

## Chapter 32-1 Echinoderms

Animals develop in one of \_\_\_\_\_ ways

As the embryo goes through the gastrula stage it has an opening to the \_\_\_\_\_ called the blastopore.

draw

Protostomes- animals in which the  
\_\_\_\_\_ forms from or near the  
blastopore

Examples: Annelids, Mollusks,  
Arthropods, and Acoelomate animals

draw

Deuterostomes- animals where the \_\_\_\_\_  
forms near or from the blastopore  
Examples: Echinoderms, and Chordates

draw

# Echinoderms share \_\_\_\_\_ characteristics



<http://www.perspective.com/nature/animalia/starfish.html>



[http://www.bynaturegallery.com/productpages/fossils/crinoid\\_holzmaden\\_germany.htm](http://www.bynaturegallery.com/productpages/fossils/crinoid_holzmaden_germany.htm)



<http://www.baylink.org/lessons/27.html>

Endoskeleton- made of ossicles  
Although it appears the animals have an \_\_\_\_\_, the ossicles actually have a thin layer of \_\_\_\_\_ over them



<http://www.perspective.com/nature/animalia/starfish.html>



Five-part radial symmetry

All are bilaterally symmetrical as \_\_\_\_\_.

Most adults have a \_\_\_\_\_-part body plan



<http://www.perspective.com/nature/animalia/starfish.html>

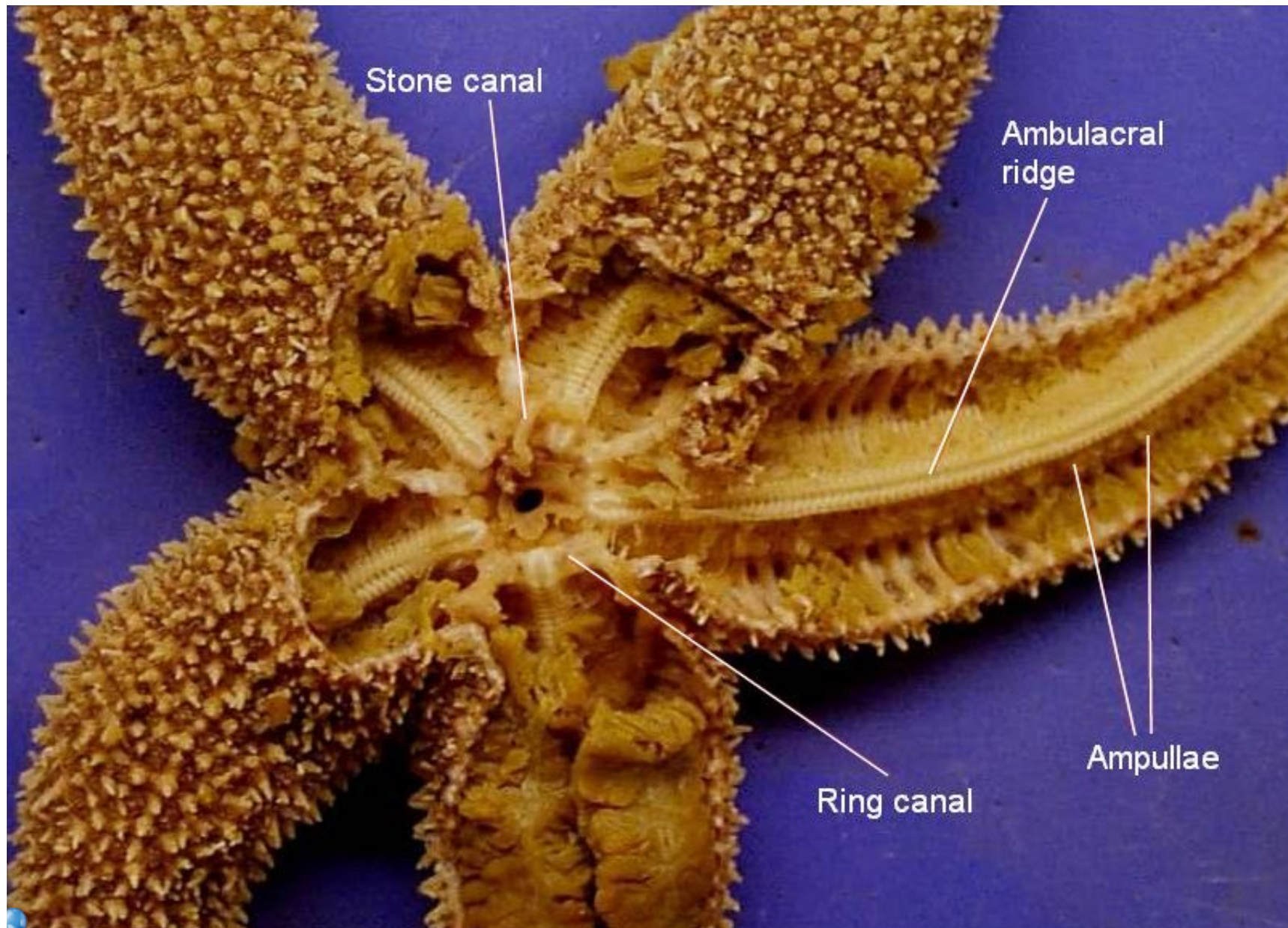
# Water-vascular system

A water-filled interconnected series of \_\_\_\_\_ and tiny \_\_\_\_\_ tube feet

Functions as a place for \_\_\_\_\_ and gas exchange

The tube feet can be used for \_\_\_\_\_





<http://harrington.biology.colostate.edu/Dissections/asterwvs.htm>



# Coelomic circulation and respiration

The body cavity functions as a \_\_\_\_\_  
circulatory and respiratory system

Some echinoderms have skin \_\_\_\_\_ - small  
finger-like projections that increase the  
\_\_\_\_\_ area for gas exchange

## Chapter 32-2 Invertebrate Chordates

The \_\_\_\_\_ major group of deuterostomes is the chordates

### \_\_\_\_\_ Characteristics of Chordates

Have a completely \_\_\_\_\_ endoskeleton including a notochord

Muscles can \_\_\_\_\_ to this rod increasing the movement an animal can accomplish

Single, hollow, dorsal \_\_\_\_\_ cord with nerves attached to it

Pharyngeal slits- the develop in the \_\_\_\_\_ of the pharynx

Postanal tail- a \_\_\_\_\_ that extends beyond the anus

All chordates have these characteristics at some point or stage in life

The Phylum Chordata has three subphyla.

Vertebrata- is the major phylum

Urochordata

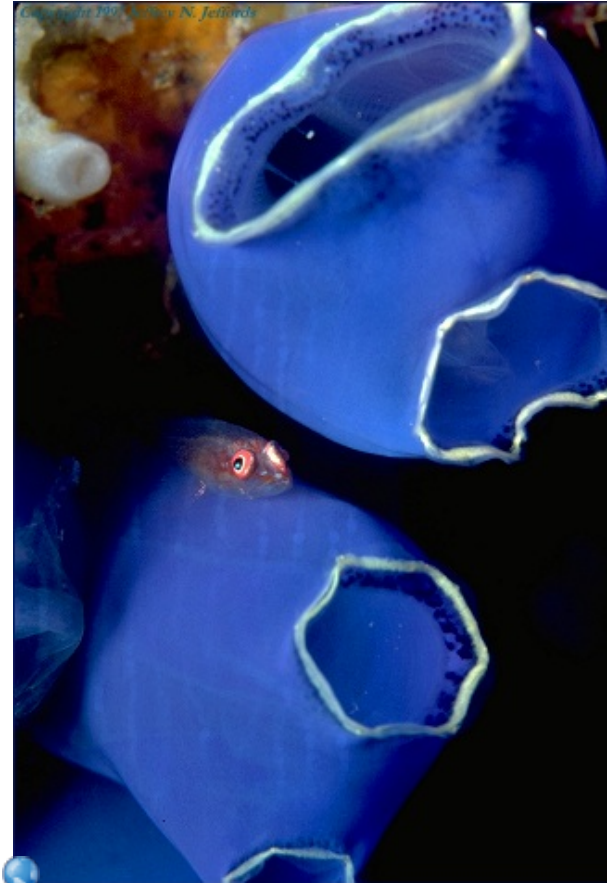
Cephalochordata

Urochordata and Cephalochordata are  
considered \_\_\_\_\_

# Urochordata (tunicates)

Sessile, \_\_\_\_\_ feeding animals

A \_\_\_\_\_ sac called a tunic surrounds the animal



<http://www.divegallery.com/tunicate.htm>



Cephalochordata (lancelets)  
Only a few centimeters long  
Spend most of their time with their tail  
burrowed in \_\_\_\_\_ or \_\_\_\_\_



[http://bioweb.uwlax.edu/zoolab/Table\\_of\\_Contents/Lab-9a/Lancelets/lancelets.htm](http://bioweb.uwlax.edu/zoolab/Table_of_Contents/Lab-9a/Lancelets/lancelets.htm)