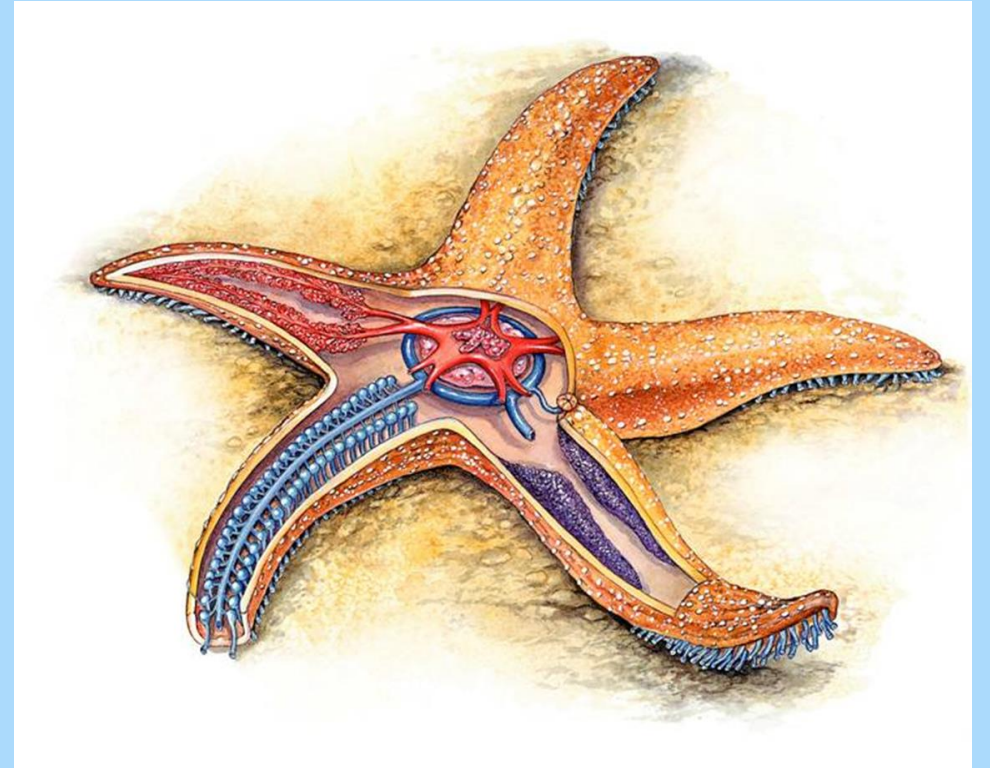


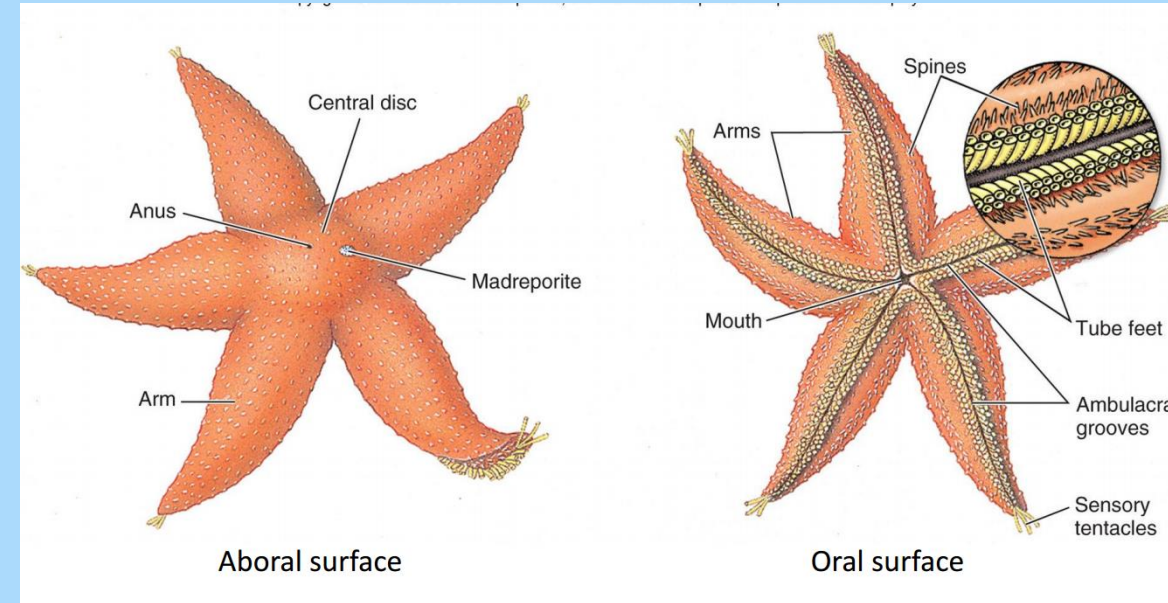
UNIFYING FEATURES

- Echinoderms are characterized by
 - Live only in the Ocean
 - Spiny skin
 - Internal skeleton (endoskeleton)
 - Water vascular system
 - Suction-cuplike structures called tube feet.
 - Most adult echinoderms exhibit five-part radial symmetry
 - Arranged around the central body in multiples of 5

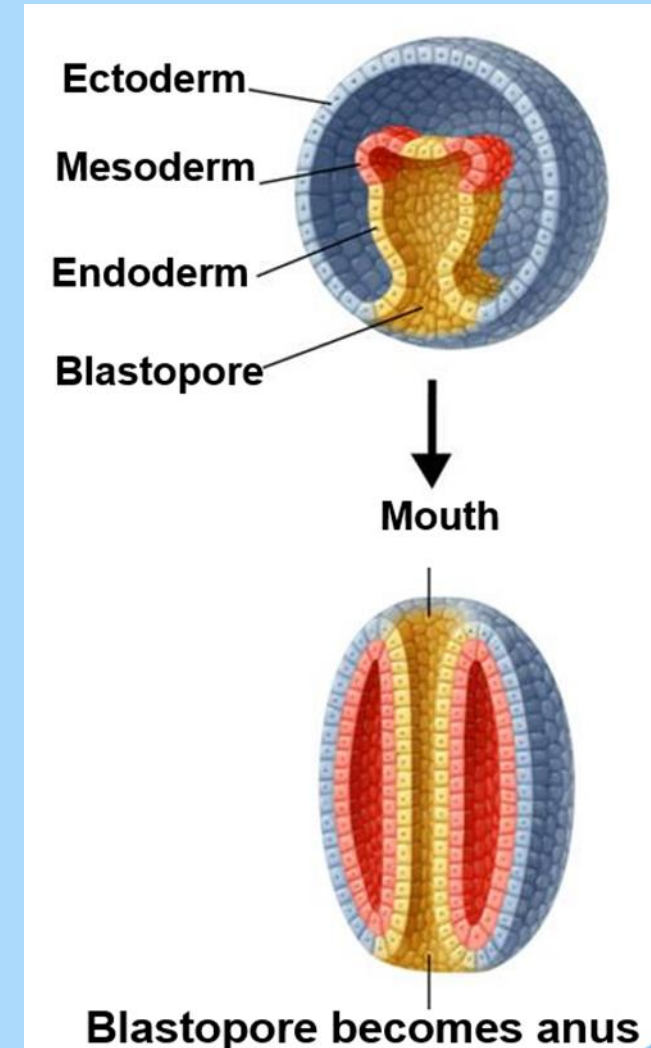


ECHINODERMS

- The skin of echinoderms is stretched over an endoskeleton
 - Formed of hardened plates of calcium carbonate.
- Adult echinoderms typically
 - have no anterior or posterior end
 - lack cephalization.
- The side in which the mouth is located is called the oral surface
- The opposite side is called the aboral surface.

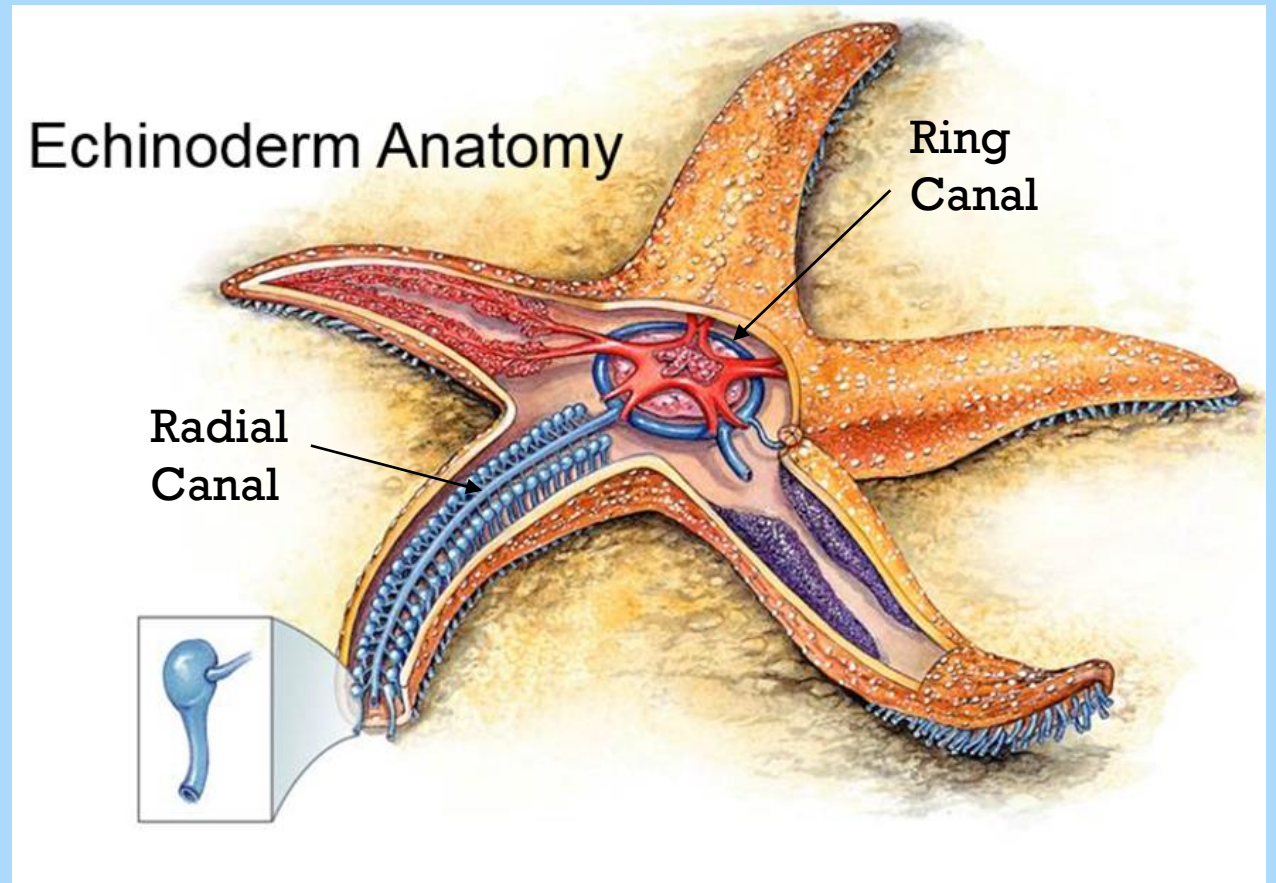


- Larvae exhibit bilateral symmetry
- Echinoderms are deuterostomes, animals in which the blastopore develops into an anus.
 - So are vertebrates (close relation)
- Sea stars, sea urchins, and sand dollars are all echinoderms.



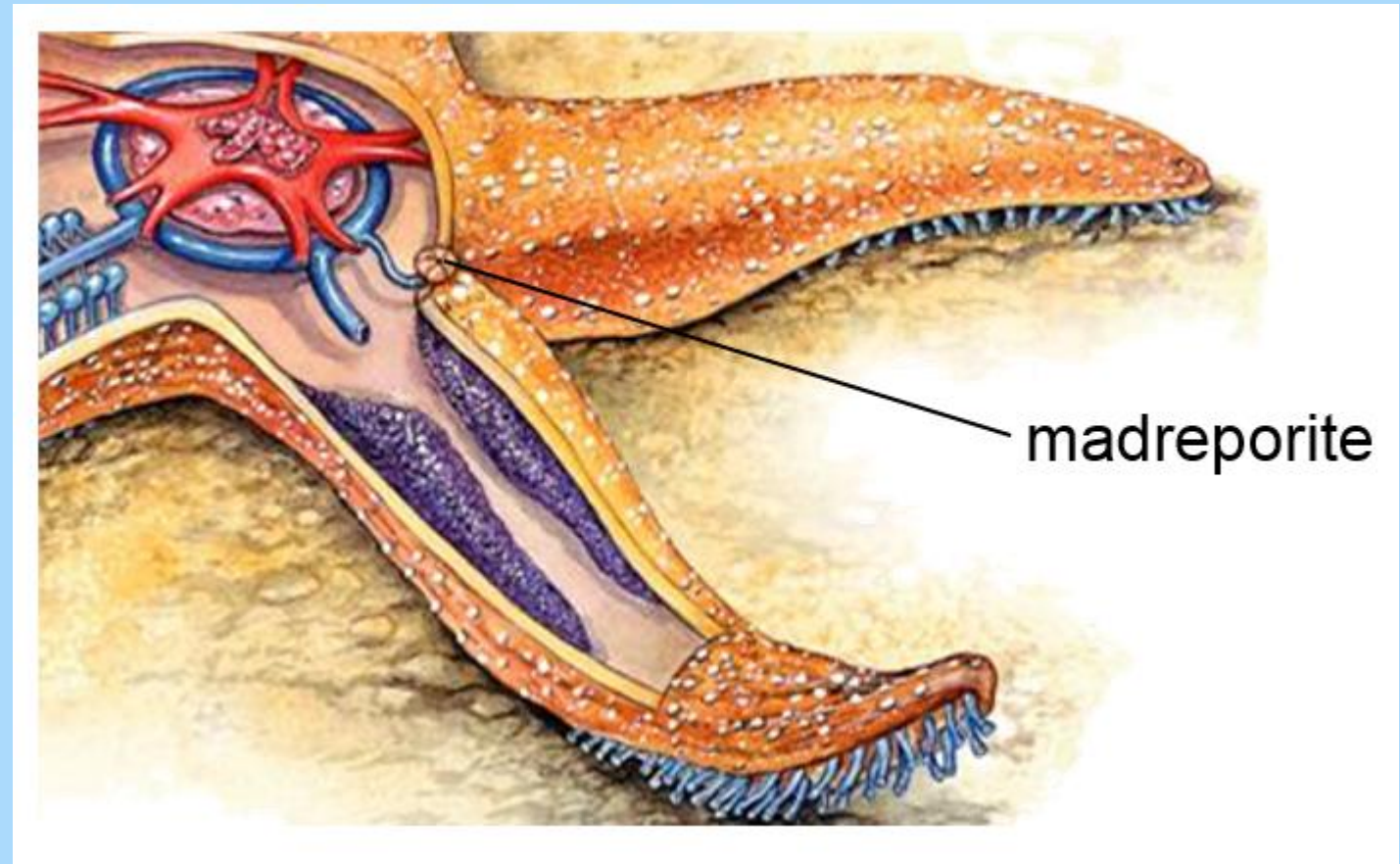
FORM AND FUNCTION

- Echinoderms have a system of internal tubes called a water vascular system.
 - Filled with fluid
 - Carries out many essential body functions, including respiration, circulation, and movement.



FORM AND FUNCTION IN ECHINODERMS

- The water vascular system opens to the outside through a sieve-like structure called a **madreporite**.
- In sea stars
 - Attached to ring canal (circles mouth)
 - From ring canal attaches to radial canal in each body segment



- A **tube foot** is attached to each radial canal
- Operates like a suction cup
- Tube feet act together to create enormous force allowing echinoderms to “walk,” and pull open shelled prey

