

Flatworms

Flatworms are in the phylum **Platyhelminthes**. Flatworms are flattened **dorsoventrally** (top to bottom). The group includes the freshwater, **free-living planarian** and the **parasitic fluke** and **tapeworm**. On the drawings, **label** the planarian and the tapeworm. Flatworms have **three body layers** --- the outer **ectoderm**, the middle **mesoderm**, and the inner **endoderm**. They do **NOT** have a fluid-filled body cavity or coelom. Instead, the body of flatworms is **solid (filled with cells)**; therefore, they are said to be **acoelomate** animals. Flatworms have **bilateral symmetry**. Bilateral symmetry means that the animal can be divided in one plane into **two, mirror images** (a right and left side.) Animals with bilateral symmetry have **dorsal** (upper) and **ventral** (lower) sides, as well as **anterior (forward or head end)** and **posterior** (tail or hind) ends. On Figure 1, **label** all 4 of these surfaces.

The **planarian**, genus as **Dugesia**, lives in freshwater and is a scavenger on decaying material (**detritus**). It will also feed on protists in the water. Like all flatworms, it has only one opening into its body, the **mouth**. The mouth is located at the end of a tube that can be extended called the **pharynx**. **Color and label** the pharynx and mouth on figure 1 tan. The mouth opens into the **gastrovascular cavity** of the hydra where **digestion** takes place. **Wastes** exit the planarian through the mouth. **Draw an arrow** going in and out at this opening showing the two-way movement of materials (called a **two-way digestive system**.) The anterior or head end of flatworms has a concentration of **sensory** structures. This is known as **cephalization**. **Label** this end of the worms in figures 1 and 4 with the word cephalization. Two light sensitive **eyespots** are located at this end. **Label** the eyespots on

figure 1. Planarians are **hermaphrodites** containing both **testes** to make **sperm** and **ovaries** to produce **eggs**. They do **NOT** fertilize their own eggs however. Planarians can also reproduce **asexually** by **fragmentation** (splitting into pieces). Planarians have a great ability to **regenerate** (regrow lost body parts). Internally, the planarian has a **simple brain** at the anterior end and two long, **nerve cords** extending from this toward the posterior of the worm. *Label and color* the brain red, and label the two nerve cords. The intestine extends most of the length of the body and has side pouches to increase the surface area for absorption. *Color and label* the intestine red.

Tapeworms are parasitic tapeworms that live inside the intestines of their **hosts**. They do NOT have true body segments, but their body does have **reproductive** sections called **proglottids**. The head or **scolex** is located at the anterior end and has both **hooks and suckers** for attachment to the inside of the host. *Label and color* the hooks green and the suckers red. *Color and label* the head brown. Tapeworms continue to grow and add proglottids and may reach 40 feet long! Tapeworms do **NOT** have a **digestive system** since they feed on food digested by their host. **Mature proglottids** have an external **genital pore**. *Label* the genital pore on the proglottids. The **sperm duct** leads from the genital pore. *Label and color* the sperm duct yellow. The **testes**, which make **sperm**, are small round bodies in the proglottids. *Color and label* the testes orange. In other ripe proglottids, **eggs made by ovaries** can be seen. Tapeworms are hermaphrodites that **DO fertilize** their own eggs. Each proglottid produces **hundreds of eggs**. These eggs pass out of the host's body with wastes.

Flukes are another type of parasitic flatworm. They have only an **anterior sucker** for host attachment. Flukes may live in more than one **host** during their **life cycle**. Adult flukes live inside the **liver of cattle** and **lay eggs**. These eggs pass out with wastes and the eggs hatch into **larva** in the water. The larva enters its next host, the **snail**. It goes through several developmental changes in this intermediate host.

Eventually, the young flukes leave the body of the snail and attach to grasses growing along the water's edge. Whenever cattle or some other animal feed on this grass, they get flukes in their bodies.

Questions:

1. Explain why planarians and flukes are called flatworms.
2. Name 2 parasitic flatworms.
3. What type of digestive system do flatworms have? How many body openings do they have?
4. Describe the nervous system and sensory structures of the planarian.
5. Why do tapeworms not have a digested system?
6. What are proglottids? What is the scolex?
7. How do tapeworms attach to a host?
8. Describe fragmentation in the planarian.
9. What is meant by cephalization? Do flatworms show this?
10. Name the hosts for a fluke.
11. How many cell layers do flatworms have? Name them.
12. Planarians are hermaphrodites. What does this mean?
13. Do planarians fertilize their own eggs?

14. Do tapeworms fertilize their own eggs?

LABELING & COLORING:

Figure 1 - External Anatomy

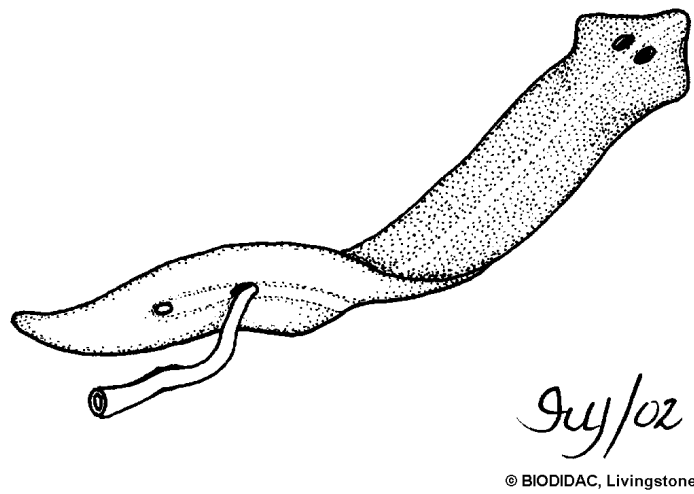


Figure 2 - Internal Anatomy



Figure 3 - Fluke Life Cycle

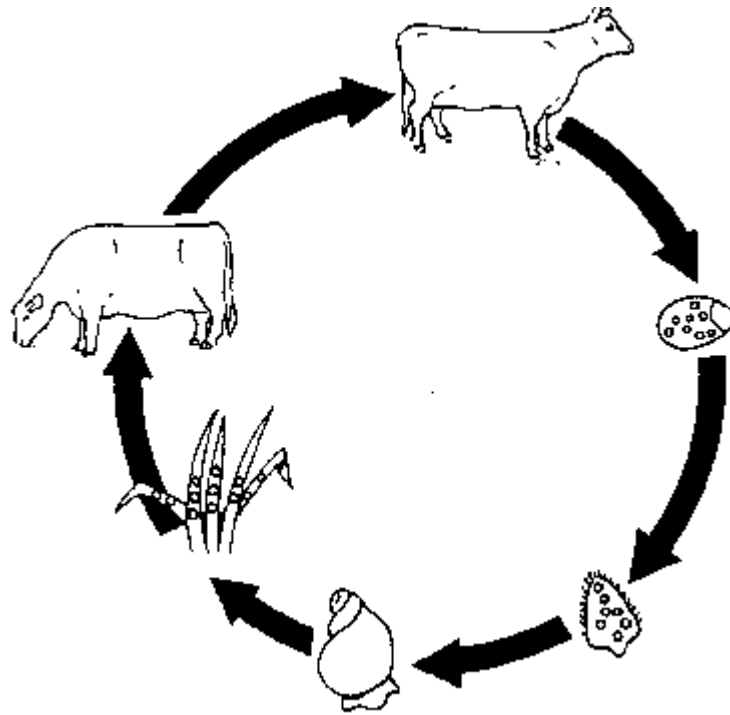
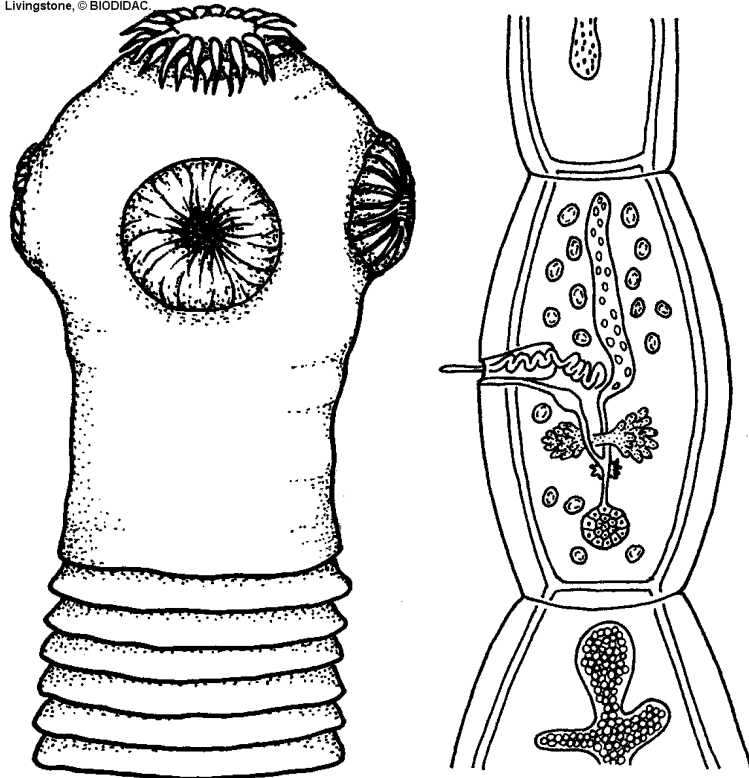


Figure 4 TAPEWORM

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