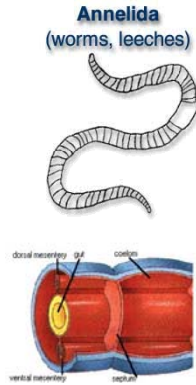


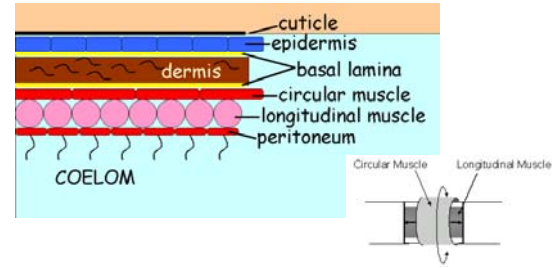
Phylum: Annelida

- from mm to about 3 meters (most species from 2 to 10 mm)
- prostomium - head prior to the oral opening
- pygidium - abdominal segment of
- links between prostomium and pygidium



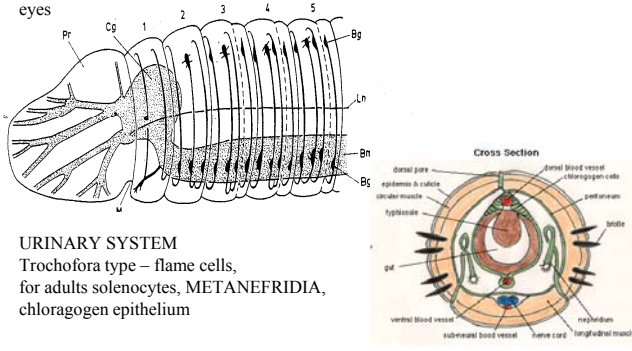
• BODY SURFACE

cuticle
epidermis



• LADDER NERVOUS SYSTEM

- cerebral nodes.
- statocysts
- Chemoreceptors
- eyes

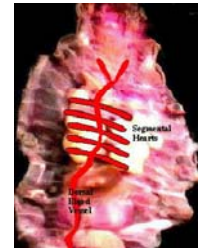
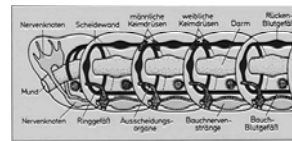


• URINARY SYSTEM

Trochophora type – flame cells, for adults solenocytes, METANEFRIDIA, chloragogen epithelium

• VASCULAR SYSTEM

primarily restricted pulsations from back to front (dorsal vessel)
the dorsal artery branches - which arcs connecting it to the abdominal blood vessel
enhanced branch in Article 7-11 - heart
hemoglobin dissolved in plasma cells



• LUNG

Breathing entire surface of the body or using gills (Polychaeta)

• REPRODUCTION:

Gonochorists, hermaphrodites.
External fertilization usually somewhere and copulation

Marine species have larvae Trochophora type

Trochophore – body organisation like Flatworm
protonefridium
schizocoel
undifferentiated (diffuse) nervous system
stern form coelom vesicle (segmentation)

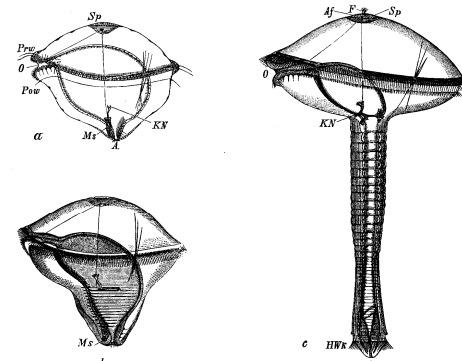
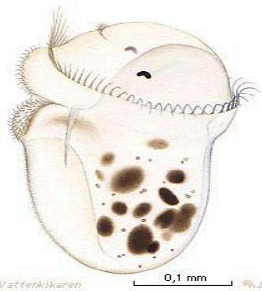

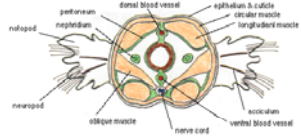


Abb. 515. Larvenstadien von Polychaeta. (Nach HAYES.) a) Trochophorenstadium. Sp Schielplatte mit Augenfleck, Prp primärer Wimperkranz, O Mund, Pm postorales Wimperkranz, A After, M Mesodermstreifen, ZV Kopfarterie (Protonefridium), →/← Metacerebrum. An der Kopflinie hat sich noch ein zweiter Schenkel entwickelt. Etwa 1/2. — e Älteres Stadium. Der Rumpf warndförmig gestreckt und in zahlreiche Metanemern gegliedert. ZW2 hinterer Wimperkranz, Af Augenfleck, F Fühler. Etwa 1/1.

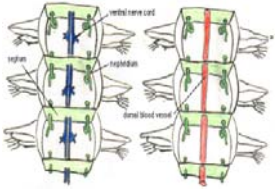
Kmen	kroužkovci (Annelida)		
Tridy:	Mnohoštětinatci (Polychaeta) Na každém článku (metameru) pár komolců (parapodií) na nich soustředěny štětiny, které ale mohou být všude v ploše epidermis.	Lilijovci (Myzostomida) Přičlínkovci s parapodií a štětinami, cizopasnici ostnokožců, Trochozoa.	Opaskovci (Clitellata) Bez parapodií s opaskovitým klínekem.
Podtridy:		Máloštětinatci (Oligochaeta) s trvalým opaskem a 7 - 600 články, které dále dříve na Nitěny, Koupice, Žížalce a Žížaly	Přívavce (Hirudinea) s přísavkami a celkovým počtem článků 33 (druhotně násobky), které dělíme na štětinovky, Chobotnatky, Čelstovky a Hltanovky (skupiny na úrovni řádu).






Classis: Polychaeta



- bristles
- parapodia (memberless growths for keeping)
- Gills
- Gonochorists
- Head with antennae have sensory organs
- Mainly sea
- Undifferentiated (diffuse) nervous systém
- Stern form coelom vesicle (segmentation)



Species: *Aphrodite aculeata*

- *Nereis pelagica*












PHOTO BY R. H. MORRIS

Glycera



Alvinella pompejana

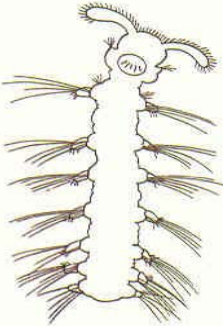
PHOTO BY EMORY KRISTOF



Cirriformia

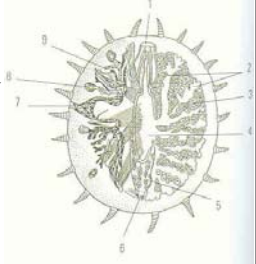
PHOTO BY R. H. MORRIS

- *Troglochaetes beranecki*
- 0, 5 mm
- Cave and other groundwater
- Europe (Moravian Karst)



Classis: Myzostomatida

- Ektoparasites of echinodermata (Crinoidea)
- Flattened body with hooks and suction cups
- Mouth on the underside of the body
- Draining body fluids



Classis: Clitellata

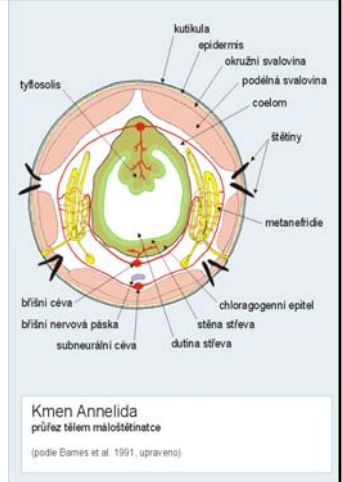
- no parapodia
- fewer bristles
- prostomium, the last article pygidium
- hermaphrodite after fertilization creates a cocoon glands belt



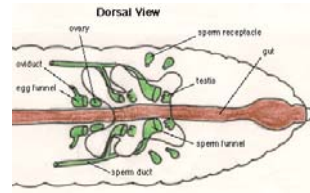
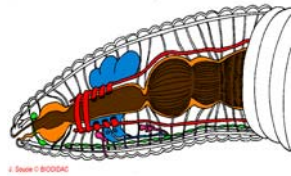
Subclassis: Oligochaeta, Hirudinea

Subclassis: Oligochaeta

- continuous belt
- 7 to 600 Articles
- fewer bristles (usually 4 volumes of two, one earthworms 8)
- hermaphrodite

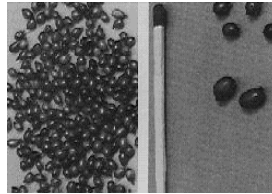


- the pharynx, salivary glands article 9 of the esophagus lime gland



- testes at 10th and 11th of article large bags 11th and 12th of article ovaries at 13th article egg bags 14th article

- earthworm egg
Eisenia foetida



OLIGOCHAETA

groups:

Earth - soil

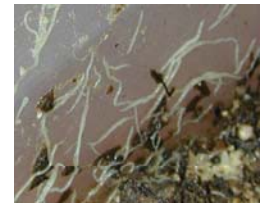
- **Enchytraeidae**
- **Lumbricidae**

Water


- **Tubificidae**
- **Naididae**
- **Lumbricululidae**
- **Branchiobdellidae**

Soil Oligochaeta


- Enchytraeidae
1 to 4 cm
in the oral cavity bar (draining roots, disease transmission)
transparent
soil origin processes - to 25000/m2
- Lumbricidae
- secretions and swallowed it earthworms deep layers (up to 3 m), vertical migration (*Lumbricus terrestris* *Lumbricus terrestris*, *Allobophora longa*)



- earthworms upper layers (up to 45 cm)
great demands on oxygen
large areal mobility
Dung earthworm (*Eisenia foetida*)




Lumbricus rubellus



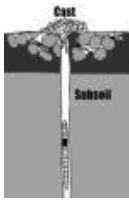
Example of two Tigers (clearly showing strips) and a Red

- earthworms from old Wood
under the bark of tree stumps
mud
Eisenia submontana





Importance of Oligochaeta in the soil

- 1. enrich the soil of their bodies
- 2. creating lumpiness land (1 g per 24 hr)
- 3. increase the permeability of the soil water
- 4. transforms into humus soil (earthworms digestive activity lies plant residues)

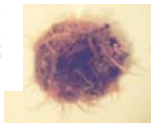



Water Oligochaeta


- Tubificidae
top layer of bottom water saprophagous
stern wave - oxygen, red blood pigment
intermediate hosts of parasites


Tubificid worms


Naididae
max. 1 cm
Raptors (i eaters cercarii fluke)



Lumbricululidae
max 14 cm
appearance of earthworms
belt ends before 20 Article
saprophagous




Branchiobdellidae
crayfish parasites





copyright R. Pekey

Tropical Oligochaeta

- *Megascolides australis*
- to 3 m (diameter 3 cm)
Australia




cocoons from 5 to 7 cm

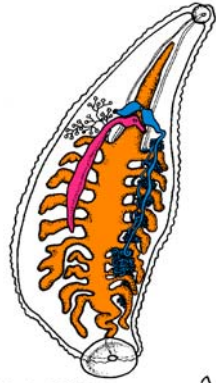



Subclassis: Hirudinea

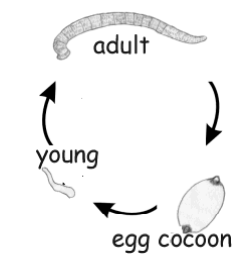
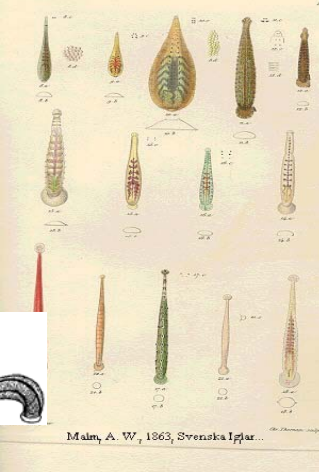
- 35 articles
- secondary segmentation (each link slots 3-5)
- 2 suction
- 1 to 5 pairs of eyes



- coelom reduced (the loopholes in the parenchyma and muscular bag)
circulation suppressed or missing
blind gut allowing an increase in volume
- predatory, parasitic
disease transmission (fish)
- freshwater, less sea



Livingstone © BIODIDAC 9w/9t

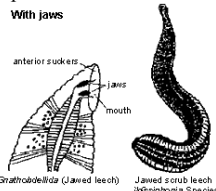



Malm, A. W., 1863, Svenska Ippar...

Hirudinea system

Gnathobdellidea


- 3 toothed jaws from chitin (wound in the form of Y)
- penis
With jaws



Gnathobdellidea (Jawed leech)




Rhynchobdellidea

- instead esophagus (proboscis)
spermatophore sticks to the body of partner



Jawless scrub leech
Rhynchobdella Species


- Gnathobdellidea
- *Haemopsis sanguisuga*
- carnivorous (invertebrates)
- *Hirudo medicinalis*
- predatory in his youth, young suck the blood of frogs, the blood of warm-blooded animals later
South Moravia
substance to prevent blood clotting and pain dampening

Rhynchobdellidea

- *Piscicola geometra*
- sucks blood
Transfer of trypanoplasma
- *Theromyzon tessalatum*
- sucks the blood and nasal mucosa of waterbird





Classis: Pogonophora

- Sea at a depth of 200 to 10 000 m
live in pipes
5 to 200 cm
closed vascular system,
gonochorists
fibers found by fishermen in deep networks
just find a complete animal challenge the jurisdiction of Deuterostomia

