

Segmented Worms with True Coelom

TAXONOMIC DOSSIER: PHYLUM ANNELIDA

Organ-System Level of Organization

Adaptive Versatility: Habitats & Forms



Habitat: Marine & Freshwater

Thrives in diverse aquatic ecosystems. Example forms include active, free-swimming organisms.



Habitat: Land

Adapted to moist soil environments, playing crucial roles in soil ecology and nutrient cycling.



Lifestyle: Host-dependent

Highly specialized forms have evolved to be parasitic, drawing nutrients directly from other organisms.

Fundamental Body Architecture

Symmetry:
Bilateral

Body can be divided into identical left and right halves in only one plane.

Germ Layers:
Triploblastic

Cells are arranged in three distinct embryonic layers (ectoderm, mesoderm, endoderm).

Body Cavity:
Coelomate

Possesses a true coelom—a body cavity lined entirely by mesoderm tissue.

i Note: The phylum exhibits an advanced organ-system level of biological organization.



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Key Highlights

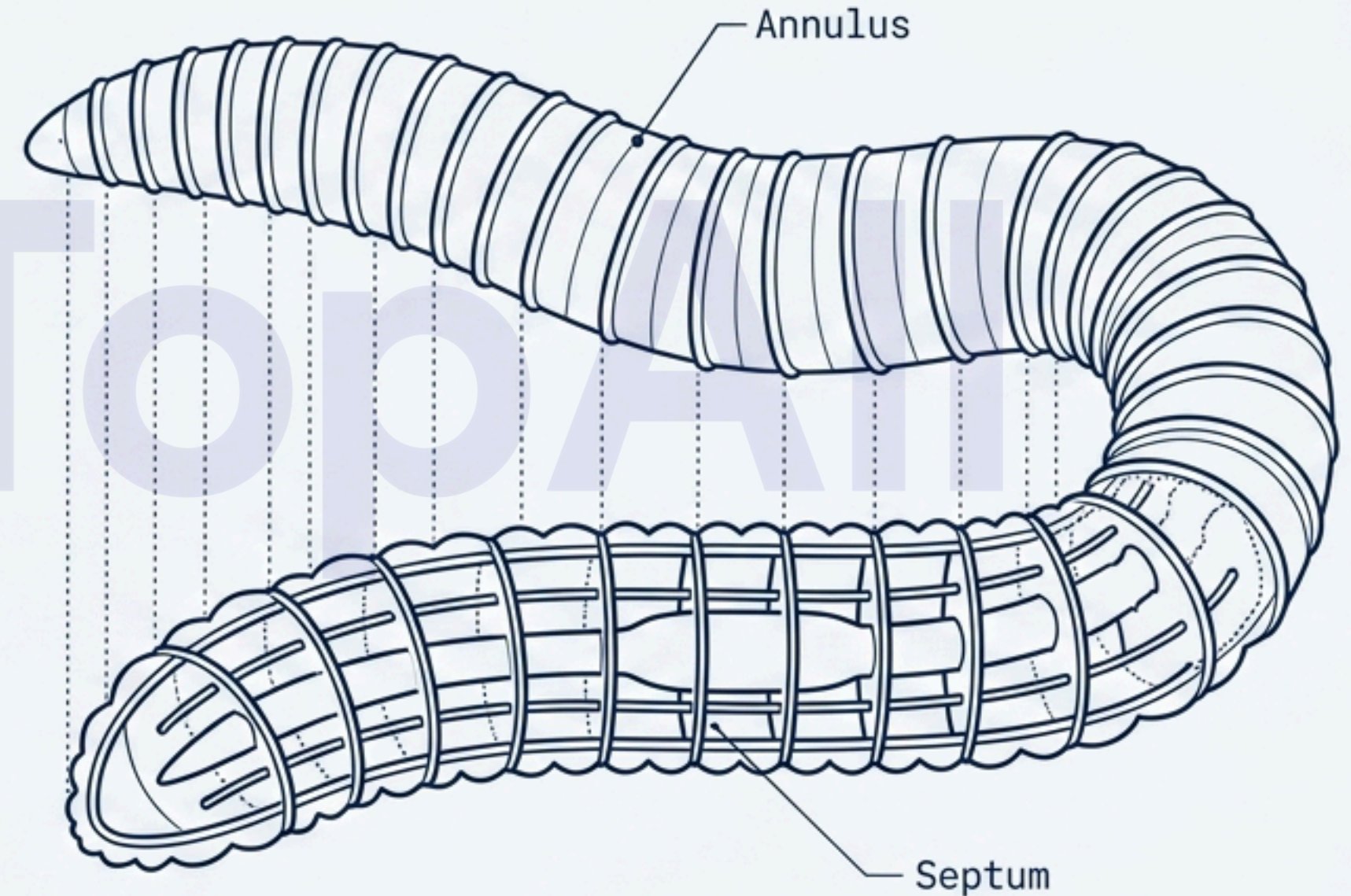
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Metameric Segmentation

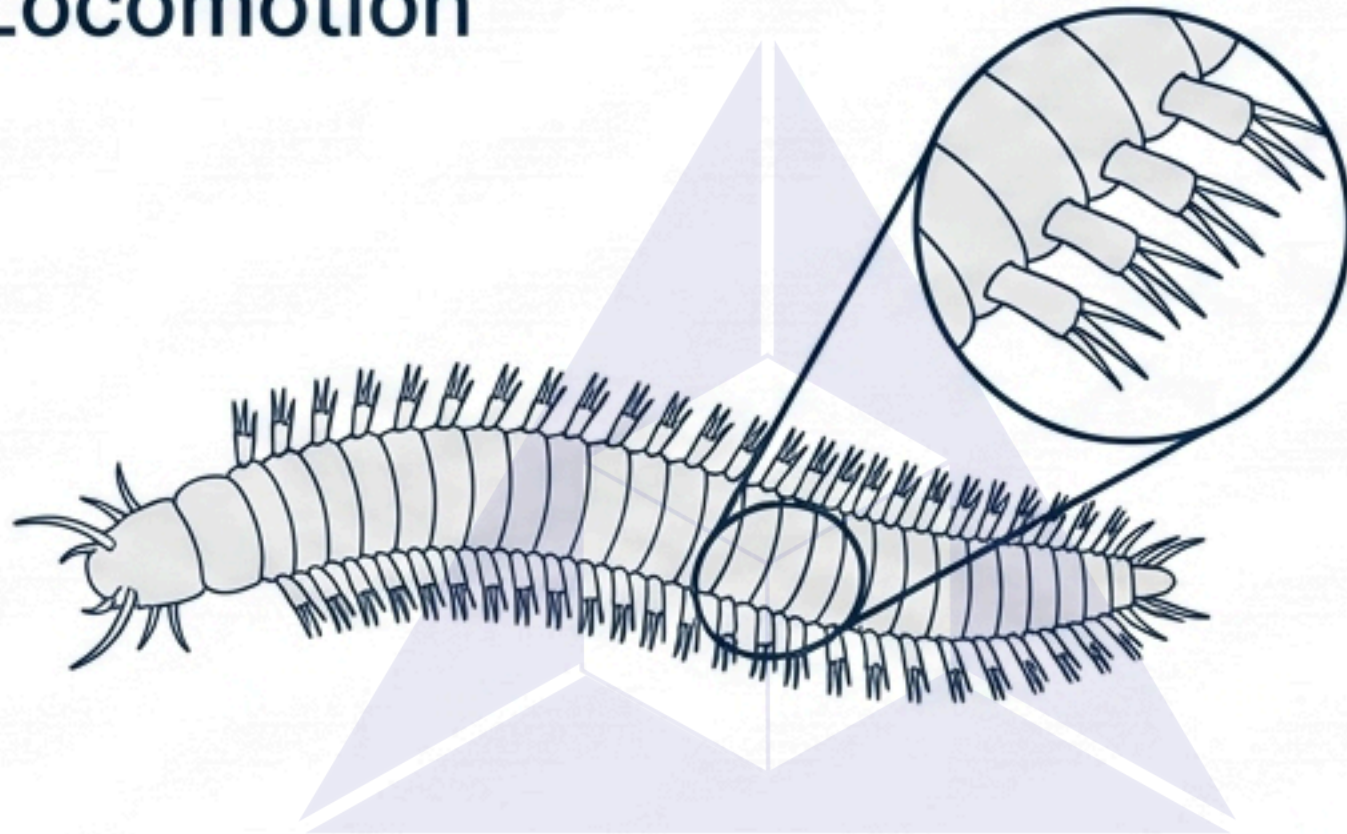
The phylum name Annelida is derived from the Latin annulus (meaning "little ring"). The body surface is distinctly marked out into segments or metamereres.

Metamerism isn't just external. The body is externally AND internally divided into segments, featuring a serial repetition of at least some vital organs.



Movement & Nervous System

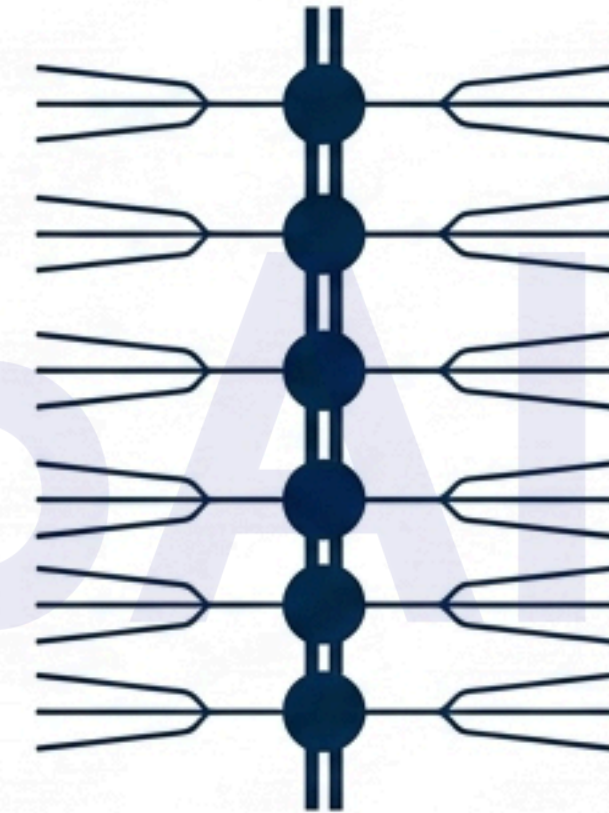
Locomotion



Possesses longitudinal and circular muscles for movement.

Specific Adaptation: Aquatic annelids like Nereis possess lateral appendages called PARAPODIA, which actively assist in swimming.

Neural Control

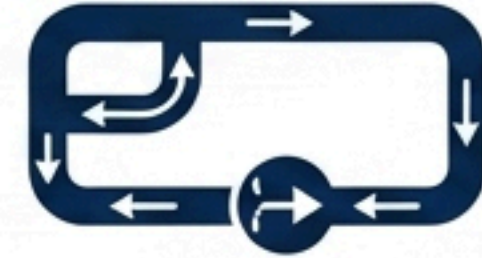


Highly organized neural network.

- > Paired ganglia (sing. ganglion)
- > Connected by lateral nerves
- > Double ventral nerve cord

Circulation & Osmoregulation

CLOSED TYPE CIRCULATION



Blood is circulated entirely through a series of vessels. This provides a significant evolutionary advantage for highly efficient nutrient and oxygen delivery compared to open systems.

NEPHRIDIA (sing. nephridium)



Specialized tubular organs that handle critical physiological functions:

1. **Osmoregulation** (maintaining fluid and electrolyte balance)

2. **Excretion** (filtering and removing cellular waste)

Sexual Reproduction: Two Strategies

All members reproduce sexually, but the distribution of sexes varies significantly by species.

DIOECIOUS

Sexes are separate. The species has distinct male and female organisms.

Primary Example:
Nereis (Aquatic form)

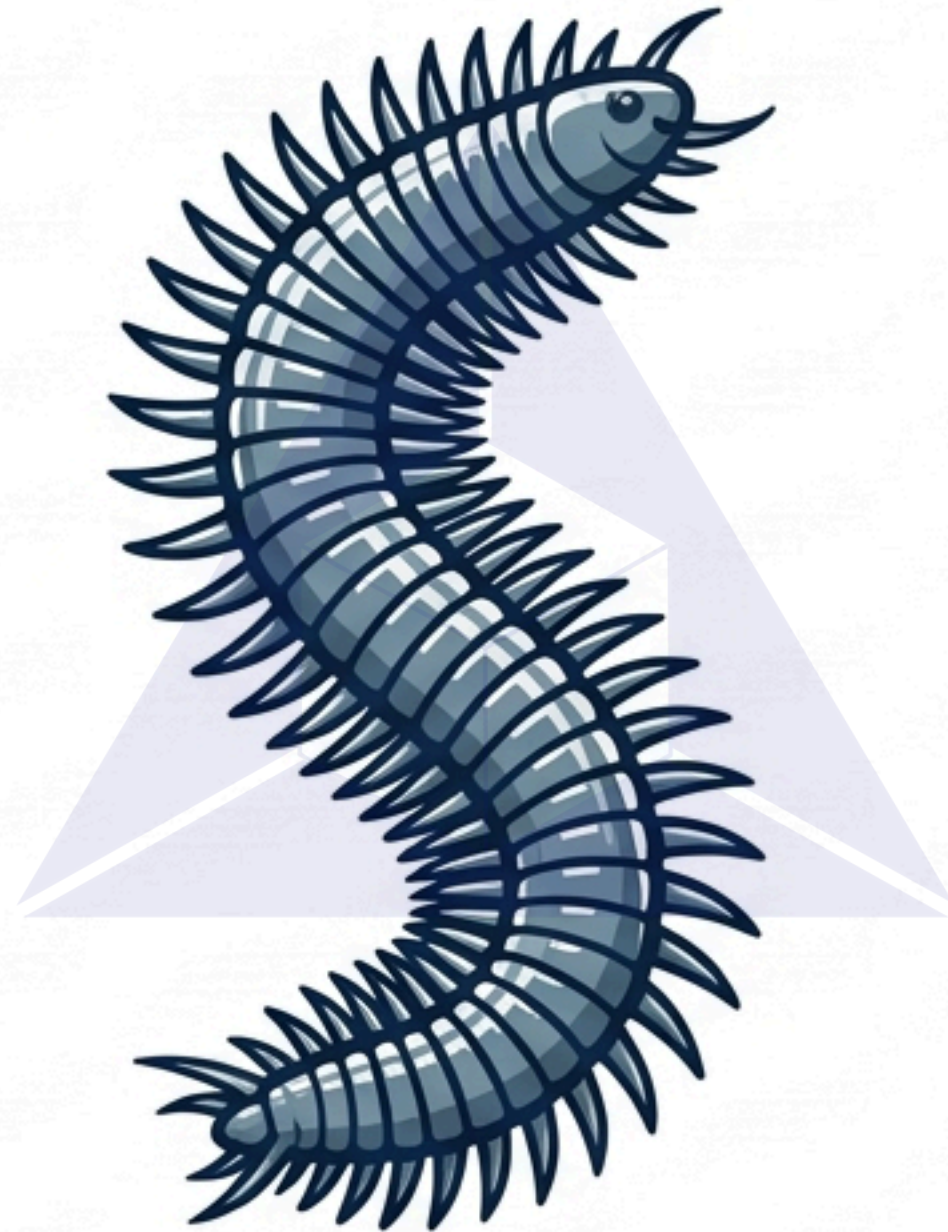


MONOECIOUS

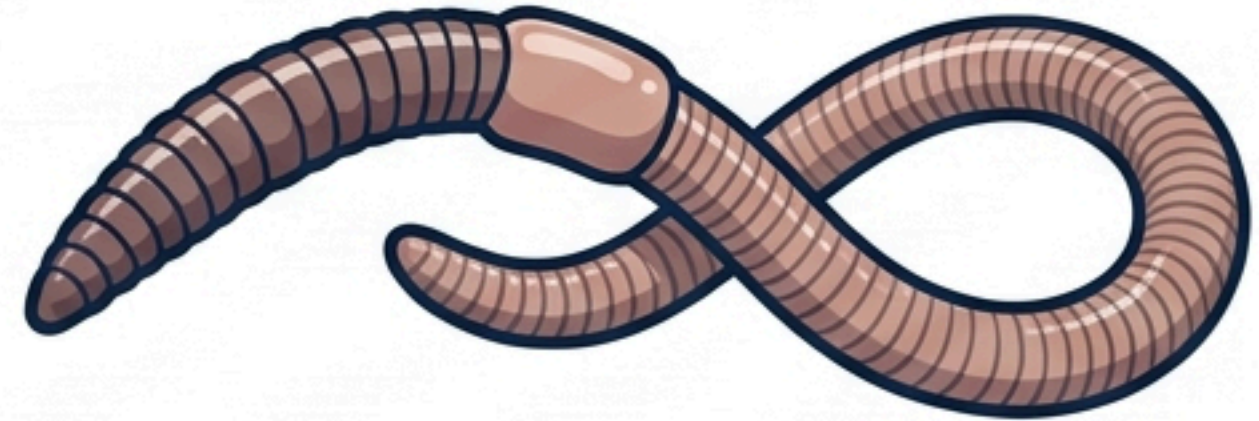
Sexes are united. The organism is hermaphroditic, producing both eggs and sperm within the same individual.

Primary Examples:
Earthworms and Leeches

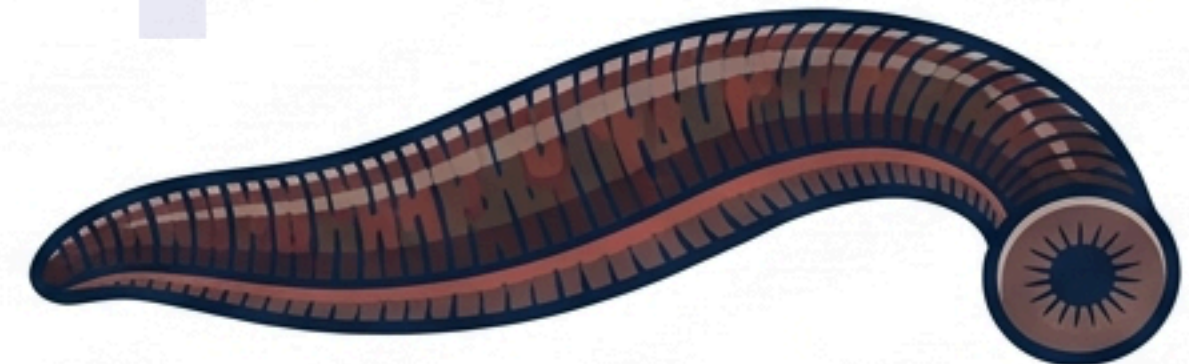
Representative Specimen Gallery



Nereis (Aquatic | Dioecious | Features Parapodia)



Pheretima (Earthworm | Terrestrial | Monoecious)



Hirudinaria (Blood-sucking Leech | Parasitic | Monoecious)



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