

Field Biology Invertebrate Dissection - Organ Functions

Ascaris

1. Anus - responsible for evacuation of intestine contents.
2. Muscular body - contains longitudinal muscles for movement of worm within an animal's intestine.
3. Mouth - ingestion of food within an animal's intestine.
4. Intestine - absorption of digested food.
5. Vagina - site of copulation - where semen is deposited from male.
6. Ejaculatory duct - tube that moves semen from seminal vesicle to the female vagina.
7. Ovary - produces eggs.
8. Testis - produces sperm.
9. Oviduct - passes eggs from ovary to uterus.
10. Sperm duct - passes sperm from testis to ejaculatory duct.
11. Uterus - site of egg fertilization and development.
12. Seminal vesicle - stores amoeboid sperm (no flagella).
13. Excretory canal - osmoregulation (water balance control).

Earthworm

1. Prostomium - the first segment of the earthworm that forms the upper region of the mouth.
2. Segments - the repeated units of the earthworm.
3. Clitellum - the external band of the earthworm that secretes mucus for fertilization.
4. Anus - the site of evacuation of the contents of the intestine.
5. Pharynx - initial thick-walled food storage organelle of the digestive.
6. Hearts - 10 total, 5 on a side, which pump blood to the ventral blood vessel and on to the body.
7. Seminal receptacle - storage of allosperm - sperm from another worm.
8. Seminal vesicles - store autosperm sperm - sperm from the worm itself.
9. Crop - food storage organ.
10. Gizzard - food grinding organ.
11. Dorsal blood vessel - moves blood from the body cells back to the hearts.
12. Intestine - absorbs nutrients from the food to the blood.
13. Ventral nerve cord - the main nerve cord of the worm body.
14. Ventral blood vessel - passes blood from the hearts to the body cells.

Clam

1. Excurrent siphon - area where water leaves the clam body.
2. Incurrent siphon - at the posterior end of the body, where water enters the clam body.
3. Valve - a shell of the clam, which protects the soft body.
4. Foot - muscular appendage that pushes the clam on a surface.
5. Umbo - the oldest part of the shell above (dorsal to) the hinge of the valves.
6. Heart - an open circulation pump that moves blood to the organs of the viscera.
7. Posterior adductor muscle - pulls the valves together on the backside of the clam body.
8. Gill - site of gas exchange between water and blood; also used to capture microscopic food from water.
9. Intestine - receives food from the stomach; absorbs nutrients from food and passes them to the blood.
10. Foot (above)
11. Digestive gland - produces enzymes and chemicals for the breakdown of food in the stomach/intestine.
12. Palps - help move food captured by gills to the mouth.
13. Mouth - where food enters the digestive tract.
14. Anterior adductor muscle - pulls the valves together on the frontside of the clam body.

15. Stomach - begins the initial breakdown of food, passes food to the intestine.
16. Mantle - skin covering around the clam body that protects the inner organs and secretes the shell.

Starfish

1. Arm - appendage used to locomote with tube feet; also contain hepatic caeca which produce digestive enzymes for the stomach.
2. Madreporite - the entry/exit point for water to access the hydraulic system which operates the tube feet; consisting of stone, ring, and radial canals.
3. Anus - the exit point for evacuation of digestive materials from the digestive system.
4. Spine - a protective and movable protrusion on the starfish surface.
5. Stomach - the digestive organ of the starfish which can be prolapsed from the central body and inserted into a mollusk to digest it for the breakdown of food.
6. Hepatic caeca - produces enzymes for the breakdown of food by the stomach.
7. Gonads - produce sperm/eggs for external fertilization.
8. Ambulacral ridge - support structure within the arm that contains the radial canal.
9. Ampulla - small bulb-like structures used to hydraulically control the tube feet.
10. Tube foot - small suction devices that are used to attach to surfaces for moving or feeding.
11. Ambulacral groove - the depression on the oral side of the starfish arm beneath the ambulacral ridge which houses the tube feet.

Crayfish

1. Antennae - long sensory appendages of the head region of the cephalothorax section of a crayfish, for sensing food and touch.
2. Antennule - short sensory appendages below the eyestalks of the head region of the cephalothorax section of a crayfish, sensing food and touch.
3. Cheliped - large walking, grasping, and defensive appendages (first pair) of a crayfish.
4. Eye - rest atop stalks on the head region of the cephalothorax section of the crayfish, for sensing light.
5. Rostrum - the protrusion at the head section of the crayfish which protects the forward sensory equipment (eyestalks, antennules, antennae).
6. Walking legs - the 4 pairs of appendages used to locomote in the crayfish.
7. Cephalothorax - the first segment of a crayfish, consisting of a head fused to the thorax.
8. Abdomen - the multi-segmented posterior region of the crayfish used to swim backwards.
9. Uropod - small swimming paddles (2) on the end of the abdomen of a crayfish.
10. Telson - the central swimming paddle of an end of a crayfish abdomen.
11. Stomach - receives food from the mouth, digests it, and moves it to the intestine.
12. Heart - pumps blood to the body.
13. Intestine - absorbs nutrients from the food and passes it to the blood; passes from cephalothorax through the abdomen to the telson.
14. Muscle - used to swim by pulling the abdomen below the cephalothorax.
15. Swimmeret - small appendages used for reproduction; in males - used to transfer sperm to females; in females - used

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- to hold eggs and young as they develop.
16. Ventral nerve cord - the nerve cord that connects the brain in the head region to the body.
 17. Liver - produces digestive enzymes for the stomach for food breakdown.
 18. Gonad - produces sperm or eggs for reproduction.
 19. Green gland - excretes waste products (nitrogenous) and osmoregulates (balances water) blood.

Squid

1. Siphon - small tube on the ventral side of a squid/octopus that can be directed in any direction for jet propulsion locomotion.
2. Eye - sensory equipment on the head of the squid which rivals the complexity of mammalian eyes.
3. Mantle - soft skin covered organ of the squid that covers the body in place of the normal molluskan shell.
4. Tentacle - soft unsegmented appendage of a squid used for grasping prey or reproduction.
5. Sucker - small suction device on the surface of a tentacle used for holding prey or mates.
6. Pen - small and stiff support structure within the mantle used for mantle support.
7. Nidamental gland - secretes the gelatinous matrix that surrounds the squid eggs.
8. Ovary - produces eggs.
9. Buccal area - the mouth area of the squid, including the oral cavity and radula.
10. Radula - the scraping organ of feeding in mollusks, structured as a bird's beak in squid and octopi.
11. Esophagus - tube that passes food from the mouth to the stomach.
12. Stomach - digests food polymers into smaller polymers and monomers.
13. Caecum - receives food from the stomach and absorbs it to the bloodstream.
14. Intestine - receives food from the caecum and continues to absorb nutrients to the blood.
15. Rectum - receives food from the intestine to pass it to the anus and out of the body.
16. Liver - produces digestive fluids for the digestion of food.
17. Systemic heart - receives blood from the gill hearts and pumps it to the body of the squid.
18. Gill (brachial) heart - pumps blood to the gills of the squid.
19. Nephridium - the excretory organ of the squid, filtering the blood of waste products.
20. Gill - respiratory organ of the squid, exchanging oxygen and carbon dioxide between the blood and sea water.
21. Ink sac - organ that stores a black substance that serves to deceive potential predators and allow escape
22. Fin - extension of mantle used to guide and steer during swimming.

Grasshopper

1. Antennae - sensory appendages on the head section of a grasshopper.
2. Ocellus (simple eye) - a 3 eyespots on the anterior-dorsal region of the head for sensing light.
3. Compound eye - paired sensory organs that each contain hundreds of smaller eyes each with individual lenses for viewing the world.
4. Thorax - the central segment of a grasshopper or any insect.
5. Auditory membrane - thin drum-like surfaces for sensing sound by vibrating in response to air movements from sounds.
6. Wing - extensions of the thorax that are responsible for

- insect flight.
7. Ovipositor - the posterior appendages of a female grasshopper used to insert and deposit eggs below the soil surface.
 8. Walking legs - the 3 pairs of legs used to locomote by any insect.
 9. Abdomen - the segmented hind section of any insect that contains digestive and reproductive organs, usually covered by the wings.
 10. Palp - appendages near the mouth used to help move food into the mouth.
 11. Maxilla - the appendages immediately posterior to the mandible used to help move food into the mouth.
 12. Labrum - forms the forward boundary of the mouth.
 13. Head - the first segment of the grasshopper which contains the brain and most of the sensory equipment, as well as the mouth.
 14. Brain - the integration center of the nervous system of the grasshopper, within the head segment.
 15. Gastric caeca - digestive organs connected to the stomach used to help hold and digest food by secreting digestive enzymes into the stomach.
 16. Gonad - produces either sperm (male) or eggs (female).
 17. Heart - a small and thin tube on the dorsal surface of the organs for pumping blood anteriorly to the head in the open circulatory system of the grasshopper.
 18. Intestine - absorbs nutrients from food and passes them to the blood.
 19. Rectum - stores food before it is eliminated from the body.
 20. Gonad duct - passes sperm/eggs from the gonads to the external body surface.
 21. Malpighian tubules - the excretory organ of the insect which excretes uric acid from the blood into the intestine.
 22. Stomach - receives food from the crop and passes it to the intestine, and with the help of the caeca, digest food.
 23. Ventral nerve cord - the main nervous system connection between the brain and the body cells.
 24. Crop - a food storage organ that receives food from the pharynx and passes it to the stomach; used to store large amounts of rapidly eaten food.
 25. Mandible - used to crush and chew food to pass it to the pharynx.
 26. Pharynx - tube that receives food from the mouth and passes it to the crop in the grasshopper.