**General characters and classification of Phylum Annelida upto class**

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**Introduction:** In 1801 French Zoologist, **Lamarck**, coined the term Annelida (Gr., *annulus* - little ring + *eidos* - form) for the higher segmented worms. There are around 16500 species included in the phylum Annelida. Annelids are defined as**triploblastic, bilaterally** **symmetrical, coelomate**invertebrates possessing a metamerically**segmented body**formed of small**rings**like**segments.** 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**.

#### General Characters of Phylum Annelida

1. These are mostly aquatic, found in marine water as well as in fresh water. A few are terrestrial and burrowing.
2. The body is bilaterally symmetrical, triploblastic and vermiform.
3. Body is soft, elongated and metamerically segmented segmented into similar metameres or somites. The segments are arranged in a linear series from anterior to posterior end.
4. 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.
5. 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.
6. The body wall consists of two types of muscles outer circular and inner longitudinal. The body wall is highly contractile.
7. Body cavity is a true coelom. The coelom is divided by septa into a series of annular cavities. Coelomic fluid with cells or corpuscles.
8. Locomotory organs are segmentally repeated chitinous bristles, called setae. The setae may be embedded in the skin or may be borne by special sac like out growths of the skin the parapodia.
9. The digestive system is straight and complete leading from the ventral mouth to a terminal anus.
10. The respiration is performed chiefly by epidermis or by gills of parapodia.
11. Blood vascular system is closed type. Respiratory pigments may be haemoglobin or erythrocruorin dissolved in blood plasma.
12. xiii. The excretory system typically consists of segmentally arranged coiled tubes, nephridia and coelomoducts.
13. Nervous system with a pair of cerebral ganglia (brain) and a double ventral nerve cord bearing ganglia and lateral nerves in each segment.
14. Sensory organs include tactile organs, taste buds, statocysts, photoreceptor cells and sometimes eyes with lenses in some.
15. 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.
16. xvi. In unisexual individual the development is indirect with larval forms known as Trochophore larva and in bi-sexual (Hermaphroditic) forms direct development takes place.
17. Regeneration is common.

**Classification of Phylum Annelida**

 **Class I– Polychaeta** (Gr., poly- many + chaite- hair)

1. These are commonly called as bristle worms. They are the most diverse group of Annelida.
2. Chiefly marine, some in fresh water.
3. Segmentation internal and external.
4. Head distinct with eyes, palps and tentacles.
5. Setae numerous, on lateral parapodia. The setae exist as bundles.
6. Clitellum absent.
7. Sexes separate.
8. Gonads are absent or temporary in some species. Most of the segments bear gonads in many species of this class.
9. The gametes are shed into the coelom and are spawned through metanephridia.
10. Fertilization is external and development includes trochophore larva.

 Examples: *Nereis, Arenicols, Chaetopterus*

 **Class II- Oligochaeta** (Gr., oligos- few + chaite- hair)

1. Mostly terrestrial, some in fresh water and marine forms
2. Segmentation internal and external.
3. Head distinct, without sensory organs.Appendages are absent in the animals belonging to this class.
4. Setae few, embedded in skin.
5. Parapodia absent.
6. Clitellum develops at sexual maturity. This clitellum will be a glandular clitellum helpful in cocoon formation
7. Hermaphroditic
8. Testes anterior to ovaries.
9. Fertilization external (in cocoon); development direct, no larval stages.

Examples: *Pheretima, Lumbricus, Tubifex*

**Class III– Hirudinea** (L., hirudo- leech)

1. Freshwater, marine or terrestrial (moist land).
2. Generally ectoparasitc, blood-sucking and carnivorous predators too.
3. Body with fixed number of segments (33). Each of these segments is externally sub-divided into annuli.
4. Each segment subdivided externally into annuli.
5. Segmentation external without internal septa.
6. Appendages, Parapodia and setae absent.
7. Both anterior and posterior ends of body with suckers. These suckers are helpful in locomotion
8. Hermaphroditic with one male and one female gonopore.
9. Fertilization internal.
10. Development in cocoons, direct without larval stages. (inside the cocoons )

 Examples: *Hirudinaria, Hirudo,* *Pantobdella, Acanthobdella* etc.

**Class IV - Archiannellida** (Gr., arch- First)

1. About one dozen genera of small, marine worms of unknown affinities.
2. Segmentation chiefly internal.
3. No parapodia and setae.
4. Sexes usually separate.
5. Usually trochophore larva.

Example: *Polygordius, Dinophilus, Protodrilus.*