

CHARACTERISTICS & CLASSIFICATION OF NEMATHELMINTHES

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Phylum Nematelminthes comprise of animals commonly called nematodes or roundworms. These are widely distributed animals found throughout the world. The word 'Nematoda' is derived from Greek words;

- Nema ($\nu\eta\mu\alpha$) meaning thread and
- -ode ($-\acute{\omega}\delta\eta$) which means like

Nematodes are one of the most common phyla of animals, with over 20,000 different described species, out of which 15,000 are parasitic in nature.

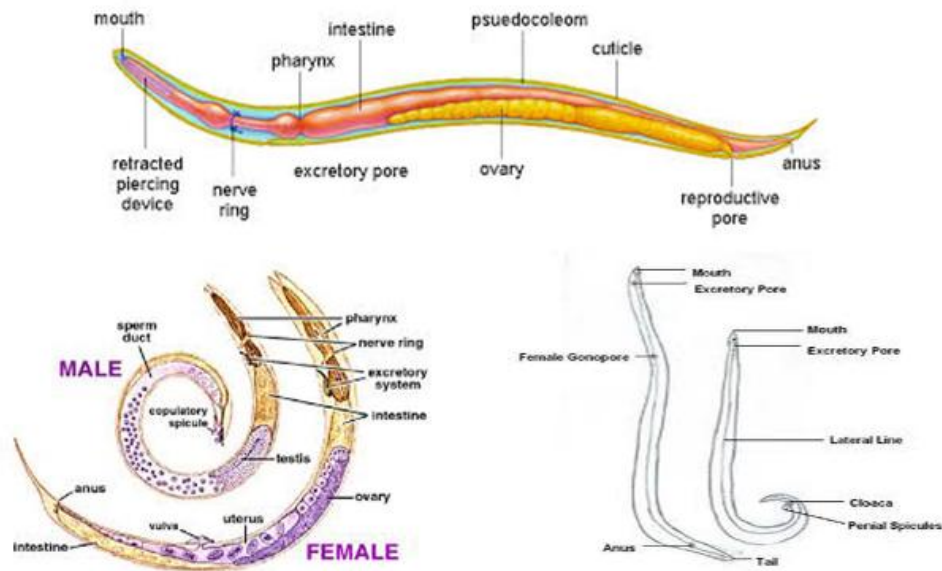


FIG : ASCARIS : Male and Female

CHARACTERISTICS

- They are commonly called thread worm or round worm.

- It is a phylum of unsegmented, triploblastic, pseudocoelomic, cylindrical or thread-like worms which are covered by a body wall having cuticle and epidermis.
- Hyman regarded Aschelminthes as a distinct phylum and the various groups included in it as classes. However, other zoologists consider Aschelminthes as a superphylum and its various groups as phyla (Rotifera, Gastrotricha, Kinorhynca, Nematomorph, Nematoda). Phylum Nematoda is its large group.
- Mostly parasitic. Few of them are free-living.
- They are cylindrical, elongated, slender worm like and tapers at both end.
- Triploblastic.
- Bilaterally symmetrical.

Organ system level of organization.

- Body is unsegmented.
- Body cavity is filled with muscle. They are pseudocoelomate i.e. body cavity is not lined by mesodermal layer.
- Internal cephalization is present but externally there is little differentiation between the anterior and posterior regions.
Distinct head is lacking. However, mouth is present in anterior region.
- Body is covered with tough and resistant cuticle.
- It is cast off periodically or which moults only during the period of growth.
- It protects the body against the action of digestive juice.
- Digestive system is complete and straight with both mouth and anus.
- Mouth is terminal and surrounded by lips bearing sense organ.
- Respiratory and circulatory organs are absent.
- Respiration occurs through general body surface. Respiration is aerobic in free-living forms and anaerobic in parasitic form.
- Excretory system consists of intracellular canal or lateral excretory ducts.
- Nervous system is not much developed.
- Nervous system consists of circumpharyngeal nerve ring and longitudinal nerve cords.
- Sense organs are poorly developed in the form of papillae, which are well defined as amphids (in mouth) and phasmid (in anus).
- These are unisexual i.e. sexes are separate with sexual dimorphism.
- Fertilization is internal, may be cross or self.
- Development may be direct or indirect.

NOTE: Larval forms are Rhabditiform, Filariform and Microfilaria.

- Various lateral lines and pores are present on the surface of body.

Classification

Based on the presence or absence of phasmids (sensory organ) nematodes are classified into two types along with their examples, as follows:

CLASS – I

Aphasmidia/Adenophoria

1. Phasmids are absent in them.
2. They doesn't bear any excretory canal.
3. Amphids in them are present behind the lips.
4. They are mostly free living and some are parasitic.
5. Free living species in them include almost all marine inhabitants.

Examples: Enoplus, Xiphinema and Mermis.

Order 1. Enoploidea

Examples: Enoplus, Metonchdium

Order 2. Dorylaimoidea

Examples: Dorylaimus, Tylencholaimus.

Order 3. Mermithoidea

Examples: Mermis, Paramermis,

Order 4. Chromadoroidea

Examples: Halichoanolaimus.

Order 5. Monohysteroidea

Examples: Monohystera, Plectus.

Order 6. Desmoscolecoida

Examples: Desmoscolex, Epsilonema.

CLASS – II

Phasmdia/Secernentea

1. Phasmids are present in them.
2. They bear excretory canals.
3. Amphids in them are present in the lateral lips.
4. Most of them are parasitic in nature.
5. Free living species in them are soil inhabitants.

Examples: Encylostoma, Euthereria, Ascaris.

Order 1. Trichuroidea (Trichinelloidea)

Examples: Trichuris, Trichinella

Order 2. Dioctophymoidea

Examples: Dioctophyma, Hystrichis.

Order 3. Rhabditoidea

Examples: Rhabditis

Order 4. Rhabdiasoidea

Examples: Rhabdias, Strongyloides.

Order 5. Oxyuroidea

Examples: Oxyuris, Enterobius.

Order 6. Ascaroidea

Examples: Ascaris, Ascaridia.

Order 7. Strongyloidea

Examples: Necator, Ancylostoma, Strongylus.

Order 8. Spiruroidea

Examples: Thelazia, Gnathostoma, Spiroxys.

Order 9. Dracunculoidea

Examples: Dracunculus, Philometra.

Order 10. Filarioidea

Examples: Wuchereria, Loa, Microfilaria.