TDC Part I
Zoology Hons.
Paper I. Group B.

Annelida
Characteristics and Classification

The phylum name Annelida is derived from the Latin word *annulus*, meaning little ring. Each ring is a distinct segment of the annelid's body, and each one is separated from the one in front of it and the one behind it by septa.

Members of phylum Annelida live in marine, freshwater, and moist terrestrial habitats. Annelids have a worldwide distribution, and a few species are cosmopolitan

Annelids are sometimes called "bristle worms" because, with the exception of leeches, most annelids bear tiny chitinous bristles called setae. Short, needlelike setae help anchor segments during locomotion and long, hair like setae aid aquatic forms in swimming.

Fig: showing segments in annelid.

Characteristics

* Marine, freshwater, and terrestrial.
* Most free-living, some symbiotic, some ectoparasitic.
* Body is triploblastic and bilaterally symmetrical, metameric, often with distinct head; metamerism reduced or lost in some.
* Coelom (schizocoel) well developed and divided by septa, except in leeches; coelomic fluid functions as hydrostatic skeleton.
* Epithelium secretes outer transparent, moist cuticle.
* Digestive system complete and not segmentally arranged.

* Body wall with outer circular and inner longitudinal muscle layers.
* Excretory system typically a pair of nephridia for each segment; nephridia remove waste from blood as well as from coelom.
* Respiratory gas exchange through skin, gills, or parapodia.
* Circulatory system closed with muscular blood vessels and aortic arches ("hearts") for pumping blood, segmentally arranged; respiratory pigments (hemoglobin, hemerythrin, or chlorocruorin) often present; amebocytes in blood plasma.
* Asexual reproduction by fission and fragmentation; capable of complete regeneration
* Hermaphroditic or separate sexes; larvae, if present, are trochophore type; asexual reproduction by budding in some; spiral cleavage and mosaic development

Classification

Annelids were traditionally divided into three groups:

1. Polychaeta (meaning "many-bristles,")

e.g. Nereis.

i. Polychaeta is diverse worms that live in a wide variety of marine habitats, some also found in freshwater.

Nereis

ii. They are highly mobile often have large parapodia and chaetae.

iii. More sedentary polychaetes have reduced parapodia and smaller, but still numerous, chaetae—adaptations for burrowing in sediments or living in tubes.

iv. Sexes separate, clitellum absent.

v. Trochophore larva persent.

2. Oligochaeta ("few-bristles")

e.g. Earthworms.

Earthworm

Mostly terrestrial make their living by deposit feeding in soils. Their tunnels are critically important in aerating soil, and their feces contribute large amounts of organic matter.

i. Parapodia absent.

ii. glandular clitellum present for cocoon formation.

iii. Hermaphrodite, testes anterior to ovaries.

iv. Fertilization external (in cocoon).

v. No larval stage, direct development.

3. Hirudinea

e.g. Leeches.

About half of leeches are ectoparasites that attach themselves to fish, humans, or other hosts and suck blood and other body fluids. The nonparasitic leech species are predators or scavengers.

Leech

i. Mostly ectoparasitic, blood-sucking or carnivorous. Few are marine, freshwater or terrestrial.

ii. The body is elongated and usually flattened or cylindrical.

iii. The body consists of a fixed number of segments. Each segment breaks up into 2 to 4 rings or annuli.

iv. Segmentation external without internal septa.

v. Parapodia and setae are absent.

vi. Both anterior and posterior ends of the body have ventrally situated suckers.

vi. The mouth opens on the ventral surface on anterior suckers, while anus opens dorsal to the posterior suckers.

vii. Coelom much reduced due to filling by botryoidal tissues, and form haemocoelomic sinuses.

viii. Hermaphrodite with one male and one female gonopore.

ix. Fertilization internal.

x. Asexual reproduction is not known.

xi. Eggs are always laid in cocoons.

xii. Development is direct without a free-swimming larval stage.