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Date: 18/07/2022

Subject: ZOOLOGY

Topic : ANIMAL KINGDOM - L1

Class: Standard XI

Instructions:

A

1. Tube-within-a-tube body plan is present in

- ☐ A. *Hydra*
- ☐ B. tapeworm
- ☒ C. *Ascaris*
- ☐ D. sponges

Tube-within a tube body plan means that the animal body consists of two tubes, one formed by the body wall and second formed within it by the digestive tract. This type of body plan is found in *Ascaris*.

Sponges have a cell-aggregate body plan. It consists of a cluster or aggregation of cells which has rudimentary differentiation but is not organized into organs.

Hydra and tapeworm have blind sac body plan where the body of the animal has a single cavity with one opening to the outside.

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2. If the body has a single cavity with only one opening to the outside, then it is called

- ☐ A. cell aggregate body plan
- ☒ B. blind sac body plan
- ☐ C. tube-within-a-tube body plan
- ☐ D. protostomic body plan

Animals have three different body plans - cell aggregate body plan, blind sac body plan and tube-within-a-tube body plan.

The cell aggregate body plan consists of a cluster or aggregation of cells which has rudimentary differentiation but is not organized into organs.
Example - sponges.

In a blind sac body plan, the body of the animal has a single cavity with one opening to the outside. Example - coelenterates and flatworms.

In tube-within-a-tube body plan the body of the animal consists of two tubes, one formed by the body wall and second formed within it by the digestive tract. Example - *Ascaris*.

Protostomic plan is a type of tube-within-a-tube plan where the mouth of the digestive tract develops first in the embryo and anus is formed later.
Examples - roundworms, earthworm, crab and snail.

3. Choanocytes form the lining of the para-gastral cavity in

- ☐ A. jellyfish
- ☒ B. sponges
- ☐ C. flatworms
- ☐ D. starfish

Paragastral cavity is another term for spongocoel which is common to all sponges. It is lined by endodermal cells, which contains a single layer of collared, flagellated cells, called choanocytes. Choanocytes generate water currents. It helps in capturing food and also in capturing sperm for fertilization.

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4. Water current in *Leucosolenia* is produced by

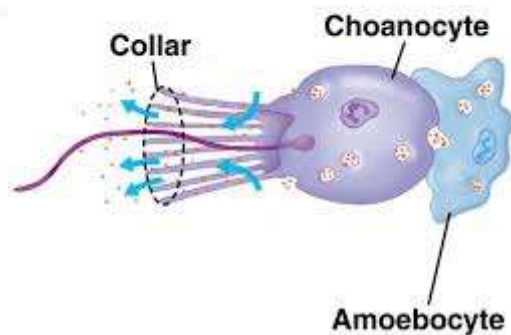
- ☒ A. archaeocytes
- ☒ B. collencytes
- ☒ C. choanocytes
- ☒ D. pinacocytes

Water current in *Leucosolenia* is produced by flagellated choanocytes. *Leucosolenia* is a genus of calcareous sponges. Species of this genus usually appear as groups of curved vases. They are up to 2 cm long and each ends in an osculum.

Archaeocytes are regenerative cells found in sponges. They can differentiate and form any cell that is a part of a sponge.

Collencytes are cells found in mesohyl which secrete fibrous gluey substances.

Pinacocytes are flat cells found on the surface of the body of a sponge.



Choanocyte

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5. Bilaterally symmetrical animals can be divided into mirror images by

- ☒ A. only a cut through the midline of its body from its anterior end to its posterior end
- ☐ B. only a cut through the midline of its body from its dorsal to its ventral surface
- ☐ C. any cut from its anterior end to its posterior end
- ☐ D. any cut from its dorsal to its ventral surface

Animals are classified on the basis of their body symmetry. A bilaterally symmetrical body can be divided into mirror images by a cut through the midline of its body from its anterior end to its posterior end.

6. The evolution of an internal body cavity was important in the animal body design for which of the following body functions?

- ☐ A. Circulation
- ☐ B. Movement
- ☐ C. Organ function
- ☒ D. All of these

Internal body cavity present between the body wall and the gut wall is called coelom. The coelom consists of fluid which helps in circulation. The coelom serves as an efficient hydrostatic skeleton, with circular and longitudinal body-wall muscles which help in movement. It also allows a more stable arrangement of organs with less crowding to perform body functions without interfering with other organs.

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7. Mesoderm helps in the differentiation between

- ☐ A. diploblastic and triploblastic animals
- ☐ B. coelomates and acoelomates
- ☐ C. acoelomates and pseudocoelomates
- ☒ D. both a and b

Mesoderm is a germinal layer that determines whether an animal is diploblastic or triploblastic. It forms a third germinal layer between ectoderm and endoderm. So, the animals having mesoderm are triploblastic. An animal that does not have mesoderm between the ectoderm and endoderm are diploblastic.

A coelom becomes a true coelom when it is lined by the mesoderm. Animals that have a true coelom are called coelomates. If the mesoderm does not line the body cavity, it is called acoelomates. Therefore mesoderm plays an important role in differentiating between diploblastic and triploblastic animals and coelomate and acoelomate.

8. Porocytes are

- ☐ A. located in the body of flatworms and are excretory in function
- ☒ B. located in the body wall of sponge and regulates incoming water current
- ☐ C. located in the body of roundworms and are excretory in function
- ☐ D. located in the body of hydra and regulates the outgoing water current

Porocytes are tube-like cells which line the pores called ostia present on the body wall of sponges. Each porocyte regulates incoming water current by contraction.

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9. Organism X has a cylindrical and curved body with thin walls. It is found attached by its siliceous roots to the bottom of the deep sea near the Philippines. The skeleton of X is a costly marriage gift in Japan. Identify X.

- ☐ A. *Sycon*
- ☒ B. *Euplectella*
- ☐ C. *Hydra*
- ☐ D. *Oniscus*

Euplectella belongs to the phylum Porifera and is commonly called Venus flower basket. It has a cylindrical and curved body with thin walls. It is found attached by its siliceous roots to the bottom of the deep sea near the Philippines.

Therefore, Skeleton of *Euplectella* are costly and considered as a marriage gift in Japan.

10. Choose the correct route of the flow of water inside a sponge.

- ☒ A. Ostia → Spongocoel → Osculum → Exterior
- ☐ B. Spongocoel → Ostia → Osculum → Exterior
- ☐ C. Osculum → Spongocoel → Ostia → Exterior
- ☐ D. Osculum → Ostia → Spongocoel → Exterior

Water canal system is a characteristic feature of phylum Porifera. The body of the poriferans have pores called ostia. The body has only one opening called the osculum. There is a continuous water movement from the exterior to the interior of the body of the poriferans. Water flows through the ostia into the spongocoel and goes out through the osculum. This helps in food gathering, exchange of gases and removal of waste.