ZOO201 MIDTERM FALL2022
ZOO 201/20.1.22/8:30 AM
Arthropods/Annelids difference 5marks

Arthropods are invertebrate animals that possess a segmented body, an exoskeleton, and paired appendages. Whereas, annelids are another group of invertebrates that are segmented worms by transverse rings. Though arthropods have an exoskeleton, annelids do not. Furthermore, arthropods have an open circulatory system while annelids have a closed circulatory system. Moreover, arthropods have a chitinous cuticle while annelids have a collagenous cuticle. Insects, crustaceans, arachnids are several groups of arthropods while earthworms, ragworms, and leeches are some groups of annelids. Thus, this summarizes the difference between arthropods and annelids.

*Body wall of turbellarian*5marks

Body wall:
A basement membrane that separates the epidermis from mesodermally derived tissues. An outer layer of circular muscles and inner layer of longitudinal muscle lie beneath the basement membrane. The innermost layer is endodermis that comprises the digestive cavity. Rhabdites a protective mucus sheath around the body possibly in response to attempted predation or desiccation. Adhesive glands attract part of turbellaria to the substrate. Releaser glands release the enzyme that dissolved the attachment.
Locomotion:
They move using cilia using muscular undulation.

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Digestion and Nutrition:
Most turbellarians are carnivores, some are herbivores. Food
digestion is extracellular and intracellular.

monoecious/diecious species 3 marks

Dioecious species are either male or female. Each individual, when it produces reproductive structures, produces only male or female structures.

Function of pellicle in protozoa 2 marks

Most protozoans are enclosed by a skeletal structure known as the pellicle consisting of the plasma membrane and underlying cytoskeleton (with additional membranes, microtubules, microfilaments, or plates of cellulose or protein). The pellicle maintains the shape of the cell.

Define typhlosole 2 marks
A dorsal fold of the luminal epithelium called the typhlosole substantially increases the surface area of the
intestine.

Tubular system 2marks
Parasitic nematodes have a more advances system, called the tubular system that developed from the renette system. In this system, the renettes unite to form a large canal which opens outside through an excretory pore.

Long Q marks

Characteristics of phylum
cnidaria include:
1. Radial or biradial symmetry
2. Diploblastic, tissue-level organization
3. Gastrovascular cavity
4. Gelatinous mesoglea between the epidermal and gastrodermal tissue layers.
5. Nervous system in the form of a nerve net.
6. Specialized cells called cnidocytes, used in defense, feeding, and attachment.
7. Endocrine have hormones, secreted by nervous system.
8. No circulatory system, use cellular diffusion and mesoglea
9. Ciliated planula larva is found.
10. Members of the phylum Cnidarian (Gr. knide means nettle) possess radial or biradial symmetry.

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Characteristics of deuterostomes:

Deuterostomes are also known as enterocoelomates because their coelom develops through enterocoely.
There are three major clades of deuterostomes:
1. Chordata (vertebrates and their kin)
2. Echinodermata (starfish, sea urchins, sea, cucumbers, etc.)
• 3. Hemichordata (acorn warms and graptolites). Extinct deuterostome groups may include the phylum Vetulicolia.
It is a sister clade of Protostomia, with which forms the Nephrozoa clade.
Parasitic Nematoda show evolutionary adoption?
Parasitic nematodes show a number of evolutionary adaptations to the way of their life. These adaptations are:
• 1. They have high reproductive potential.
• 2. Their life cycles increase the likelihood of transmission from one host to another.
• 3. They develop an enzyme resistant cuticle, resistant eggs, and encysted larvae.

Q No2
Difference between monophyletic, Diphyletic and polyphyletic?
• A fundamental question concerning animal origins is whether animals are;
• Monophyletic (derived from a single ancestor)
• Diphyletic (derived from two ancestors)
• Polyphyletic (derived from many ancestors).

Monophyletic:

The goal of animal systematics is to arrange animals into groups that reflect evolutionary relationships.
• Ideally, these groups should include a single ancestral species and all of its descendants.
• Such a group is called a monophyletic group.

Diphyletic:
Some zoologists believe the animal kingdom to be at least diphyletic, with the porifera being derived separately from all other phyla.
• The similarity of poriferan choanocytes and choanoflagellates protists suggest evolutionary ties between these groups.

Polyphyletic:
These groups have members that can be traced to separate ancestors.

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What is spongocoel?
Ostia are the outer openings of porocytes and lead directly to a chamber called the spongocoel. It is a single, large, spacious central cavity in the sponge's body.

Define Determinate cleavage?

Determinate cleavage:
A second characteristic common to many protostomes is that early cleavage is determinate.
• Determinate means that the fate the cells is established very early in development.

Q No
Circulatory system in cephalopod:

Cephalopods have a closed circulatory
system.
• Blood is confined to vessels throughout its circuit around the body.
• Capillary beds connect arteries and veins, and exchanges of gases, nutrients, and metabolic wastes occur across capillary walls.
• In addition to having a heart consisting of two auricles and one ventricle, cephalopods have contractile arteries
and structures called branchial hearts.

• The latter are at the base of each gill and help move blood through the gill.These modifications increase blood pressure and the rate of blood flow—necessary for active animals with relatively high metabolic rates.
• Large quantities of water circulate over the gills at all times.
• Cephalopods exhibit greater excretory efficiency because of the closed circulatory system.

Q no.
Role of osphradia:
Osphradia are chemoreceptors in the anterior wall of the mantle cavity that detect sediment and chemicals in inhalant water or air.
• The osphradia of predatory gastropods help detect prey.

QNo.
Definition of siphon:
Some gastropods have a rolled extension of the mantle, called a siphon, that serves as an inhalant tube.
Q no. Phylum Nematoda
Phylum Nematoda is a phylum of invertebrate animals. They are comprised of roundworms (or nematodes). They are identifiable by their smooth and tough outer covering and narrow cylindrical unsegmented body. Their name is etymologically derived from the Greek word nema, nematos, meaning “thread.

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QNo.
Ecdysis is the process of an arthropod moulting its exoskeleton. Moulting is a critical but vulnerable time for arthropods. Their existing cuticle weakens at specific points and by taking in water or air the animal splits its old exoskeleton. The animal then extracts itself from the old skin and inflates its new skin.
Summary of Molting

Step 1: Apolysis: separation of old exoskeleton from epidermis
Step 3: Production of cuticulin layer for new exoskeleton
Step 4: Activation of molting fluid
Step 5: Digestion and absorption of old endocuticle.

Define Ecdysis and it's four stages?
The growth of an arthropod would be
virtually impossible unless the exoskeleton
were periodically shed, such as in the molting process called ecdysis
(Gr. ekdysis, getting out).

Four stages:
Ecdysis is divided into four stages:
• (1) Enzymes, secreted from hypodermal glands, begin digesting the old procuticle to separate the hypodermis and the exoskeleton.

(2) new procuticle and epicuticle are secreted.
• (3) the old exoskeleton splits open along predetermined ecdysial lines when the animal stretches by air or water intake; pores in the procuticle secrete additional epicuticles.
(4) Finally, calcium carbonate deposits and/or sclerotization harden the new exoskeleton.

Q No.
Pinacocytes
The process in which food is engulf in form of liquid.

Q No.
Schizocoel hypothesis about the Origin of coelom:
Schizocoel hypothesis: Coelom is formed by the splitting of mesoderm i.e. protostomes. It suggests that a triploblastic acoelomate (flatworm) body form is the ancestor of the coelomate.
QNo.
Heartworm ?

Heartworm disease is a serious disease that results in severe lung disease, heart failure, other organ damage, and death in pets, mainly dogs, cats, and ferrets. It is caused by a parasitic worm called Dirofilaria immitis. The worms are spread through the bite of a mosquito.
QNo.
Mastax?
Pharynx contains a structure called the mastax (jaws). The mastax is a muscular organ. It grinds food. The inner walls of the mastax contain several sets of jaws called trophi. The trophi have different structures.

Q no
Hydra reproduction
The common asexual method of reproduction by hydras is budding. Buds originate at the junction of the stalk and gastric aregions. The bud begins as a hemispherical outpouching that eventually elongates, becomes cylindrical, and develops tentacles. The bud then pinches off and a new individual becomes independen..

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