

PHYLLUM PLATYHELMINTHES (18,700 spp)

4 Classes

Turbellaria - free-living (ciliated venter)

Monogenea - ectoparasites (only sexual reprod)

Trematoda - flukes (sex. & asex. reprod.)

Cestoda - tapeworms (sex. & asex. reprod.)

Bilateral Symmetry

Body flattened dorsal-ventrally

Triploblastic (ectoderm, endoderm, & mesoderm)

Acoelous (mesoderm = mesenchyme)

Blastopore mouth, Spiral Cleavage, & Determinate

Blind (aka Incomplete) Digestive Tract

Parenchyma Cells - undifferentiated mesodermis cells are totipotent

Organ system level of organization

Skin - Free-living forms: epidermis covered with cilia,

Glands contain Rhabdite bodies which produce mucous,

Duogland system (aka dual-gland) - anchor cell, viscid gland, and releasing gland.

Parasitic forms: Tegument (no cilia) & Syncytial

Locomotion - ciliary action on film of mucous & undulations

Muscle - longitudinal, circular, & diagonal - flexibility

Digestive - [absent in cestodes (Reductionism)] Midventral mouth, highly branched intestinal tract, extra-cellular & intra-cellular digestion.

Respiratory - diffusion

Circulatory - diffusion

Excretory - Flame cells (Protonephridia) & highly branched tubules to 1 or more Nephridiopores.

Osmoregulation and nitrogen excretion (NH₃)

Nervous System - Beginning of Cephalization, ladder-shaped network - 2 longitudinal cords with lateral connections

Sensory - Possible paired simple eyes & statocysts (absent in cestodes)

Reproduction - Regeneration (parenchyma cells)

Asexual: Transverse Fission

Sexual: Gonads, ducts, copulatory organs, monoecious & dioecious, internal fertilization, complex life cycles [hyperdermic impregnation in some turbellarians]

Class Turbellaria (3,500 spp)

Free living (5-50 cm long), aquatic or moist habitats

Rides on slime track using cilia

Ventral mouths

Class Monogenea (1,100 spp)

Monogenetic flukes (ectoparasites, Turtle, frog, fish skin, gills, cloaca)

One host, direct life cycle using sexual reproduction (no asexual generations)

Use OPISTHAPTOR at posterior end to hold on

Class Trematoda (11,000 spp, 40 spp in humans)

Digenetic flukes (endoparasites)

Two or more asexual generations and multiple hosts

Two suckers, one at anterior, other at posterior

Reductionism

Class Cestoda (3,400 spp, 7 spp in humans)

Tapeworms, two or more hosts & asexual generations

No GI tract (reductionism)

Blood flukes:

Schistosoma

japonicum - Asia

haematobium - Africa, Middle East

mansoni - Africa, Middle East, America (including West Indies)

250, 000, 000 schistosome infections world-wide

Characteristics of:

PROTOSTOMIA

DEUTERSTOMIA

Spiral Cleavage

Radial Cleavage

Determinate

Indeterminate

Blastopore (mouth)

Blastopore (anus)

Schizocoelous

Enterocoelous