

Echinoderms (p. 692 - 699)

I. Animal Development

1. Match the following terms with the correct definitions.

1. B. Blastopore A. Animals with mouths that develops near the blastopore.
 2. A. Protostomes B. Opening to the outside of the gastrula (embryo cells).
 3. C. Deuterostomes C. Animals with an anus that develops near the blastopore.

2. List examples of animals that are :

- Protostomes : Annelids, Mollusks, Arthropods
 Deuterostomes : Echinoderms, Chordates (Closely related)

II. Modern Echinoderms

1. Sea stars are members of the phylum Echinodermata.

2. List four other examples of echinoderms.

1. Brittle Stars 2. Sea Lilies + Feather Stars 3. Sea Cucumbers 4. Sea Urchins + Sand Dollars

3. In what type of environment do all echinoderms live? Marine

4. What type of skeleton do echinoderms possess?

- Circle One : Hydrostatic Skeleton Endoskeleton Exoskeleton

5. What is the skeleton of an echinoderm composed of?

Calcium carbonate

6. Define the term ossicles.

Ossicles - individual plates that make up echinoderm endoskeletons (appears external, but covered by a skin)

7. What type of symmetry do echinoderms exhibit as adults?

- Circle One : Bilateral Radial

8. What is the structure of the nervous system in most echinoderms?

- Nerve ring (surrounds mouth) with radial nerves (connects to ring)

9. Echinoderms cannot regenerate lost rays or arms.

- Circle One : True False

- External fertilization
- Separate sexes

p. 692
Proto = "first"
Deutero = "second"
Stoma = "mouth"

p. 693

p. 694

Eyespots at tips. →

10. Define the term water-vascular system.

Water-Vascular System - water-filled system of interconnected canals + thousands of tiny, hollow tube feet.

11. What functions does the water-vascular system carry out in echinoderms?

- Carries out respiration, circulation, + movement

12. Define the term skin gills.

P. 695

Skin Gills - small, fingerlike projections that grow on spines (↑ surface area for gas exchange)

13. What are the functions of the skin gills?

- Aid respiration + waste removal

III. Sea Star (Up Close p. 696)

1. Match the sea star anatomical terms with the correct definitions.

P. 696

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|----------------------------------|---|
| 1. <u>D.</u> Tube Feet | A. Produce juices that liquefy prey when ingested. |
| 2. <u>G.</u> Madreporite | B. Cardiac & pyloric; Expelled during feeding. |
| 3. <u>E.</u> Reproductive Organs | C. Attaches to radial canal & extends down each ray. |
| 4. <u>A.</u> Digestive Glands | D. Operates like a living suction cup. |
| 5. <u>B.</u> Stomachs | E. Eggs or sperm that may occupy a full arm or ray. |
| 6. <u>F.</u> Ring Canal | F. Attached to madreporite & circles central disk. |
| 7. <u>C.</u> Radial Canal | G. Sieve-like structure of the water-vascular system. |

IV. Echinoderm Diversity

1. Complete the table about the groups of echinoderms.

P. 697

Group	Description Of Feeding	Description Of Body
Sea Stars	Carnivores	Star-shaped
Brittle Stars	Filter feeders and detritivores	Star-shaped with slender, flexible arms
Sea Lilies & Feather Stars	Filter feeders	Long, feathery arms attached to a stalk
Sea Cucumbers	Detritus feeders	Look like warty, moving pickles (slug-like)
Sea Urchins & Sand Dollars	Detritivores or grazers	- Disk-shaped (urchins → spines)

P. 697

P. 698

P. 698

2. Define the term pedicellaria.

Pedicellaria - pincer-like structure produced by ossicles
 ↳ snap at anything touching them
 ↳ prevents organisms from attaching