

Kingdom: Animalia

Phylum: Echinodermata (spiny skin)

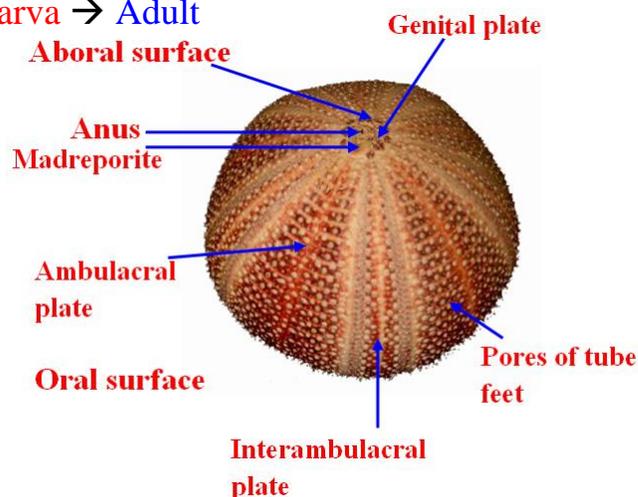
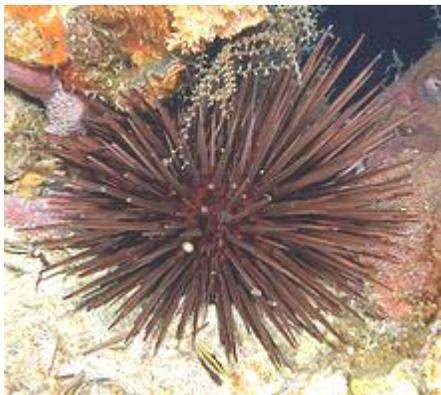
3. Class: Echinoidea

Order: Arbacioida

Arbacia sp. (sea urchin)

1. Movable animals, Body is spherical, consisted of two hemisphere; oral and aboral hemisphere. Arms are not found. Mouth is on oral half, anus & madreporite are on aboral half.
2. Endoskeleton is called Test, consisted of 5 fused ossicles. It is covered by epiderm that bears movable long spines and pedicellariae spine.
3. Five ambulacral areas are found, and adhesive tube feet are found that lacks suckers.
4. Digestive system possesses Aristotle's lantern (mouth part). They feed on algae.
5. Life cycle includes an indirect growth, the larva called Pluteus.

Egg → Pluteus Larva → Adult



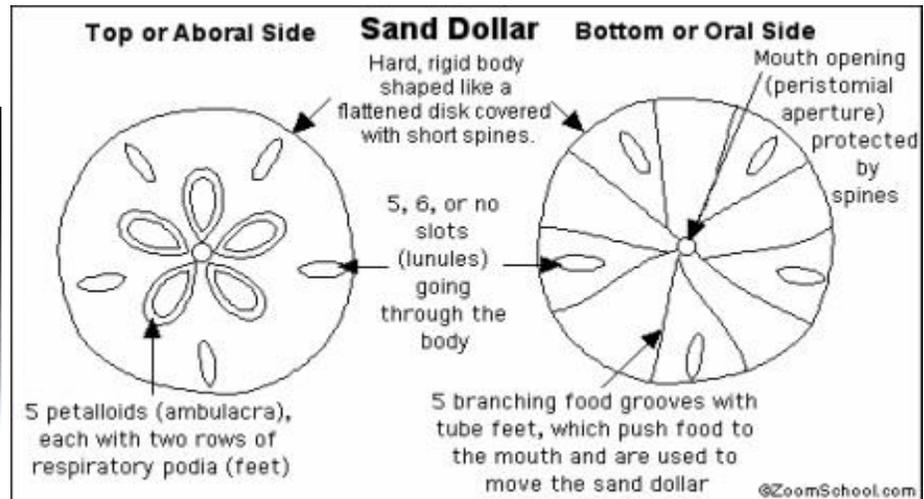
4. Class: Echinoidea

Order: Clypeastroida

Clypeaster sp. (Sand dollars, The cake urchin)

1. The body is very much flattened and rounded. Possess a rigid skeleton known as a test. The test consists of calcium carbonate plates arranged in a fivefold radial pattern.
2. The oral surface covered by short and delicate spines.
3. The mouth is in center and extend from it five ambulacral grooves with rows of locomotors tube feet.
4. The anus is on the aboral surface.
5. Life cycle includes an indirect growth, the larva called **nektonic larvae**

Egg → Nektonic Larvae → Adult

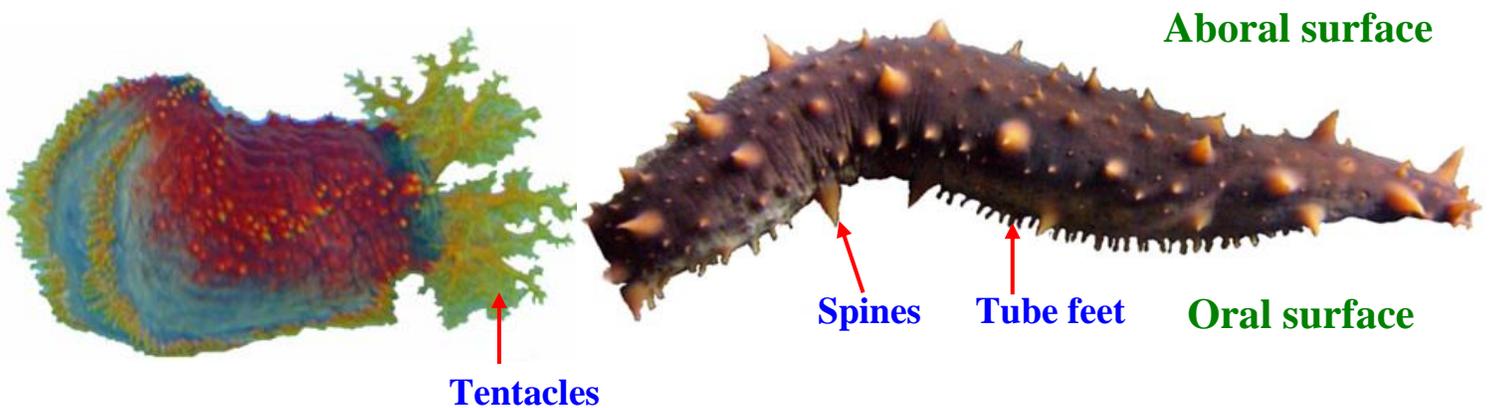


5. Class: Holothuroidea

Cucumaria sp. (sea cucumber); Characteristics:

1. Movable animals, Body is elongated, consisted of two ends; oral and aboral ends. Arms are not found. Mouth is on oral surface, anus is on the opposite end, but madreporite is found.
2. Endoskeleton is reduced to a ring of 10 small ossicles. Body is soft due to heavy muscle layer. It is covered by epiderm that doesn't bear spines or pedicellariae spines.
3. Ambulacral areas are found. Suckerless tube feet are converted to tentacles of mouth.
4. Digestive system lacks pyloric caeca. They feed on decaying organic matter.
5. Life cycle includes an indirect growth, the larva called Auricularia.

Egg → Auricularia Larva → Adult



5. Class: Crinoidea

Antedon sp. (sea lily); Characteristics:

1. Sedentary animals, Body is simple, consisted of two apexes; oral and aboral surface. Body of 3 sections; **stem, calyx and 5 arms**. Mouth and anus are found on oral surface, but madreporite is absent.
2. Endoskeleton is consisted of ossicles on aboral surface. It is covered by epiderm that doesn't bear spines or pedicellariae spines.
3. Five ambulacral areas are found in oral apex. Tube feet lack suckers and ampullae.
4. Arms lack pyloric caeca. They feed on planktonic organism.
5. Life cycle includes an indirect growth, the larva called Crinoid larva.

Egg → Crinoid Larva → Adult

