

METAMERISM IN ANNELIDA

1. Define metamerism. Give example./ Name the phyla other than Annelida where metamerism is found.

Metamerism is the phenomenon of having a linear series of body segments along an anterior-posterior axis, fundamentally similar in structure, though not all such structures are entirely alike in any single life. Some of them perform special functions.

Metamerism appears in a variety of metazoan phyla, including some Coelenterates, Platyhelminthes, **Annelids**, Arthropods and Chordates.

2. Discuss the role and evolutionary significance of metamerism in phylum Annelida.

i) Metameric animals such as annelids have multiple body wall divisions that provide a smooth transition of the peristaltic wave. The sustained and efficient burrowing by Oligochaete Annelids (earthworm) is a direct consequence of their numerous segments. Once segmentation appeared, further locomotory adaptations rapidly evolved.

ii) In Polychaete class of Annelids, motion occurs primarily by means of **parapodia**, which consequent reduction in the circular muscles. The parapodial muscles, enabling turgor in the parapodium so the animal can move it as a single unit.

3. Characterise a typical metamere.

1. Metamerism is always confined to the intermediate (trunk) segments except the anterior **acron** (head) and a posterior **pygidium** or telson.

2. Each **metamere** represents a mirror image of the other.

3. Segmental structures are interdependent on each other.

4. Metameres are integrated into a single functional unit.

5. All the segments of body work in coordination.

4. Discuss the different theories on the origin of metamerism.

There are several conflicting views regarding the origin of metamerism. Such as—

a) Pseudometamerism theory (By Hyman, 1951):

i) According to this theory the metamerism evolved secondarily as a result of repetition of body parts whose ancestor was acoelomate and unsegmented and contained the various systems or organs.

ii) The metameric segmentation was linked with the evolution of coelom.

b) Cyclomerism theory- (by Sedgwick, 1884)/ Enterocoelous theory of coelom origin:

i) According to this theory coelom is associated with the origin of metameric segmentation.

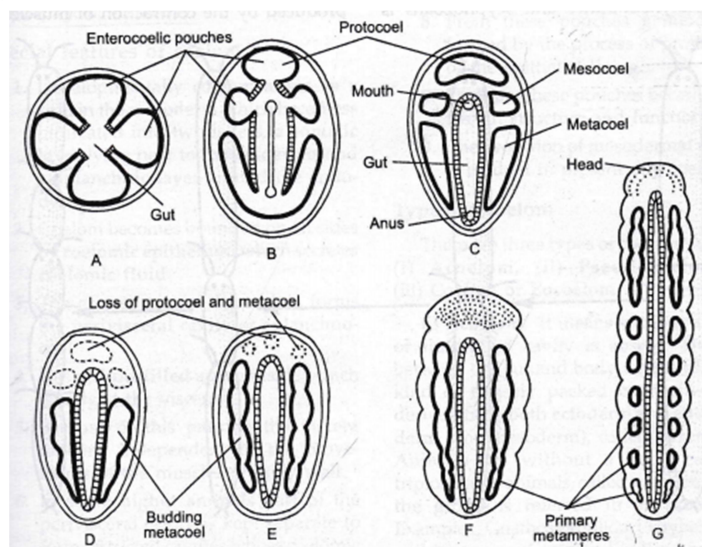


Figure: Diagram illustrating the cyclomerism theory of metamerism