

WARD'STM

Working with Planaria

Introduction

Planaria are free-living aquatic flatworms known as Turbellarians, of the phylum Platyhelminthes (Greek for “flatworm”). Turbellarians are also known as “triclads”, which refers to their triple gut with a single anterior and two posterior branches.

Other characteristics of planaria include pigmentation which can be gray-brown, brown, white, or black; simple nervous system; and head with “eyes”. The eyes have no lenses and so cannot form an image, but they are sensitive to light. (To get a sense of how Planaria “see”, close your eyes and face a bright light.) Note, however, that planaria are negatively phototactic—they avoid light; they hide under rocks, leaves, and other debris in aquatic habitats.

Planaria are carnivorous, eating living or dead animal matter. When they eat, they use their long, muscular pharynx, which they evert to almost one-half their body length.

Reproduction

Planaria reproduce both sexually and asexually. There are two methods of asexual reproduction: fragmentation and spontaneous “dropping tails”. Fragmentation usually begins with a transverse constriction just behind the pharynx, which increases until the two parts separate and move away from each other. The head grows a new tail, and the tail grows a new head. In spontaneous “dropping tails”, planaria in very stagnant water will frequently “drop” their tails, and the tails regenerate to form complete animals. This condition usually results in stunted animals, or dwarfs, which remain in this state until water conditions improve.

Because planaria are hermaphroditic—each animal possesses complete male and female systems—they reproduce sexually by producing “summer” eggs and “winter” eggs. Summer eggs are thin-shelled and transparent; winter eggs are usually black and on stalks. While summer eggs hatch quickly, winter eggs take longer to hatch; they may even remain dormant throughout the winter, and they are capable of withstanding unfavorable environmental conditions.

Collection

Planaria can be found on the underside of rocks, leaves, and other objects in the shallow water of streams, ponds, and rivers, as well as in aquatic vegetation such as Elodea and filamentous algae. The most common species found in running water are *Dugesia dorotocephala*, *Cura foremani*, and *Phagocata velata*; in standing water *Dugesia tigrina* and *Phagocata vernalis* are common. *Proctotyla fluviatilis* can be found in running water, standing water, and even brackish water.

To collect planaria, wash off the underside of objects from a stream or pond bottom into a container of water. Planaria can also be collected by using “bait”—a cube of raw beef liver tied with a string and left to drift near submerged rocks for 15 or 20 minutes; shake off any planaria that adhere to the liver into a container of water. You may also remove a large amount of aquatic vegetation and place it in covered containers of water. As the oxygen content decreases, the planaria will rise to the surface where they can be easily removed.