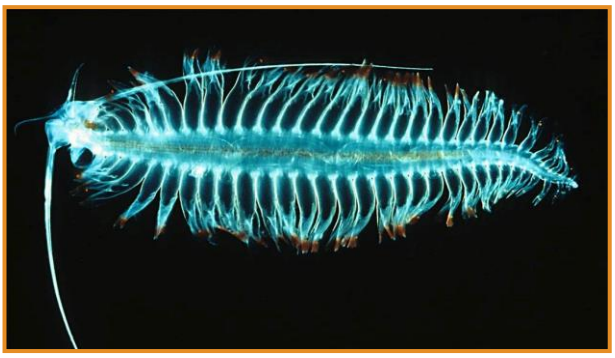
Shape of Life
The Story of the Animal Kingdom

Annelids Fact Sheet

Not Lowly – Lovely!

Annelids are far from being lowly worms. They are impressively adapted – and even beautiful – animals. The roughly 20,000 species of modern annelids live in every habitable niche on earth except the sky. Annelids include earthworms and leeches. They are found not only in home gardens, but in soft and hard substrates around the world and even in hot, deep ocean hydrothermal vents.



Marine bristle worms (polychaetes) are stunning annelids. Over 10,000 species have been discovered! Learn more: smithsonianmag.com/science-nature/14-fun-facts-about-marine-bristle-worms-180955773
Eigin Skrá, Wikimedia Commons

Successful Segments

One of the main features of the body plan is segmentation: a repetition of body parts along the body axis. Segmentation lets annelids have complex movements. And it means different parts of the body can have different functions. Segmentation is also present in arthropods and chordates.

Annelids share the following characteristics:

- ### Segmentation and a long, bilateral shape

  An annelid's segmentation is visible on the outside of its body as ring-like bands. These bands match internal partitions dividing the body into segments. Each segment, except the head and tail, contains the same set of organs.

  The evolution of segmentation was an important step for the annelids. These segments and other body structures allowed species to diversify. The name of their phylum **Annelida** means "little ring" in Latin.

The many species of earthworms are long with ring-like segments. *Pixabay*

- ### Bilateral symmetry

  The left and right sides of their bodies are mirror images of each other.

- ### A coelom (body cavity)

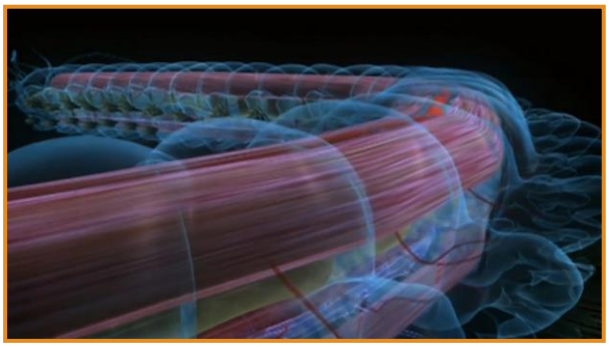
  Each segment has a body cavity that provides room for the organ systems. It also provides a fluid system against which the muscle system can work effectively. These separate, fluid-filled cavities helped annelids become effective burrowers in mud, sand, and soil.

- ### A complete circulatory system

  Their **circulatory system** runs through the segments with its capillaries, arteries, and veins distributing blood and oxygen to organs in each segment.

- ### A body wall made of circular and long muscles

  Two sets of **muscles** coordinate so a worm can move. When the circular muscles of a region contract, that part becomes thinner and lengthens. Contraction of the **longitudinal** (long) muscles causes the segment to shorten and thicken. The worm



The two sets of muscles are shown in the "Annelids: Powerful and Capable Worms" video from Shape of Life: shapeoflife.org/video/annelids-powerful-and-capable-worms.

moves forward as these contractions progress along segments like waves.

- ## Bristle-like structures, called setae

  Setae are thin bristle-like projections from most segments. They help worms move and stay anchored. Burrowing worms travel through mud by contracting circular muscles, anchoring their body with their setae, and contracting their long muscles. In this way they push themselves forward. Leeches lack setae.

- ## A continuous gut running from mouth to anus

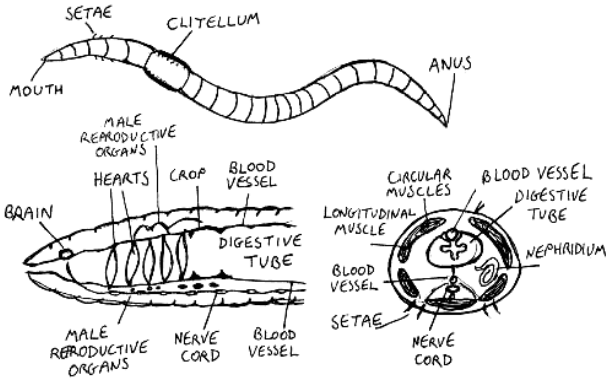
  A **gut** that goes from one end of the body to the other was a major step in the evolution of animals. The gut has its own supporting muscles that are different from muscles used for movement. With this type of gut, food can be constantly taken in by the mouth and digested. Waste is released through the **anus**. Not only could the early annelids constantly digest their food, but they could move while they did it.

Annelids have evolved specialized ways of feeding:

- Many annelids build tubes for protection. These **tubeworms**, like feather-duster worms, extend their tentacles to capture food in the water column.
- **Spaghetti worms** extend elastic tentacles from their burrows to get food. Sticky mucus on the tentacles traps **detritus** (decomposing organisms). **Cilia** transport the food along their **tentacles** to their mouths.
- **Burrowing annelids,** like lugworms, feed on organic matter by swallowing sediment while in their burrow. They then strip the sediment of its nutritious bits.
- Most **leeches** prey on small invertebrates, which they eat whole. Blood-sucking leeches attach to their hosts and remain there until they become full.
- Unlike most annelids, tubeworms living near hot vents in the seafloor don't eat! Instead, they have billions of **bacteria** living inside their bodies. These bacteria transform chemical compounds like **hydrogen sulfide** into energy for them.
- There are also annelids that swim freely in the deep-sea midwater zone. And others that crawl on the hard seafloor that are fierce predators.

Learn More with Shape of Life Videos

- "Annelids: Powerful and Capable Worms": shapeoflife.org/video/annelids-powerful-and-capable-worms
- "Annelid Animation: Body Plan": shapeoflife.org/video/annelid-animation-body-plan
- "Annelids: Abarenicola, Burrowing Worm": shapeoflife.org/video/annelids-abarenicola-burrowing-worm
- "Annelids: Diopatra, Tube-Dwelling Worm": shapeoflife.org/video/annelids-diopatra-tube-dwelling-worm
- "Annelids: Leeches": shapeoflife.org/video/annelids-leeches
- "Annelids: Lumbricus, Earthworm": shapeoflife.org/video/annelids-lumbricus-earthworm
- "Annelids: Terrebellid, Spaghetti Worm": shapeoflife.org/video/annelids-terrebellid-spaghetti-worm



Diagrams of external and internal earthworm anatomy
Neckro, Wikimedia Commons

The marine worm diopatra builds tubes using its bristle-like setae. Their tube homes stabilize intertidal habitats: shapeoflife.org/video/annelids-powerful-and-capable-worms.

Blood-sucking leeches are used in medical therapies because they release "proteins and peptides that thin blood and prevent clotting": healthline.com/health/what-is-leech-therapy.

Giant tubeworms like these don't need to eat!