

# Phylum

# Echinodermata

(5 Classes) **Oh I ACHE!**

**Asteroids CRashed Here On Earth**

**Ophiuroidea**

**Asteroidea**

**Crinoidea**

**Holothuroidea**

**Echinoidea**

# Echinodermata Basics

- Water vascular system for gas exchange & excretion
- Exclusively marine
- *MOST* are dioecious.  
Boy & girl sea stars and urchins.....
- Phylum *typically* has pentaradial symmetry

Class **Holothuroidea**  
- **Sea Cucumbers**

Respiratory Structure?  
Term for releasing insides?  
Symmetry as adult?



# Holothuroidea

## - Sea Cucumbers

Respiratory Tree

Evisceration

Secondarily bilateral as adults



# Asterozoa

## - Sea Stars



Path of Water

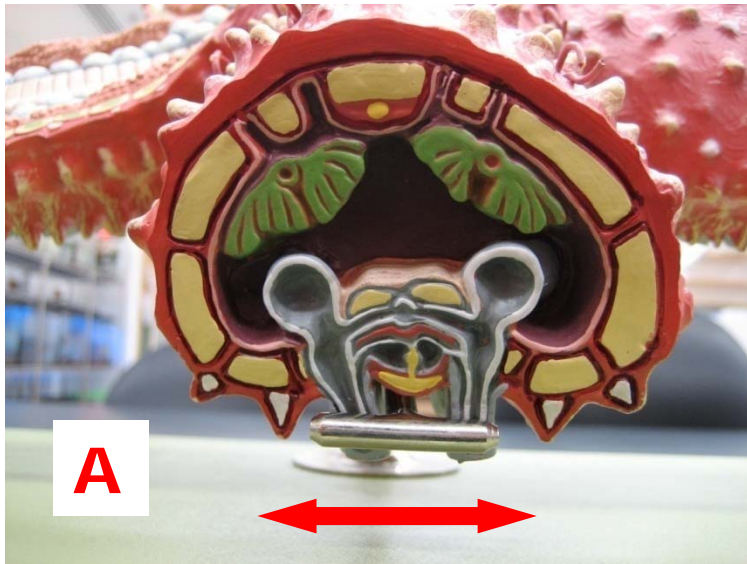
Flow:

Madreporite -> stone canal -> ring canal ->  
radial canals -> ambulacral groove -> lateral  
/transverse canals -> tube feet/ampullae

Surface features visible in some sea stars but more so in Echinoids:

Pedicellariae - for cleaning the surface

Papulae = dermal branchiae - for respiration



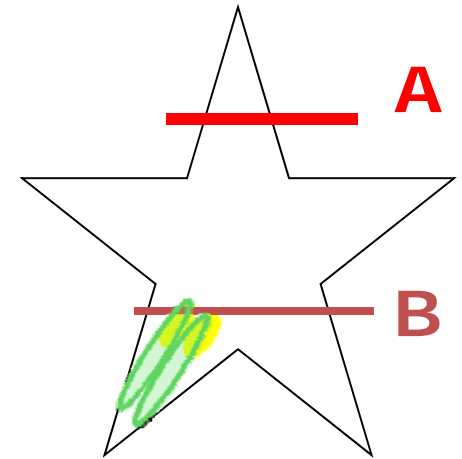
Pyloric Caecum

Gonad

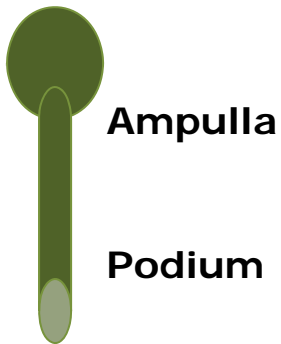
Radial Canal and tube feet

Ambulacral Ridge

Perivisceral Coelom



Ambulacral Groove



Ampulla

Podium

Sucker

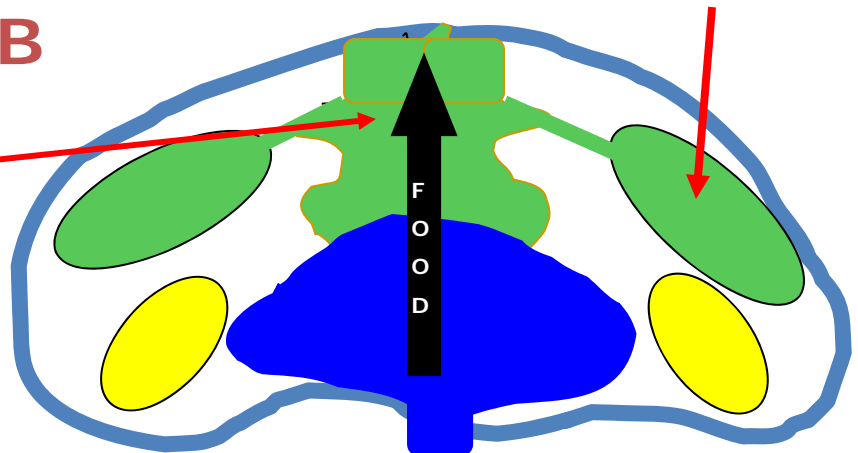
Enables locomotion – but in Ophiuroidea this is replaced by a platelet, preventing tube feet being used for movement.

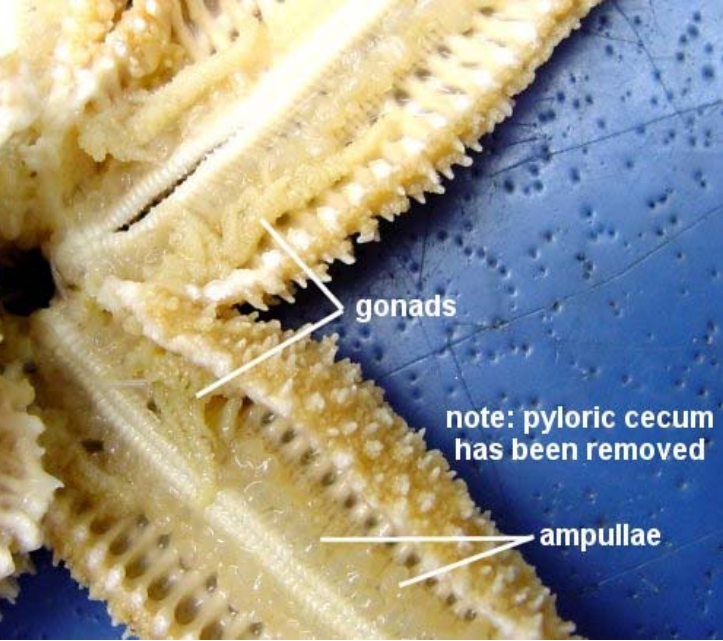
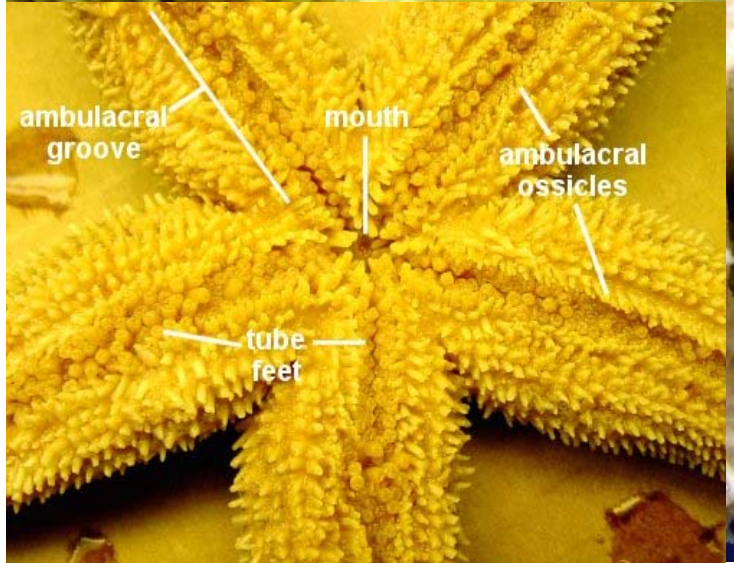
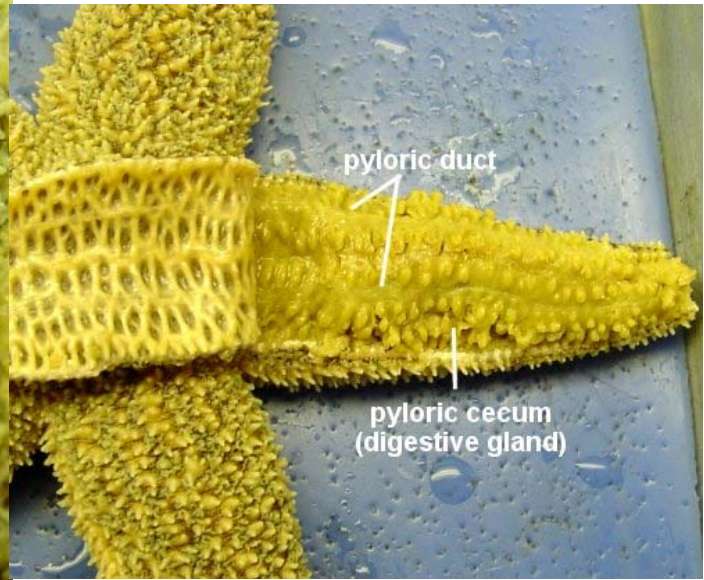
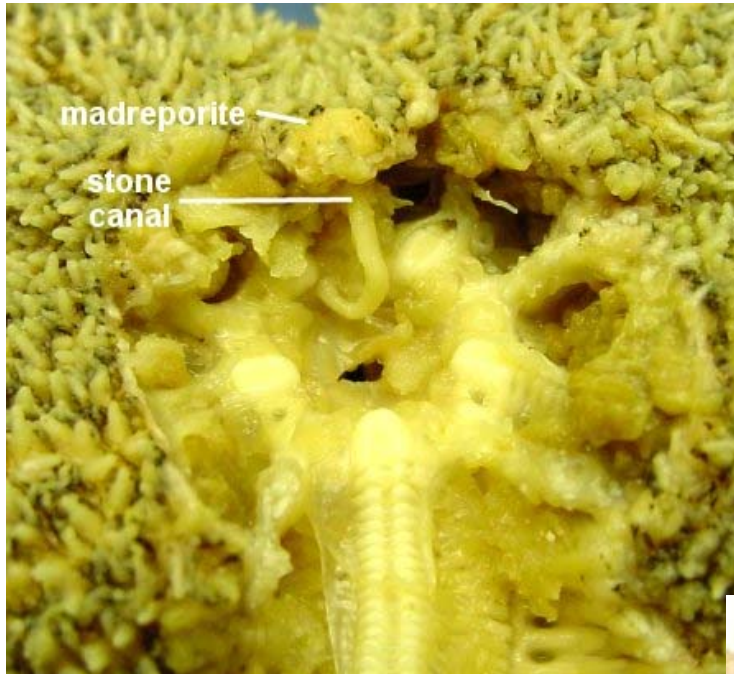
Pyloric Stomach

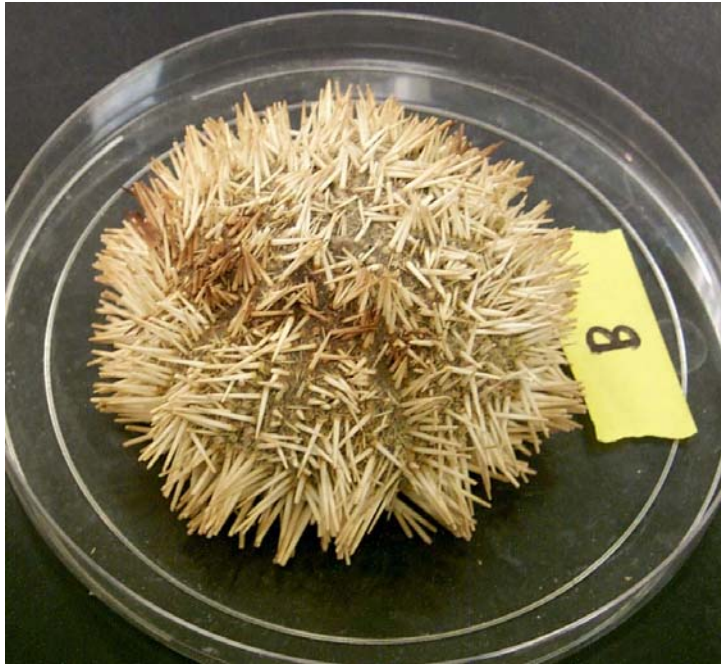
Cardiac Stomach - can be everted in some seastars!

Hepatic or pyloric caecum

B







## Class **Echinoidea**

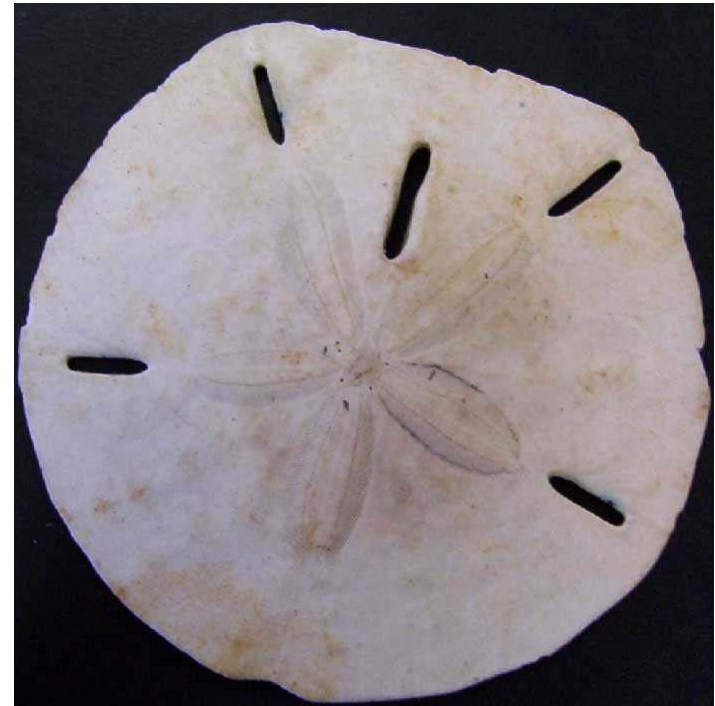
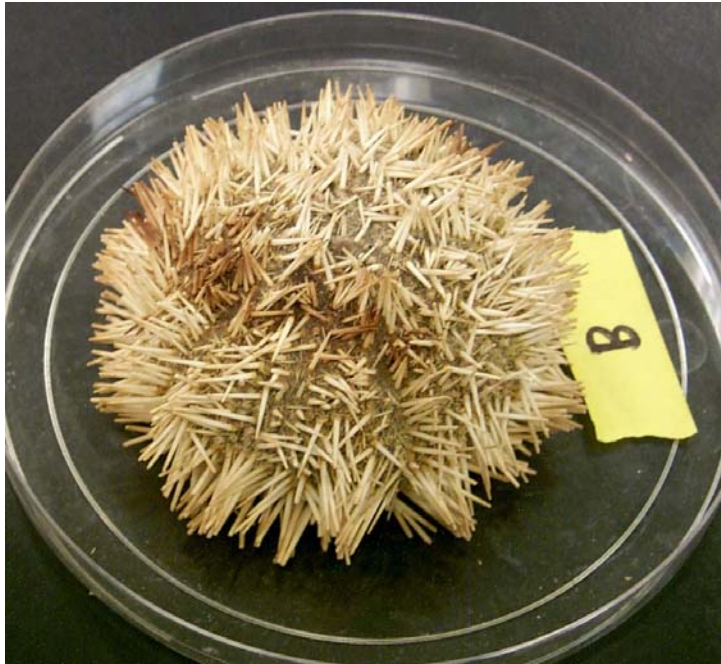
- **Sea Urchins, Sand Dollars**

What is the test is used for? What is it made of?

Aristotle's Lantern is used for what?

Name the other surface features. Functions?





# Echinoidea

## - Sea Urchins, Sand Dollars

Test – Support

Made up of ossicles

Aristotle's Lantern – Feeding

Pedicellariae are for cleaning the surface

Papulae are dermal branchiae for respiration

# Class **Crinoidea**

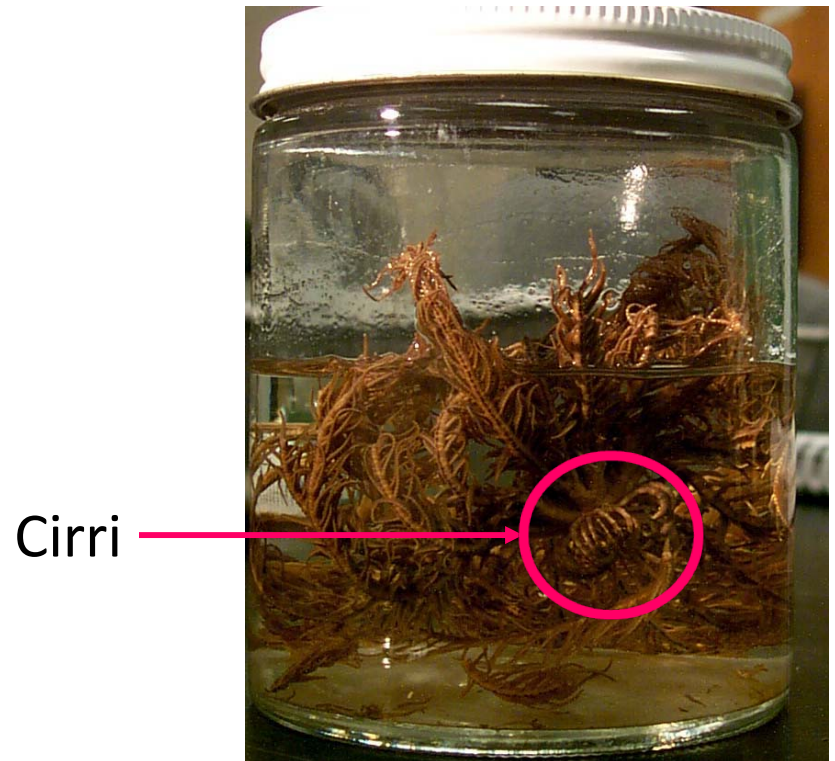
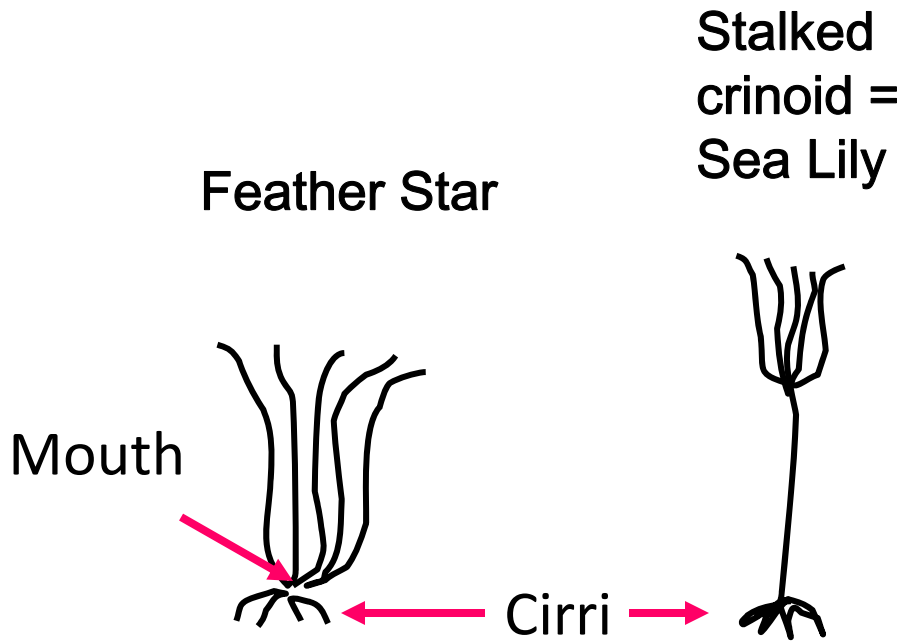
## - **Sea Lilies and Feather Stars**

Mouth on upper surface of body

Madreporite is oral instead of aboral

Tube feet used mainly for feeding

Sounds (and are)  
much prettier than  
our specimens  
would have you  
believe!



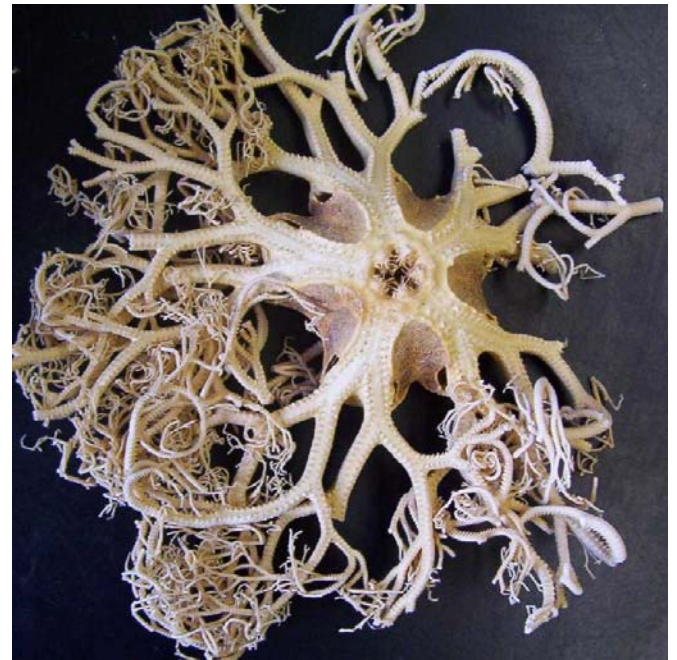
Class **Ophiuroidea**  
- **Brittle Stars, Basket Stars**

No Anus, all organs  
in central disk

What is the advantage of  
having an anus?

First phylum to have an anus?

What is special about a brittle  
star's tube feet?



Class **Ophiuroidea**  
- **Brittle Stars, Basket Stars**

No Anus, all organs  
in central disk

More efficient digestion  
– can specialize function

Nemertina?

No sucker but a plate on end of  
the podia (tube). Cannot be  
used for locomotion.

