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## Phylum : Mollusca

### **CLASSIFICATION OF MOLLUSCA :**

Molluscs are classified into 6 classes according to their symmetry and the characters of food, shell, mantle, gills, nervous system, muscles and radula.

#### **Class 1. Monoplacophora (Gr., monos, one+ plax, plate+ pherein, bearing)**

- Body is bilaterally symmetrical and segmented.
- Mantle dome-shaped.  
     Flattened limpet-shaped shell with spirally coiled Protoconch.
- Head without eyes and tentacles.
- Mantle encircles the body as a circular fold of the body.
- Foot broad and flat, with 8 pairs of pedal retractor muscles.
- 5 pairs of gills in pallial grooves.
- 6 pairs of nephridia, two of which are gonoducts.
- Radula in a radular sac; intestine much coiled.
- Heart of 2 pairs of auricles and a single ventricle.
- Nervous system with longitudinal pallial and pedal cords.
- Example : *Neopilina galathea*.

#### **Class 2. Amphineura (Gr., amphi, both + neuron, nerve)**

- Body elongated with reduced head.
- Radula present.
- Shell as 8 dorsal plates or as spicules.
- Ventral foot, large, flat and muscular.

- Non- ganglionated nerve ring around the mouth with 2 pairs of the interconnected nerve cord.
- Fertilization external; trochophore larva.

### **Subclass I. Aplacophora**

- Worm-like body with a mantle.
- No shell and foot.
- Calcareous spicules buried in the cuticle.
- Radula simple ; mantle cavity posterior, some with a pair of bipectinate ctenidia.
- Examples: *Neomenia*, *Nematomeina*, *Chaetoderma*.

### **Subclass II. Polyplacophora**

- Dorso-ventrally flattened body; small head (no eyes and tentacles) .
- Radula, mantle, foot and external gills present.
- Posterior mantle cavity.
- Shell as 8 calcareous dorsal plates.

### **Order 1. Lepidopleurina**

- Valves of the shell without insertion plates.
- Ctenidia a few and posterior.
- Example : *Lepidopleurus*.

### **Order 2. Chitonida**

- Valves of the shell with insertionplate
- plates.
- Gills along whole length of mantle groove.
- Examples: *Chaetopleura*, *Chiton*, *Ischnochiton*.

### Class 3. Scaphopoda (Gr., Scapha, boat + podos, foot)

- Exclusively marine.
- The body is bilaterally symmetrical, elongated and enclosed in a **Tusk-shells**, open at both ends.
- No head; mouth with tentacles; no eyes.
- Conical foot, radula present; no gills.
- Mantle tubular completely enclosing the body.
- Mouth surrounded by lobular processes or outgrowths.
- Heart rudimentary.
- Kidneys paired; gonad single.
- Dioecious ; trochophore larva.
- Examples: *Dentalium*, *Cadulus*, *Pulsillum*.

### Class 4. Gastropoda (Gr., gaster, belly + podos, foot)

- Mostly marine, some freshwater or terrestrial.
- Snails and Slugs.
- Well developed head bearing tentacles, eyes. Radula present.
- The foot is ventral, broad, flat and muscular forming the creeping sole .
- **Torsion** (coiling) of body mass at sometimes in development.
- The mantle is a collar-like fold of body wall lining the body leaving a space, the **mantle cavity**, between itself and the body.
- The buccal cavity contains an **odontophore** with a radula bearing rows of chitinous teeth.
- The digestive system comprises muscular pharynx, long oesophagus, stomach, long coiled intestine, and anteriorly placed anus.

- Shell present or absent ; univalve and usually coiled.

### **Subclass I. Prosobranchia(streptoneura)**

- Mostly marine, few freshwater or terrestrial forms.
- Nervous system streptoneurous with pleuro- visceral connectives twisted into a figure of “8”.
- Head with a single pair of tentacles.
- Mantle cavity opens anteriorly in front of the visceral mass.
- Shell closed by an operculum borne on foot.
- The foot is muscular, forms the ventral parts of the body.
- Two ctenidia in mantle cavity situated anterior to the heart.
- Sexes separate (Dioecious); gonad single; larvae trochophore or veliger.

### **Order 1. Archaeogastropoda (Aspidobranchia)**

- One or two bipectinate ctenidia.
- Shell usually coiled.
- 2 kidneys and heart with 2 auricles.
- Nervous system not concentrated, with pedal cord.
- Genital products conveyed to outside through right kidney. Fertilization external.
- Examples: *Fissurella* (key-hole limpet), *Trochus* (top shell), *Acmaea*(limpet), *Patella*(limpet).

### **Order 2. Mesogastropoda (Pectinibranchia)**

- Prosobranchs usually with siphon, penis and a non-calcified operculum.
- One auricle, one kidney, and one mono-pectinate ctenidium.

- Siphon, operculum and penis present ; osphradium developed.
- Nervous system without pedal cords.
- Fertilization is internal; larva usually a free-swimming veliger.
- Mostly marine, some freshwater.
- Examples: *Crepidula* (slipper shell), *Pila* (apple snail), *Natica* (star shell).

### **Order 3. Neogastropoda (Stenoglossa)**

- Shell with a short to a very long siphonal canal.
- Radula consists of rows with 2 or 3 teeth in each row.
- Nervous system concentrated.
- Osphradium is large.
- Free-swimming veliger suppressed.
- Examples: *Murex*, *Nassarius*, *Oliva*, *Magilus*, *Buccinum*.

### **Subclass II . Opisthobranchia**

- Exclusively marine gastropods.
- Shell small without operculum or no shell.
- Shell when present covered with mantle or pedal cord.
- Body mass torted or detorted.
- Gills posterior to the heart.
- Heart with one auricle posterior to the ventricle.
- One kidney, one gonad.
- The nervous system euthyneurous, without twisted pleuro-visceral loop..
- Monoecious; larva veliger.

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