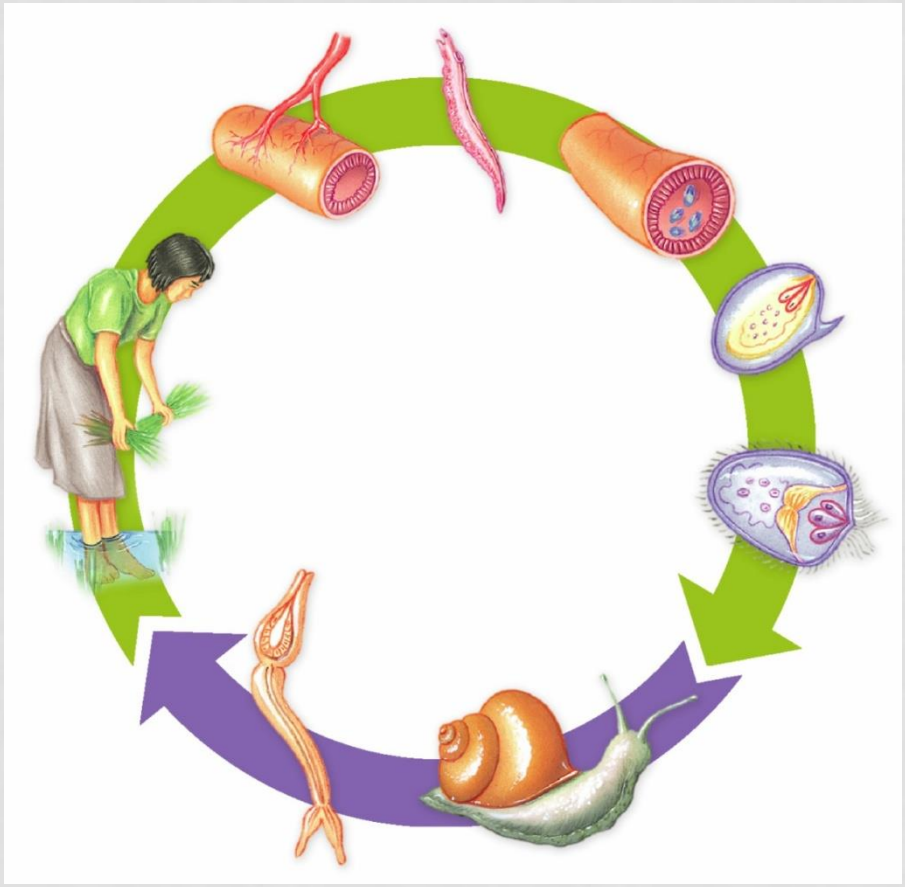
- **Flukes** are **parasitic flatworms**. Most flukes infect the internal organs of their host.

- They have **suckers** that help attach themselves to their host

(**oral** and **ventral suckers**)

LIFE CYCLE OF A BLOOD FLUKE

- Life Cycle of a Blood Fluke



1) Eggs pass out of human host in feces
2) If the eggs reach the water, hatch into free swimming miracidia (24 hours to find host)
3) The larva (miracidia) find snail, burrow inside it and digest tissues
4) Fluke reproduces asexually in snail, and break out of snail
5) The free swimming larva have 48 to find human
6) Larva penetrate any exposed skin of human
7) Reach vein, travel to heart and lung, then eventually to liver. Here they change to adult. After 3 weeks in liver, they lay eggs in veins around large intestine

http://animal.discovery.com/tv-shows/monsters-inside-me/videos/the-lung-fluke.htm

ZOMBIE SNAIL

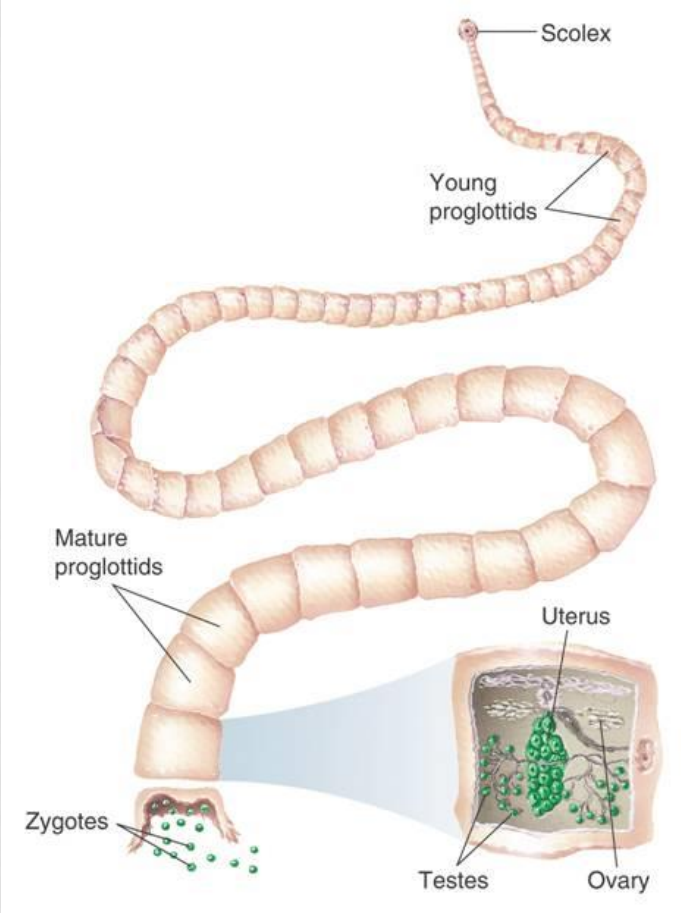
- Leucochloridium paradoxum
- http://www.youtube.com/watch?v=EWB_COSUXMw

FORM AND FUNCTION IN FLATWORMS

- **Cestoda**
  - **Tapeworms** are **long**, **flat**, **parasitic worms** that are adapted to life inside the **intestines** of their hosts.
  - Attach themselves to host by **disks** that **bear hooks**

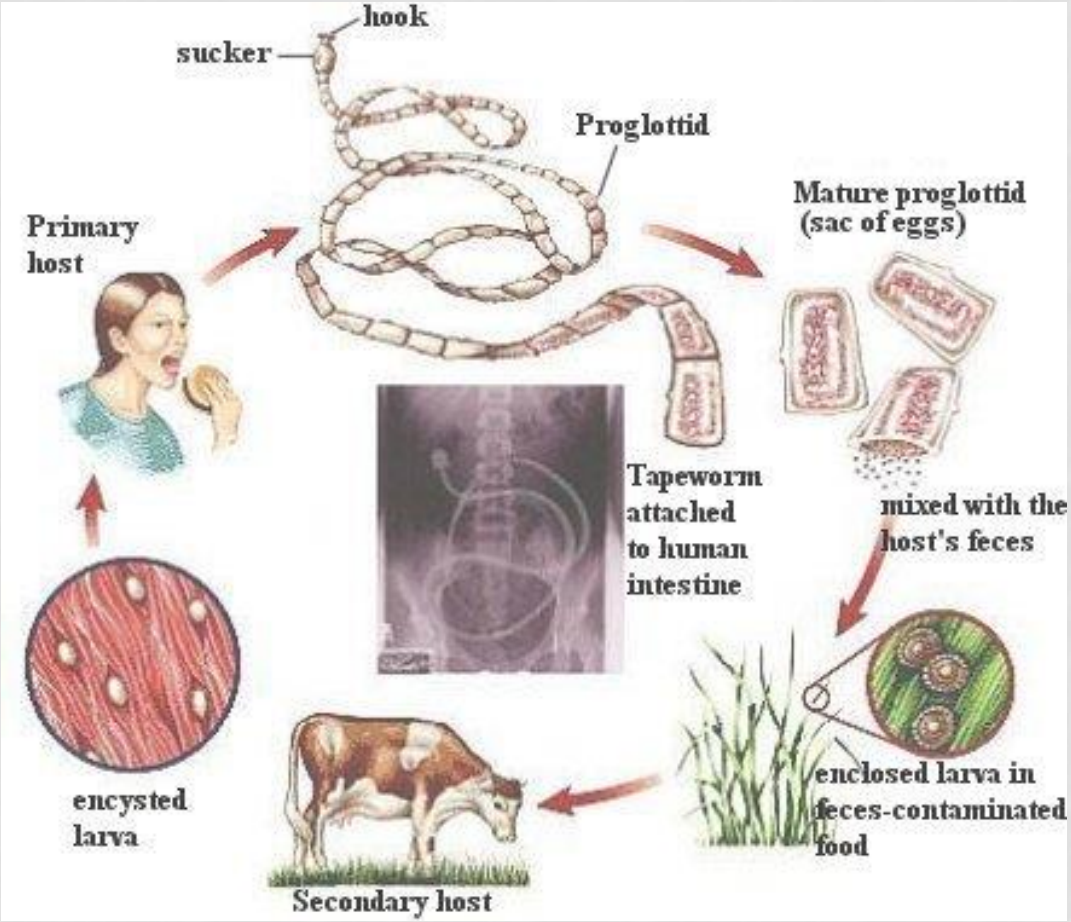
CESTODA

- Structures of a Tapeworm



Scolex: The tapeworms “head”
Has hooks and suckers
to hold onto host

LIFE CYCLE OF A TAPEWORM



DO YOU HAVE A TAPEWORM?