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

**Chapter 14 Chaetognaths, Echinoderms, and Hemichordates**

1) The Chaetognaths

A) have radial symmetry.

B) feed on clams.

C) are small ancestors of fish.

D) are mostly pelagic plankton feeders.

E) are advanced deuterostomes.

Answer: D

Section: 14.01

Topic: Phylum Chaetognatha: Arrow Worms

Learning Objective: 14.01 Discuss the early evolution and membership of the deuterostomes.

Bloom's: 1. Remember

Gradable: automatic

2) The common name for chaetognaths is

A) arrow worms.

B) acorn worms.

C) spoon worms.

D) lancelets.

E) elvers.

Answer: A

Section: 14.01

Topic: Phylum Chaetognatha: Arrow Worms

Learning Objective: 14.01 Discuss the early evolution and membership of the deuterostomes.

Bloom's: 1. Remember

Gradable: automatic

5) Unique characteristics of echinoderms include all of the following EXCEPT

A) an endoskeleton of plates or ossicles.

B) marine, freshwater, and terrestrial species.

C) pedicellariae.

D) dermal brachiae.

E) a water vascular system.

Answer: B

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 2. Understand

Gradable: automatic

7) Echinoderms are

A) mostly pelagic or free-swimming in open ocean.

B) benthic.

C) parasitic.

D) mostly particle feeders.

E) fish predators.

Answer: B

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

10) Ecologically, sea stars are at what trophic level?

A) Producer

B) Herbivore

C) Top carnivore

D) Omnivore

E) Detritivore

Answer: C

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 3. Apply

Gradable: automatic

12) The orientation of a sea star is

A) a dorsal mouth and a ventral spiny surface facing upward.

B) an oral mouth facing downward and an aboral spiny surface.

C) an anterior mouth and a posterior spiny surface.

D) a dorsal oral mouth and a ventral-aboral spiny surface.

E) a ventral mouth and an anti-ventral spiny surface.

Answer: B

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

13) Tube feet run along the \_\_\_\_\_\_\_\_ groove that extends along the oral side from the mouth to the tip of each arm.

A) ambulacral

B) hemal

C) radial

D) dermal

E) lateral

Answer: A

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

14) Pedicellariae are

A) larval sea stars.

B) the mouth-like openings into the center of the bottom of the sea star.

C) structures linking the madreporite and the ring canal.

D) small pincer-like projections clustered on the skin of a sea star which serve to keep it clean of parasites and aquatic growth.

E) soft and delicate projections of the coelomic cavity covered with epidermis.

Answer: D

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

16) Water enters the water vascular system of a sea star through a porous plate on the aboral surface called the

A) Aristotle's lantern.

B) pedicellariae.

C) madreporite or sieve plate.

D) ambulacrum.

Answer: C

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.02 Describe the water-vascular system of echinoderms.

Bloom's: 1. Remember

Gradable: automatic

20) How do the tube feet of sea stars and sea urchins operate?

A) Sticky threads lead back to the mouth and primitive brain.

B) Cilia transport hemolymph from chamber to chamber.

C) Actin and myosin in muscles in the five arms or "rays" constrict the tube feet directly when stimulated by nerves from the sea star brain.

D) A hydraulic system regulates water pressure in the tube feet.

E) Each tube foot is an independent organism and the sea star is a colonial mass.

Answer: D

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

23) A sea star feeds by absorbing food through the

A) tube feet on the tentacles.

B) dermal calcareous ossicles.

C) stone and ring canals.

D) lower part of stomach which is everted.

E) sieve plate.

Answer: D

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 2. Understand

Gradable: automatic

30) The echinoids

A) have five long, slender arms.

B) are enclosed in an endoskeletal test or shell.

C) lack tube feet.

D) lack ambulacral areas.

E) are unable to move because of their spines.

Answer: B

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

32) The oral tentacles of the sea cucumber are

A) modified tube feet.

B) actually primitive lophophores.

C) elaborated pedicellariae.

D) also part of its respiratory tree.

E) completely new structures evolved in this group.

Answer: A

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

36) Hemichordates live

A) in the open ocean with a similar lifestyle to arrow-worms (which is why they are considered related).

B) in kelp beds.

C) in deep oceans, especially the rich and oxygenated Arctic Ocean.

D) on the bottom of shallow oceans, sometimes colonially and in secreted tubes.

E) just around thermal vents.

Answer: D

Section: 14.04

Topic: Phylum Hemichordata

Learning Objective: 14.04 Identify the phylogenetic position of hemichordates and describe the functional anatomy of its members, the acorn worms and pterobranchs.

Bloom's: 1. Remember

Gradable: automatic

44) Clade Ambulacraria contains two deuterostome phyla: Echinodermata and \_\_\_\_\_\_\_\_.

Answer: Hemichordata

Section: 14.02

Topic: Clade Ambulacraria

Learning Objective: 14.04 Identify the phylogenetic position of hemichordates and describe the functional anatomy of its members, the acorn worms and pterobranchs.

Bloom's: 1. Remember

Gradable: automatic

45) The larvae of echinoderms have \_\_\_\_\_\_\_\_ symmetry.

Answer: bilateral

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

46) The grooves that run along the oral side of the arms of sea stars are called \_\_\_\_\_\_\_\_ grooves.

Answer: ambulacral

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

49) A calcareous sieve leading to the water vascular system is the \_\_\_\_\_\_\_\_ or sieve plate.

Answer: madreporite

Section: 14.03

Topic: Phylum Echinodermata

Learning Objective: 14.03 Describe the functional anatomy of the five echinoderm groups: sea stars, brittle stars, sea urchins, sea cucumbers, and crinoids.

Bloom's: 1. Remember

Gradable: automatic

63) Hemichordates are marine animals that were formerly considered a subphylum of \_\_\_\_\_\_\_\_.

Answer: chordates

Section: 14.04

Topic: Phylum Hemichordata

Learning Objective: 14.04 Identify the phylogenetic position of hemichordates and describe the functional anatomy of its members, the acorn worms and pterobranchs.

Bloom's: 1. Remember

Gradable: automatic

68) The \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ was formerly thought to be a notochord.

Answer: buccal diverticulum

Section: 14.04

Topic: Phylum Hemichordata

Learning Objective: 14.04 Identify the phylogenetic position of hemichordates and describe the functional anatomy of its members, the acorn worms and pterobranchs.

Bloom's: 1. Remember

Gradable: automatic

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

**Chapter 15 Vertebrate Beginnings: The Chordates**

3) Although several invertebrate groups have been proposed as chordate ancestors, most zoologists now believe the embryological evidence indicates the chordates have probably descended from ancestors nearest the \_\_\_\_\_\_\_\_ lineage.

A) Arthropoda

B) Cnidaria

C) Annelida-Mollusca

D) Lophophorate

E) Echinodermata

Answer: E

Section: 15.01

Topic: Traditional and Cladistic Classification of the Chordates

Learning Objective: 15.05 Describe the early evolution of chordates and vertebrates.

Bloom's: 1. Remember

Gradable: automatic

6) The central definition of a monophyletic group is found in which question given below?

A) Do we have evidence of transitional fossils in the geological record?

B) Do we have the majority of species described in each higher taxon?

C) Are all of the species described actually real species?

D) Do all higher taxa contain all known descendants of their single common ancestor?

E) Do all of the taxa fit into the seven ranks of the Linnaean taxonomic hierarchy?

Answer: D

Section: 15.01

Topic: Traditional and Cladistic Classification of the Chordates

Learning Objective: General-Understand basic concepts related to chordates.

Bloom's: 1. Remember

Gradable: automatic

7) One example of why a cladist is not satisfied with the traditional classification scheme is because it

A) includes too many levels of classification.

B) includes birds with the reptiles.

C) does not include birds with the reptiles.

D) does not reflect evolutionary lineages.

Answer: C

Section: 15.01

Topic: Traditional and Cladistic Classification of the Chordates

Learning Objective: 15.05 Describe the early evolution of chordates and vertebrates.

Bloom's: 2. Understand

Gradable: automatic

9) A dorsal tubular nerve cord is

A) another name for the notochord.

B) a strip of cartilage that forms a back and tail.

C) primitive tissue that forms boney vertebrae.

D) an early nerve cord that enlarges at one end to form the brain and also extends through vertebrae.

E) None of the choices are correct.

Answer: D

Section: 15.02

Topic: Five Chordate Hallmarks

Learning Objective: 15.01 List or briefly describe five characteristics of chordates.

Bloom's: 1. Remember

Gradable: automatic

10) The perforated pharynx of chordates first evolved as a device for

A) support.

B) respiration.

C) suspension or filter feeding.

D) detecting odors.

E) All of the choices are correct.

Answer: C

Section: 15.02

Topic: Five Chordate Hallmarks

Learning Objective: 15.01 List or briefly describe five characteristics of chordates.

Bloom's: 1. Remember

Gradable: automatic

12) The name Urochordata means literally

A) "head chordates."

B) "kidney chordates."

C) "tunic chordates."

D) "larval swimmer."

Answer: B

Section: 15.04

Topic: Subphylum Urochordata (Tunicata)

Learning Objective: 15.03 Describe the functional anatomy of urochordates and cephalochordates.

Bloom's: 1. Remember

Gradable: automatic

14) The urochordates are

A) called tunicates.

B) marine animals.

C) sessile as adults, but tadpole-like as larvae.

D) often abundant in intertidal zones.

E) All of the choices are correct.

Answer: E

Section: 15.04

Topic: Subphylum Urochordata (Tunicata)

Learning Objective: 15.03 Describe the functional anatomy of urochordates and cephalochordates.

Bloom's: 1. Remember

Gradable: automatic

19) The lancelets or *Branchiostoma* are found

A) very rarely and are about extinct.

B) commonly in the sandy bottoms of coastal waters around the world.

C) in tropical freshwater streams.

D) near deep ocean thermal vents.

Answer: B

Section: 15.05

Topic: Subphylum Cephalochordata

Learning Objective: 15.03 Describe the functional anatomy of urochordates and cephalochordates.

Bloom's: 1. Remember

Gradable: automatic

45) Outline the five chordate features. What is the fate of the endostyle in the higher vertebrates?

Answer: Answers will vary.

Section: 15.02

Topic: Five Chordate Hallmarks

Learning Objective: 15.01 List or briefly describe five characteristics of chordates.

Bloom's: 3. Apply

Gradable: manual