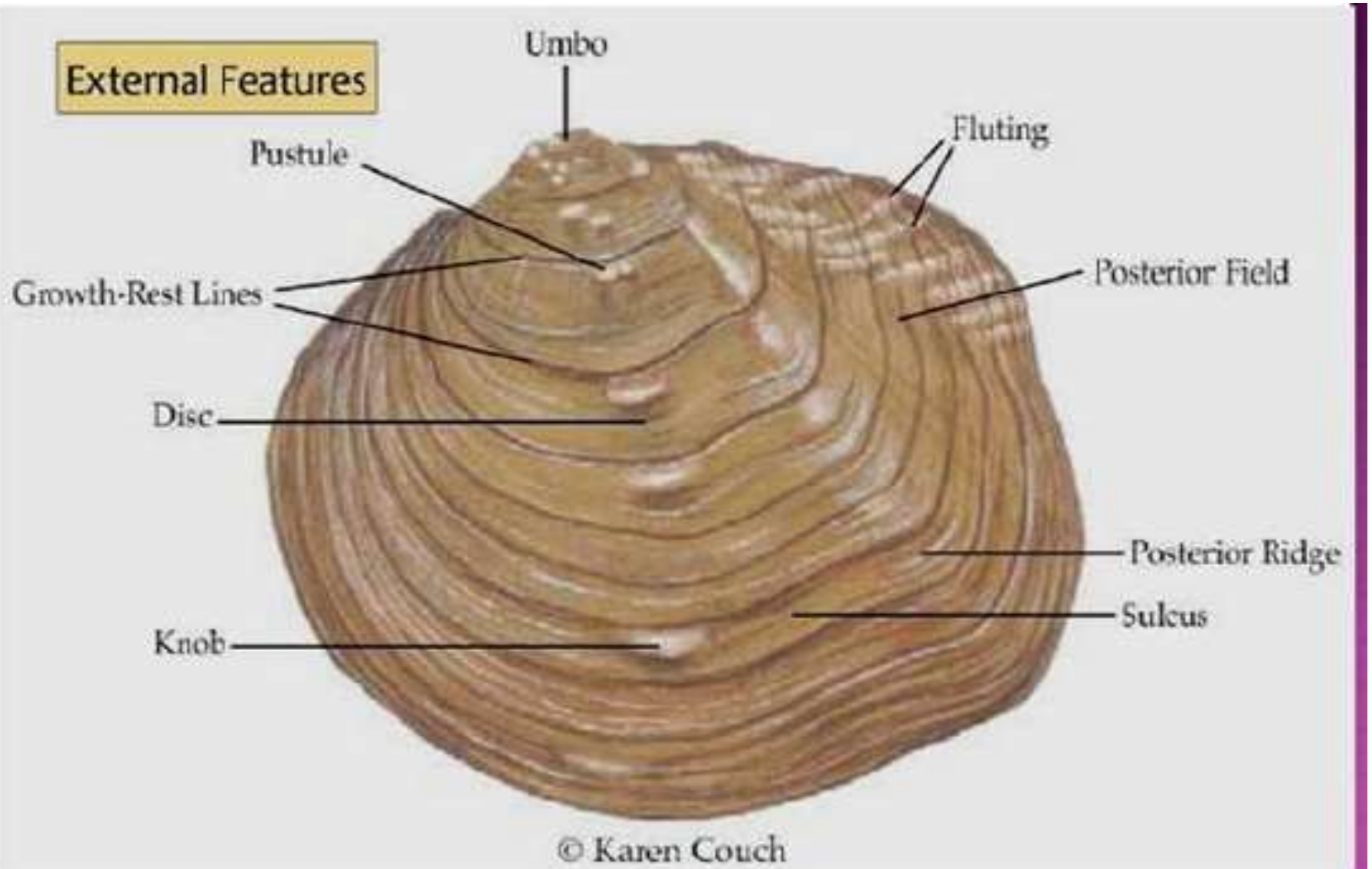


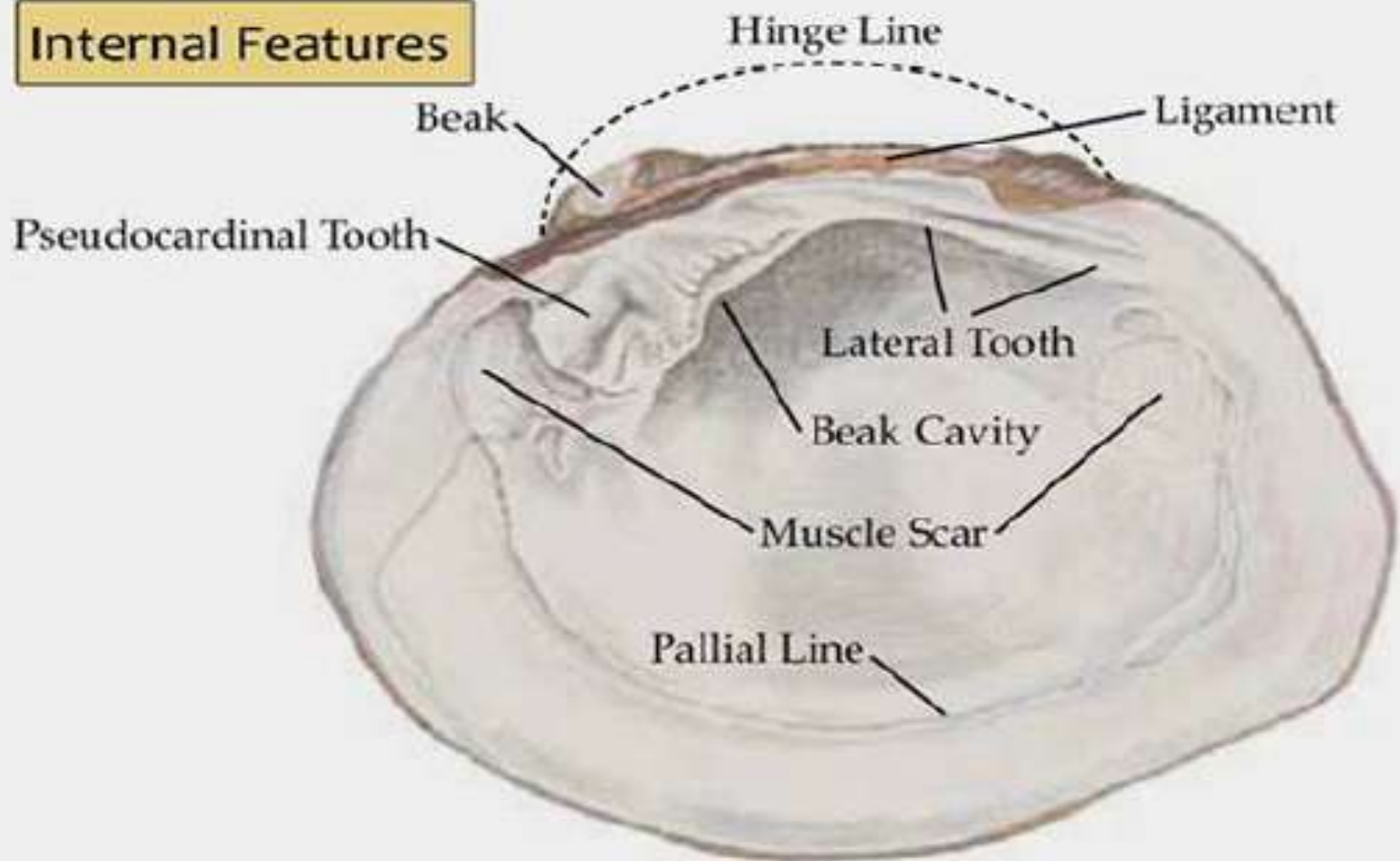
FOOD, FEEDING AND DIGESTION PROCESS IN *UNIO*

**TDC Part I
Paper I Group C
Ashutosh Mishra**

Unio



Internal Features



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DIGESTIVE SYSTEM

Consists of

Alimentary canal

Long Coiled tube

Pair of

Digestive Glands

(Liver)

Mouth – Transverse slit-like aperture; guarded by a pair of labial palp

Oesophagus - Short narrow tubular ciliated passage

Stomach – Thick-walled sac-like; ciliated; crystalline style containing Amylases and glycogenases for digestion

Intestine – Coiled visceral mass; surrounded by gonads

Rectum – Passes backwards through pericardium; opens by anus;
have ridges called typhosoles

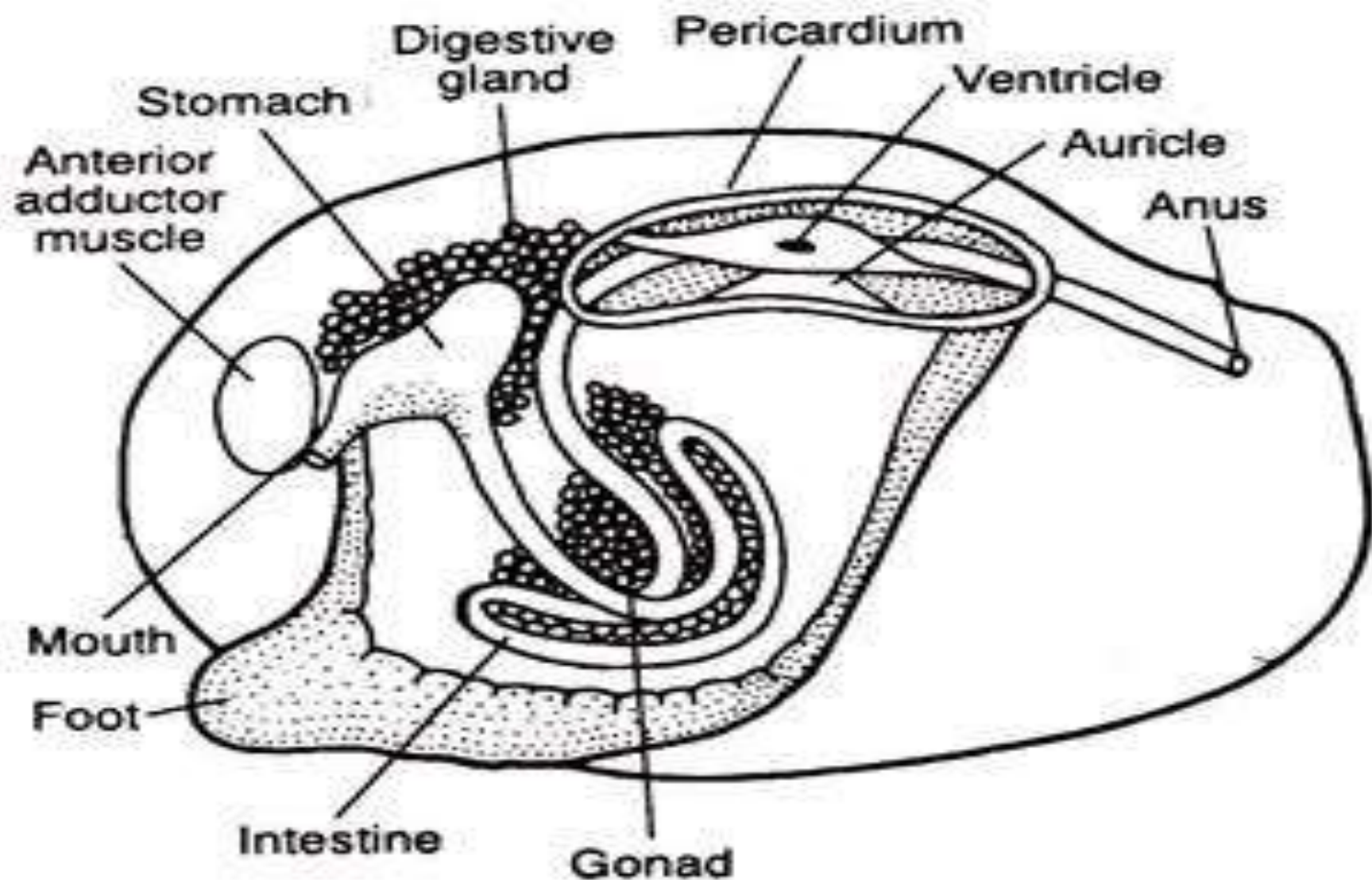


Fig. 16.30: Digestive system of *Unio*. Labial palps are removed.

DIGESTIVE SYSTEM

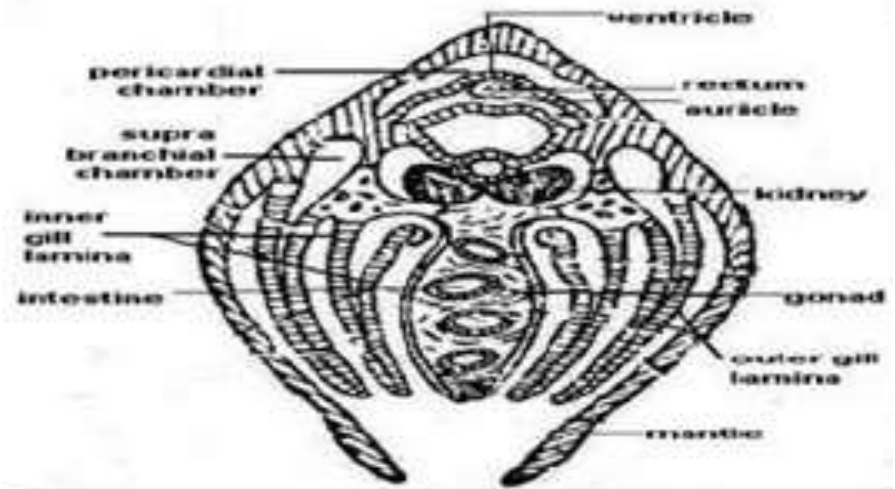
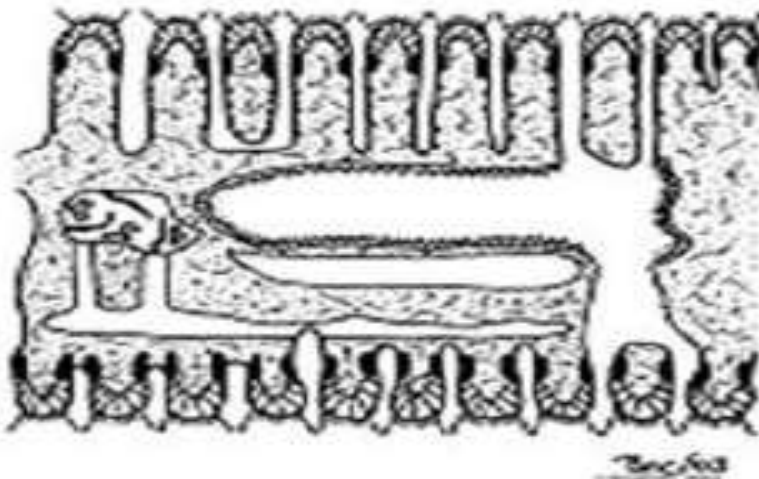
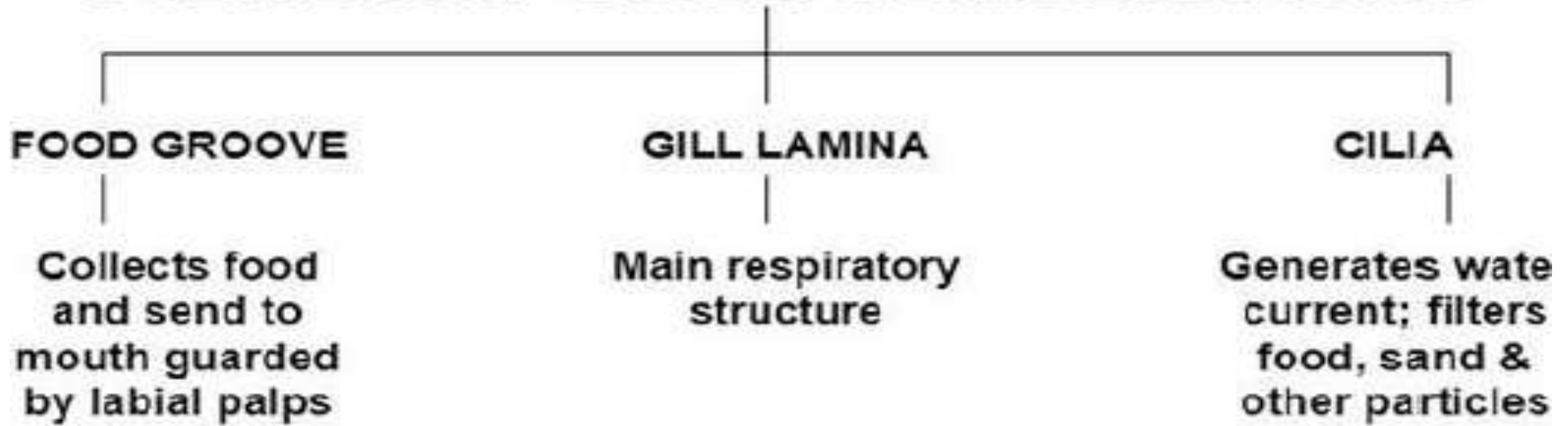
- ◉ Food and Feeding
 - Filter or Ciliary feeder
 - Ctenidia obtain food and sends it to mouth via labial palps
- ◉ Digestion, Absorption & Egestion
 - Digestion - intracellular & extracellular
 - Absorption in stomach
 - Undigested food passes through intestine, rectum, anus and exhalent siphon
- ◉ Filter feeders
- ◉ gills strain particles from the water through a net formed by the cilia on each gill sheet (ctenidium). The particles are swept by the cilia toward the mouth.

FOOD AND FEEDING PROCESS

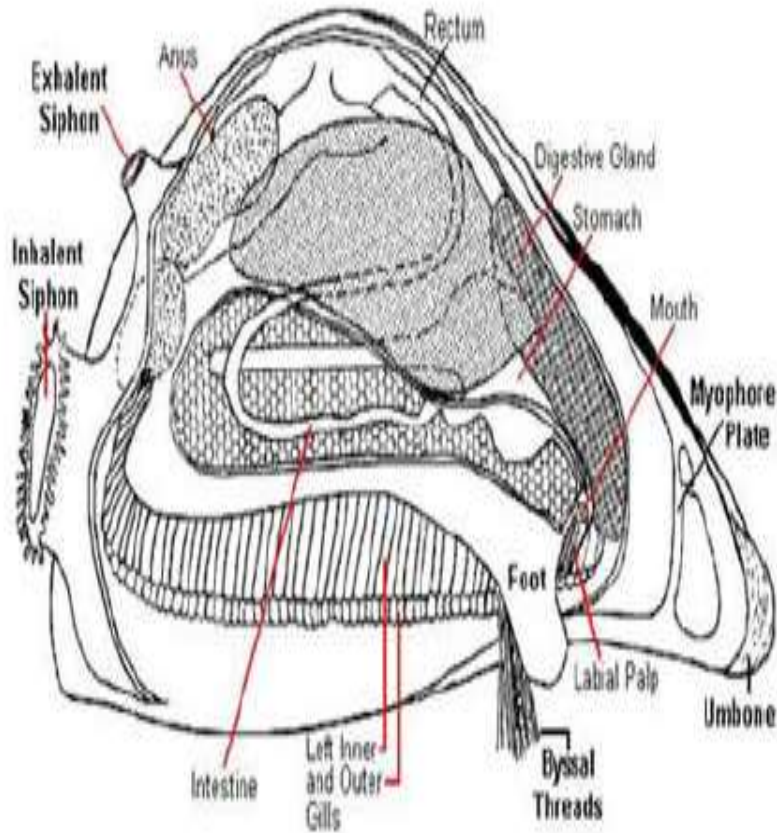
- Unio is planktonic feeder. Its food consists of diatoms, Protozoa, other microorganisms and organic detritus, brought in by the circulating water current.
- Displays filter feeding that involves straining food from large quantities of water.
- The beating of lateral cilia of the gill filaments draws water into the infra bronchial chamber of the mantle cavity through the incurrent siphon..

Role of Gills in Food collection and sorting

CTENIDIUM/ GILLS/ DEMOBRANCHS



DIGESTIVE SYSTEM



- The water current enters the gills through the austria and egresses to outside through the excurrent siphon via the suprabranchial chamber of the mantle cavity.
- The incoming water contains millions of microorganisms, constituting the animal's food.
- The beating of the laterofrontal cilia of the gill filaments towards the outer surface of the lamellae throws the fine food particles to the lamellar surface

- The heavier sand particles are conveyed upon the gill surfaces to the edge of the laminae, which touch the mantle.
- From here these are dropped to the bottom of the mantle cavity. The lamellar surfaces secrete a mucus sheet to trap the food particles. The frontal cilia of the gill filaments beat downwards towards the food groove, moving the mucous sheet downwards.
- The mucus from the both sides of each gill lamina moves into the food groove.

- Here ciliary beating moves the food towards the mouth while reaching in between the labial palps, further sorting of food particles take place. This is achieved by a series of overlapping folds on the inner surface of labial palps.
- In the gutters between them, a set of ciliar track beat outwards, causing the heavier particles to drop out of the mucus into the gutters. Another state of ciliary tracts allows the fine particles to reach the the mouth.
- Through the mouth the food passes into the oesophagus and stomach.

- When a good amount of heavier particles are accumulated on the labial palps, these fling to sweep them to the bottom of the mantle cavity. A sudden thrust of water outward through the incurrent siphon carries the rejected food particles and the sediment out of the mantle cavity

Digestion absorption and Egestion

- Within the stomach the food particles are subjected to sorting, maceration, digestion and partial absorption. The crystalline style perform the functions of stirring rod and windlass. Its rotation by the style sac,cilia causes the detachment of the food particles from the string like mucus sheet entering the stomach.
- The detachment of food particles from the mucous seat is facilitated by the lower pH of the stomach which decreases the viscosity of mucus. The style free its amylase enzyme into the stomach fluid where it hydrolyses the carbohydrates extra-cellularly.

- The sorting reason of the dorsal portion of the stomach directs the final particles of the food towards the opening of the ducts of digestive gland from these opening the food moves into the digestive gland.
- From these openings the food moves into the digestive gland where it is engulfed by the phagocytic cells of its epithelium.

- Within these cells complete intracellular digestion of food takes place by the carbohydrate, protein and possibly fat splitting enzyme. The digested nutrients are absorbed into the blood and the undigestible residue is sent back into the stomach.
- From here in the course food particles and an digestible Residue pass on to the lumen of the intestine. The amoeboid cells present throughout the digestive tract are said to engulf and digest food particles, a method that recalls the part played by the amoebocytes of sponges.
- In the intestine the food contents are moulded as fecal pellets that are conveyed into the rectum and finally voided through the anus into the cloaca, to be carried away with the outgoing water current.