

Hirudinea

Introduction



(Source: [Biodiversity Institute of Ontario](#))

These worms are commonly referred to as leeches. Leeches are very diverse in physiology; some freshwater species live in water with very low salt concentrations, while others can tolerate concentrations that are more severe than [seawater](#). They can also survive severe fluctuations in [oxygen](#) levels.

Morphology

Because of the different habitat occupancy and lifestyles, leeches come in different shapes and sizes. There are a few characteristics that set them apart from all other worms. All have both an anterior and posterior sucker and are divided into 32 post-oral segments. The type and placement of eyes are used for classification.

The musculature of leeches is modified from that of other worms. They possess the circular and longitudinal muscles of the other groups, but also have a set of diagonal and dorsoventral muscles. The result is a reduced coelom (and a loss of septa separating the coelom at each segmental juncture) as this space is taken up by the extra sets of muscles. Setae, which are used by other worms to anchor themselves while burrowing, are absent in the leeches. These structural changes are reflected in leech locomotion. Leeches crawl and swim, but are not capable of burrowing. In order to crawl (often called looping) the leech uses its anterior and posterior suckers to alternately anchor itself to the substrate.

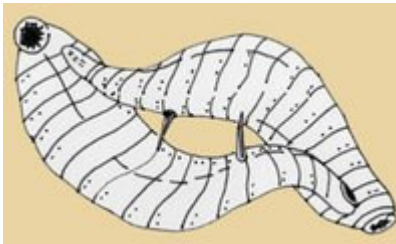
Metabolism

All leeches have a flattened body shape and a relatively high surface area exposed to the water relative to their body volume. They absorb [oxygen](#) through the body wall, so there is no need for the leech body to waste energy developing gills to obtain oxygen. If there is a low oxygen content in the water, they attach their rear sucker to the substrate and make intense waving motions with their body. This causes a water flow so more oxygen reaches the leech.

When you finish a swim in your lake and you get out to find a leech clinging to your toe, what do you do? Just reach for a shaker of salt and let osmosis do its job. Leeches, like other freshwater animals, have a higher concentration of salts in their bodies than the water around them. Leech bodies are used to this balance, and have mechanisms dedicated to pumping out excess water that tries to enter their cells. When salt is poured on them, the water tries to reach higher concentration of salts that is now present outside the leech. The water inside the leech leaves the body to dilute the salt outside. The cells in the wither up, spelling the end of the leech.

Blood sucking leeches have tiny [bacteria](#) in their guts that break down the blood into components that the leech can absorb. This is a symbiotic relationship that benefits both parties.

Reproduction

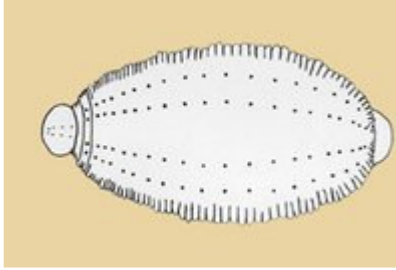


(Source: [Biodiversity Institute of Ontario](#))

All leeches are hermaphroditic, as all individuals have both male and female reproductive organs. Female and male reproductive organs are not active at the same time in the lifecycle; they must find a partner with which to copulate. They can, however, simultaneously exchange sperm with a partner and store it for later use. Unlike other annelid groups, leeches cannot reproduce asexually or regenerate damaged body segments. Most predatory leeches breed only once and then die. Blood feeding leeches are more likely to reproduce several times in a year.

Between two days and many months after copulation, depending on the species, eggs are laid inside an albumin-filled cocoon created by the clitellum of the egg donor. The eggs hatch inside the clitellum and the juveniles develop while feeding on the nutritive albumen, before being released into the environment.

Ecology



(Source: [Biodiversity Institute of Ontario](#))

Contrary to popular belief, not all leeches are blood sucking terrors. In fact only a few species are ectoparasites, and even fewer are [parasites](#) on humans. The majority of leech species are predators on oligochaete worms, molluscs and larvae of chironomid midges. Although leeches are predators and ectoparasite, they are still food for some higher predators. Fish, birds, snakes, [amphibians](#), and to a lesser extent insects and gastropods, are all voracious predators on leeches.

Idiosyncratic Inverts

The saliva of blood sucking leeches has amazing properties. Human saliva carries out only a few tasks, the most important of which is lubrication of food to ease swallowing, and some basic chemical breakdown. Leech saliva also has some digestive powers, but it is also uniquely adapted to aid in the act of extracting blood.

When a leech first latches onto your finger, it uses its mouthparts to break the skin to gain access to blood. It has a better chance of having a good meal if it's not noticed. The saliva released into the wound acts as a painkiller. The next step is the extraction of blood. Ordinarily, blood clots as soon as a wound is made. The leech ensures the free flow of blood with another saliva component that acts as both an anticoagulant—which stops the red blood cells from sticking together to block the wound—and a vasodilator—which causes the vessel that the leech has tapped to open wider for a better blood flow. In this way the leech ensures an abundant flow of blood into its mouth.