ANNELIDA

Annelida (*L - annulus - ring*) is a diverse taxon of large bodied segmented worms. The phylum Annelida includes **soft bodied**, **elongated, bi-laterally symmetrical, metamerically segmented coelomate** worms previously it was included under the **phylum vermes** by Linnaeus (1736).

The unique characteristic of the phylum Annelida is **metamerism**. The body is divided into a number of similar parts. Each division or part of the body is known as **somite or segments** or **metameres**. The somites are arranged in a linear series. Externally the somites are differentiated by ring like grooves called the **annuli**. The internal segmentation is also complete and distinct and hence the coelom id divided by transverse **septa**. The phylum includes about 12000 described species.

General characters of the phylum Annelida:

i. These are mostly aquatic, found in marine water as well as in fresh water. A few are terrestrial and burrowing.

ii. The body is bilaterally symmetrical, triploblastic and vermiform.

iii. Body is soft, elongated and metamerically segmented externally by transverse grooves and internally by muscular septa into a number of divisions. These divisions of body is known as somites or segments or metameres. The segments arranged in a linear series from anterior to posterior end.

iv. The anterior end of the body is known as **prostomium** that bears **the head and the sex organs**. The posterior end is **pygidium** includes the anus and the first segments behind the prostomium is called **peristomium.**

v. The body is covered externally by a thin cuticle. The cuticle is secreted by the underlying epidermal cells and it consists of unicellular gland cell and sensory cells.

vi. The body wall consists of two types of muscles **outer circular** and **inner longitudinal**. The body wall is highly contractile.

vii. No distinct head and paired appendages.

viii. Body cavity is a true coelom. The coelom is divided by septa into a series of annular cavities.

ix. The locomotory organs are segmentally arranged few to many chitinous bristles termed as **setae.** The setae may be embedded in the integument or may be borne on special sac like out growths of the skin the parapodia.

x. The alimentary canal is a straight tube leading from the **ventral mouth** to a **terminal anus.**

xi. The respiration is performed chiefly by epidermis or by **gills** in some tube dwellers.

xii. Blood vascular system is closed type. Respiratory pigments may be **haemoglobin, chlorocruorin** and **haemoerythrin**, remain dissolved in plasma.

xiii. The excretory system typically consists of segmentally arranged coiled tubes, **nephridia** and **coelomoducts.**

xiv. Nervous system consists of a nerve ring formed by a **pair of cerebral** or **supra pharyngeal ganglion** (brain).

xv. They may be **unisexual** or **bi-sexual**. Gonads developed from coelomic epithelium. The gonads pass out to the exterior either by **nephridia or coelomoduct**.

xvi. In unisexual individual the development is indirect with larval forms known as Trochophore larva and in bi-sexual forms direct development takes place.

Classification of Annelida:

Before 1950 Parker and Haswell divide the phylum Annelida into Cheatopoda, Hirudinea and Archiannelida . Later on1972, the phylum divided into 4 classes – polychaeta, Archiannelida, Oligochaeta, Hirudinea. Barnes (1987)- divided the phylum Annelida into 3 classes- Polychaeta, Oligochaeta and Hirudinea. He includes Archiannelida in polychaeta.

		Annelida	
Polychaeta		Oligochaeta	Hirudinea.
E.g.- Neris	Order	Lumbriculida	Order Acanthobdellida
		E.g-*Lumbriculus*	E.g.- *Acanthobdella.*
	Order	Tubificida	Order Rhynchobdella
		E.g. *Tubifera.*	E.g.*Pontobdella*
	Order	Haplotaxida	Order Archynchobdellida
		E.g.-*Pharetima*	E.g.- *Hirudo.*

Class I Polychaeta (poly- many chaeta-setae)

i. These are exclusively marine and carnivorous.
ii. Body is elongated and consists of numerous segments. Anterior end of the body is modified to form the head which bears eyes, tentacles, and palps
iii. Each segment of the body bears a pair of lateral outgrowth of the integument known as parapodia provided with numerous setae.
iv. Clitellum is absent
v. Fertilization external.
vi. Sexes separate, development includes trochophore larva.

E.g.- *Neris, Aphrodite, Sebella* etc.

N.B. Clitellum is a thickened granular or non-segmented segments of body wall near the head in earthworm and leech, that secretes a viscid sac in which eggs are stored. It is located near the anterior end of the body between 14-17 segments.

Class2 Oligochaeta (Oligo-few, chaeta-setae)

i. They are terrestrial and fresh water annelids
ii. The head is indistinct, prostomium is distinct but without any appedages (eyes and tentacles).
iii. Parapodia and bristle are absent. Setae are embedded in the integument.
iv. A clitellum is usually present.
v. They are hermaphrodites i.e. bi-sexual development is direct without any larval form.

e.g. *Pheretima, Tubifex, Lumbricus*

Class 3- Hirudinea (Latin –Hirudo-Leech)

i. Mostly aquatic either marine or fresh water but few are terrestrial.
ii. The body is elongated and usually dorsoventrally flattened or cylindrical with a fixed number of segments which are further subdivided externally into a large number of annular rings.
iii. Setae and parapodia are absent.
iv. Blood vascular system is haemocoelomic type.
v. They are bi-sexual and development is direct.

e.g. *Hirudinaria , Pantobdella, Acanthobdella* etc.

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