

6) PHYLUM ANNELIDA

(FIRST TRUE COELOMATES)

The word Annelida is of Greek origin; annelus means little ring. The animals of this phylum have their bodies divided into rings (segmented body) hence called annelids. They are also known as ringed worms or segmented worms.

BODY SHAPE

Body may be cylindrical as in earthworm, or dorso-ventrally compressed as in Neries.

SYMMETRY

Body of annelids is bilaterally symmetrical. They are triploblastic.

COELOM

They are coelomates having true coelom.

SEGMENTATION

Body is metamerically segmented i.e the organs are repeated in every segment. Septa separates the segments of many species, but are poorly defined or absent in others. Every segment contains blood vessels, epidermal structures, nervous and excretory organs.

HABITAT

They are freeliving or ectoparasite. They are found in soil, freshwater and marine (Nereis).

BODY PLAN

The annelid body consists of a head region; a trunk, made of metameres (segments) and an unsegmented terminal region called the pygidium.

CIRCULATORY SYSTEM

Characteristics of the circulatory system vary within the phylum. The blood usually contains hemoglobin, a red oxygen-carrying pigment; some annelids have green oxygen-carrying pigment, and others have unpigmented blood. The circulatory system is usually closed i.e. confined within well-developed blood vessels; in some polychaetes and leeches the circulatory system is partly open, with blood and coelomic fluid mixing directly in the sinuses of the body cavity.

In earthworm four to five pairs of hearts called pseudo-hearts are present, which contract rhythmically to keep the blood moving in the system.

DIGESTIVE SYSTEM

The digestive system is well developed especially in free living species.

Many polychaetes have a muscular pharynx while some species have evolved jaws, which can be used for seizing prey, biting off pieces of vegetation, or grasping dead and decaying matter. Some clitellates have sticky pads in the roofs of their mouths for capturing prey.

The gut is generally an almost straight tube supported by the mesenteries (vertical portions within segments), and ends with the anus on the underside of the pygidium.

Different digestive organs are well-developed

EXCRETORY SYSTEM

Excretion is done by paired excretory organs, nephridia. Excretory system consists of metamericly arranged nephridia. Nephridia opens to the exterior through nephridiopore.

BODY WALL

The body is covered with glandular epidermis, which secretes mucus and keeps the skin moist. Epidermis is overlaid by thin, pliant cuticle secreted by epidermal cells.

LOCOMOTION

Locomotory organs are setae (in earthworm) or parapodia (in neries).

~~Neries~~ Setae are short external bristles which are composed of chitin. They are also known as chaetae. Setae are used to grip the soil, to hold the animal in a tube, or to increase the surface area of appendages for swimming.

RESPIRATION

Respiration is through general body surface but some annelids e.g. neries have thin-walled feathery gills through which gases are exchanged between the blood and environment.

NERVOUS SYSTEM

The nervous system typically consists of a primitive brain, or ganglionic mass, located in the head region, connected by a ring of nerves to a ventral nerve cord that runs the length of the body; the cord gives rise to lateral nerves and ganglia in each segment.

Sense organs of annelids generally include eyes, taste buds, tactile tentacles, and organs of equilibrium called statocysts.

FERTILIZATION / REPRODUCTION

Sexually reproducing Annelids are mostly hermaphrodite i.e. the same animal contains both type of sex-organs; ovaries and testes; but cross fertilization is common.

Asexual reproduction is by fragmentation, budding, or fission.

Fertilized eggs of marine annelids usually develop into free-swimming larvae known as Trochophore larva. Eggs of terrestrial forms are enclosed in cocoons and hatch as miniature version of the adults.

REGENERATION

The ability to regenerate lost body parts is highly developed in many polychaetes and digochaetes.

EXAMPLES

Common examples are Pheretima posthuma (earthworm), Hirudinaria medicinalis (medicinal leech), Neries etc.

CLASSES OF PHYLUM ANNELIDA

Phylum Annelida consist of the following classes: P

1. Class Polychaetes
2. Class Clitellates
3. Class Oligochaetes
4. Class Hirudinea

Koracademy.com

~~classes~~

~~class~~ 1. CLASS POLYCHAETES

As their name suggests, they have multiple chetae per segment. Polychaetes have parapodia, that function as limbs. Most are marine animals, although a few species live in fresh water and even fewer on land.

2. CLASS CLITELLATES

They have a few or no chetae per segment, and no parapodia. However, they

Koracademy.com

have a unique reproductive organ, the ring-shaped clitellum around their bodies, which produces a cocoon that stores and nourishes fertilized eggs until they hatch.

The clitellates are sub-divided into:

1. Oligochaetes
2. Hirudinae

3. CLASS OLIGOCHAETES

Oligochaetes (with few chetae), which include earthworms. They have a sticky pad in the roof of the mouth. Most are burrowers that feed on wholly or partly decomposed organic material.

4. CLASS HIRUDINAE

Hirudinae means "leech-shaped". The best known members are leeches. Marine species are mostly blood-sucking parasites, mainly on fish, while most freshwater species are predators. They have suckers at both ends of their bodies, and use these to move rather like inchworms.

ECONOMIC IMPORTANCE OF ANNELIDS

Many Annelids are of significant importance which includes:

1. SOIL FERTILITY

Earthworms make the soil porous and fertile which increases the production of crops.

2. INTEGRAL PART OF FOOD CHAINS

Animals of this group are an integral part of the food chains both in aquatic and terrestrial environment.

3. ESSENTIAL FOR CONSERVING ENDANGERED BIRDS

Earthworms are an important prey for birds ranging in size from robins to storks, and in some cases ~~ea~~ conserving earthworms may be essential for conserving endangered birds.

~~4. FOR MEDICINAL PURPOSES~~

4. FOR MEDICINAL PURPOSES

Leeches have been used in microsurgery, and their saliva have provided anti-inflammatory compounds and several important anticoagulants, one of which also prevents tumors from spreading.