***Animal Diversity, 8e* (Hickman)**

**Chapter 11 Annelids**

1) Select the list of characteristics typical of annelids.

A) Segmentation, open circulation, and nephridia

B) Segmentation, a closed circulatory system, and nephridia

C) An exoskeleton, seasonal reproduction, and a pseudocoelom

D) An endoskeleton, seasonal reproduction, and a pseudocoelom

Answer: B

2) Each internal compartment of an annelid is lined with

A) amebocytes that serve to distribute food and remove wastes.

B) nephridiocytes that keep the coelomic fluid in circulation.

C) cuticle secreted by the epithelium.

D) peritoneum, a layer of mesodermal epithelium.

Answer: D

3) A robin has difficulty pulling an earthworm from its earthen burrow because of small chitinous bristles called

A) parapodia.

B) segments.

C) annuli.

D) metanephridia.

E) setae.

Answer: E

4) The circulatory system of earthworms is

A) open with blood "washing" through the coelomic cavity.

B) half closed with hearts pushing blood toward the head but washing posteriorly through an open cavity.

C) closed with dorsal and ventral blood vessels joined by five paired "hearts" forcing circulation flow dorsal-ventrally.

D) absent and they rely solely on diffusion to absorb gases through the epidermis.

Answer: C

5) Considering the age of the various segments of an annelid such as an earthworm,

A) they are born with all segments present and these merely grow in size; this allows segment count to be a major feature in their identification.

B) new segments are added just behind the prostomium, so the oldest segments are at the posterior end.

C) new segments are added just in front of the pygidium, so the oldest segments are at the anterior end.

D) segments grow and duplicate in a haphazard fashion preventing their use in identification.

Answer: C

6) The body wall of an annelid consists of

A) an epidermis and longitudinal muscles only, as is the case with nematodes.

B) a non-living cuticle, and inner circular muscles to squeeze the cuticle.

C) an epithelium that secretes cuticle, and layers of both longitudinal and circular muscles.

D) a bare epidermis with inner circular muscles and outer longitudinal muscles.

E) a soft exoskeleton to hold up in the absence of inner fluids, with outer circular muscles and inner longitudinal muscles.

Answer: C

7) In contrast to roundworms, how do segmented worms elongate or stretch lengthwise?

A) Contracting the longitudinal muscles

B) Contracting circular muscles

C) Forcibly expanding the circular muscles

D) Forcibly expanding longitudinal muscles

Answer: B

8) The polychaetes

A) belong to the smallest and most evolutionarily derived class of annelids.

B) are mostly freshwater inhabitants.

C) are mostly terrestrial, living in moist soil.

D) consist of active predators and sedentary particle feeders.

E) cannot tolerate brackish or marine salinity.

Answer: D

9) Polychaetes differ from other annelids because polychaetes

A) lack any head or specialized sense organs.

B) have paired parapodia on most segments.

C) have a clitellum used for reproductive purposes.

D) lack setae.

Answer: B

10) Polychaetes crawl by means of leg-like \_\_\_\_\_\_\_\_ which also serve in respiration.

A) aortic arches

B) metanephridia

C) palps

D) parapodia

Answer: A

11) The typical nervous system of a polychaete consists of

A) cerebral ganglia and a double ventral nerve cord with ganglia in each segment.

B) a ladder-like pattern similar to that of a flatworm.

C) a distributed nerve net without a central nervous system.

D) major digestive ganglia that extend to all parts of the polychaete.

Answer: A

12) In the earthworm, the typhlosole

A) is the organ of locomotion.

B) increases the absorptive area of the gut.

C) grinds the food.

D) produces secretions during mating.

E) coordinates the contractions of the digestive system.

Answer: B

13) Chloragogen cells

A) can float freely to distribute materials to body tissues.

B) function in excretion.

C) have a function similar to those of liver cells.

D) All of the choices are correct.

Answer: D

14) Giant axons are utilized in the earthworm for

A) coordinating mating.

B) rapid escape movements.

C) preventing drowning.

D) coordinating digestion.

E) improving the visual sensory system.

Answer: B

15) The circulatory system in the earthworm

A) is absent since all respiration is across the epidermis.

B) has a dorsal vessel as the main pumping organ.

C) has no pumping structure but depends on the action of body muscles to move the blood.

D) has five pumps that circulate blood first to the gills and then to the rest of the body.

Answer: B

16) Gas exchange in the earthworm occurs through the

A) gills.

B) metanephridia.

C) skin.

D) setae.

E) typhlosole.

Answer: C

17) Oligochaetes are primarily

A) aquatic.

B) terrestrial.

C) parasitic.

D) micropredators.

Answer: A

18) The cocoon in the earthworm is produced by the

A) clitellum.

B) prostomium.

C) calciferous glands.

D) chloragogen cells.

E) typhlosole.

Answer: A

19) Reproduction in the earthworm involves

A) asexual budding.

B) self-fertilization.

C) cross-fertilization between two hermaphroditic organisms.

D) cross-fertilization between two dioecious organisms.

Answer: C

20) When earthworms copulate, each stores the other's sperm in chambers called a/an

A) clitellum.

B) egg capsule.

C) nephridiopore.

D) seminal receptacle.

E) seminal vesicle.

Answer: D

21) Compared to earthworms, freshwater oligochaetes

A) have more conspicuous setae.

B) have better-developed sense organs.

C) are more mobile.

D) All of the choices are correct.

Answer: D

22) A leech

A) has a clitellum only during the breeding season.

B) has a fixed number of segments.

C) has both anterior and posterior suckers.

D) All of the choices are correct.

Answer: D

23) Leeches

A) are mostly found in fresh water.

B) are largely "micropredators" but sometimes parasites.

C) may be carnivores on small invertebrates.

D) are more abundant in the tropics.

E) All of the choices are correct.

Answer: E

24) The remaining valid use of "medicinal leeches" is to

A) to relieve blood congestion and allow damaged vessels to grow back.

B) use them to clean out dead tissue from a wound.

C) use them to restore the balance of body fluids or humors.

D) apply them to increase circulation or blood flow to a region.

E) All of the choices are correct.

Answer: A

25) Conventional *external fertilization* involves both males and females extruding gametes into the environment where they fertilize separate from the parents; *internal fertilization* involves sperm being transferred to the female with fertilization inside the female. A leech utilizes

A) external fertilization, generally in the hours or days following a meal.

B) internal fertilization, by hypodermic impregnation of the integument.

C) no transfer of sperm at all but regenerates asexually.

D) None of the choices are correct.

Answer: B

26) A biologically plausible reason that burrowing earthworms have solid segmental walls but nonburrowing and parasitic annelids often have partial septa is

A) the segmentation was selected to enable better expansion during burrowing.  Parasitic annelids do not burrow and the loss of the ability to expand segments was not disadvantageous during their evolution.

B) the nonburrowing worms were primitive and had not yet developed full walls.

C) nonburrowing worms are halfway between roundworms and fully segmented earthworms.

D) that it permits fragmentation and regeneration of body parts, which earthworms need because they are in a dangerous environment, but internal parasites do not need this.

E) None of the choices are correct.

Answer: A

27) The evolutionary position of leeches is best described as

A) closest to the primitive annelid ancestor that later gave rise to all other annelids.

B) closest to the polychaetes due to their common aquatic lifestyle.

C) a monophyletic clade within the Clitellata.

D) a paraphyletic group.

Answer: C

28) The anterior-most and posterior-most portions of the annelid body are the \_\_\_\_\_\_\_\_ and pygidium, respectively.

Answer: prostomium

29) Paired appendages used for locomotion in polychaetes are called \_\_\_\_\_\_\_\_.

Answer: parapodia

30) In the earthworm, food is drawn into the mouth by the pumping action of the \_\_\_\_\_\_\_\_.

Answer: pharynx

31) The temporary food storage organ in the earthworm is the \_\_\_\_\_\_\_\_.

Answer: crop

32) \_\_\_\_\_\_\_\_ cells surround the intestine in the earthworm and function in excretion and in synthesizing glycogen and fats.

Answer: Chloragogen

33) When earthworms mate, the \_\_\_\_\_\_\_\_ secretes mucus to hold them together.

Answer: clitellum

34) The Hirudinida are unique in that they have both an anterior and a posterior \_\_\_\_\_\_\_\_.

Answer: sucker

35) The coelom in leeches is filled with muscle and connective tissue, thus decreasing the coelom's role in the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.

Answer: hydrostatic skeleton

36) In leeches, a cocoon into which fertilized eggs will be deposited is secreted by the \_\_\_\_\_\_\_\_.

Answer: clitellum