

Topic: Organs of Excretion: Coelomoducts & Nephridia (Part-I)

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Introduction - Coelomoducts and Nephridia are characteristic of phylum Annelida of Invertebrates. Annelids are the first Encelomate animals in the evolutionary order. The coelom is Schizocoelous and it is divided into compartments by intersegmental septa. Some structures are arranged segmentally and are described as segmental structures. Among them are coelomoducts and Nephridia. These structures will be useful for the passage of reproductive and excretory products from coelom to the exterior. Coelomoducts - These are generally wide tubes of mesodermic origin and develop as evaginations of coelomic epithelium. Each coelomoduct opens into coelom by a ciliated funnel like structure called coelomostome.

which opens out by a genital aperture. ^(Pg 2)
It primarily functions as gonoducts. So, these
are primarily limited to the reproductive
functions, although in some forms they
function as excretory ducts.

Similarly, Nephrocoelae are generally
called tubes which are formed by
the invagination of Ectoderm. Each
nephrocoelium communicates with the outside
through a Nephrocoelopore. If the nephro-
coelium opens outside into the coelom
through nephrostome, it is described as
open. If it is closed, then it is
closed type. Nephrocoelium without
Nephrostome is called Protonephrocoelium
and if present it is called metanephrocoelium. Nephrostome may communi-
cate with protonephrocoelium of the same
segment or anterior to it. Nephrocoelium
is primarily excretory and osmoregulatory
in function but secondarily they may
serve reproductive functions.
Nephrocoelium without a nephrostome are
considered as primitive. In some cases,
the closed end of the tube may have
soleroocytes which occur singly or in
groups.
Nephrocoelium with a nephrostome are
considered as advanced. In majority
of Polychaetes, it opens into coelom through

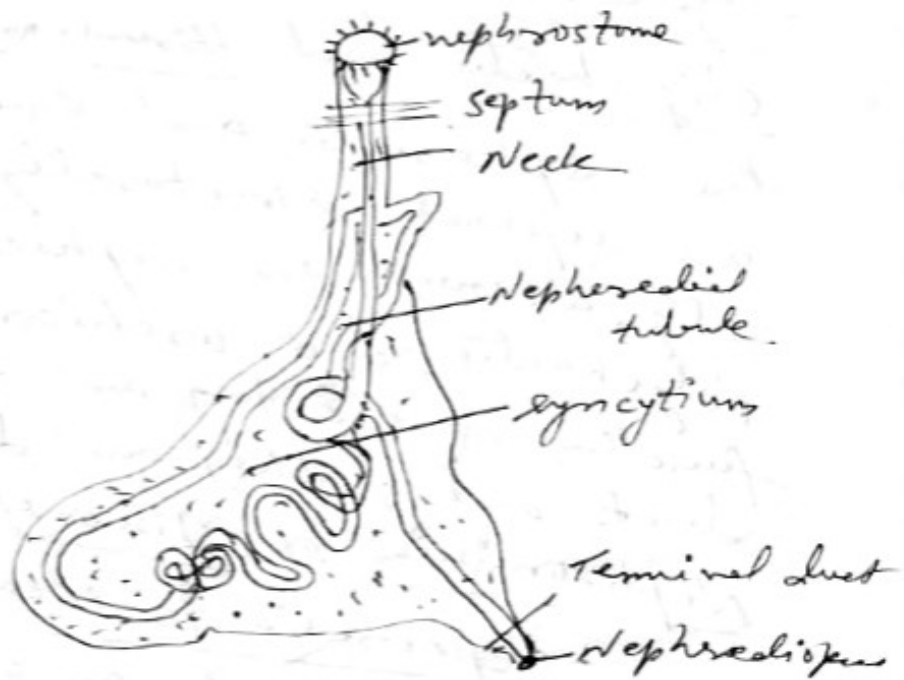
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Ciliated Nephrostome. Based on size, nephrostomes are classified into Micronephrostomes and Meganephrostomes. Generally, micronephrostomes will be more in segments and meganephrostomes will be one pair per segment. If of nephrostomes communicate outside through nephrostome directly, it is termed as Exonephric; whose primary function is excretory and if the terminal ducts ultimately open into alimentary canal, it is called as Endonephric nephrostome, which are basically osmo-regulatory in function. In case of Oligochaetes and Hirudineans the nephrostomes and coelomoducts are separate structurally and functionally, whereas the nephrostomes of Polychaetes and archannelids, they function as excretory and reproductive ducts and so they are described as Nephromixia or Mixonephrostomes.

Nephrostome is another. Each nephrostome has an oval syncytial mass of protoplasm containing a long, convoluted, ciliated canal, the nephrostomal tubule. The syncytial protoplasm is differentiated into a body and a neck. The main body is an irregular, oval and compact gland like mass; directed transversely in a segment. It contains highly convoluted and mostly ciliated tubules. The

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nephrosomal tubule passes through the septum into the anterior segment where it opens by a ciliated funnel or Nephrostome. Posteriorly, the tubule opens by a contractile nephrodiopore, located ventrally at the base of parapodium near the origin of ventral cirrus. The nephrosomal tubule is an excavation in the mass of protoplasm. Such an open type of nephrosomal unit with a ciliated nephrostome is called a metanephrosomium.



Meaning: A nephrosomium

Nephrosome in Pheretima

In Pheretima, there is a large no. of small sized nephrosomes in each segment, which are called Mesonephrosomes or Mesonephrosomes. The nephrosomes are found in all segments except the first three. They are of three types based on location.

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