Echinoderms

Phylum Echinodermata

All marine and include sea stars, brittle stars, sea urchins, sea cucumbers, and sea lillies

Have radial symmetry (How?)

Cambrian ancestors thought to be sessile

All free living

No ability to osmoregulate

Echinoderms

General Echinoderm Traits

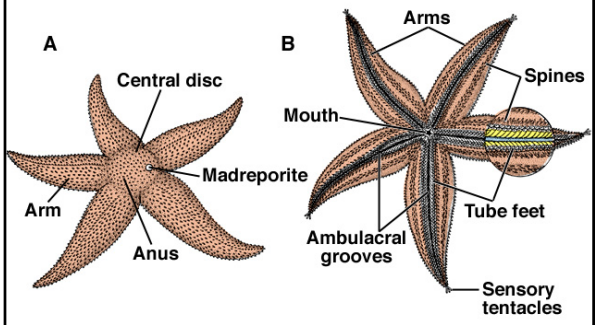
- Radial symmetry (bilateral larvae)
- Generally 5 or more radiate areas
  - Pentamerous design
- No head or brain
- Endoskeleton of calcareous ossicles
- Water – vascular system
- Respiration by dermal branchiae

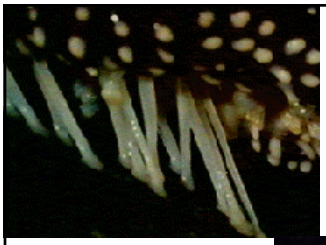
Echinoderms

Sea Star Form & Function

- Central disc with 5 or more arms (rays)
- "Open" ambulacral groove on each arm
- Rows of tube feet (podia)
- Spiny aboral surface with pedicellariae
- Dermal branchiae

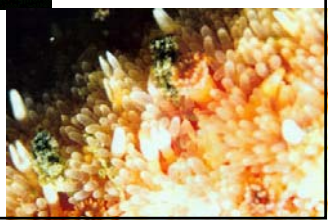
External anatomy of asteroid





Tube feet (podia) on oral surface

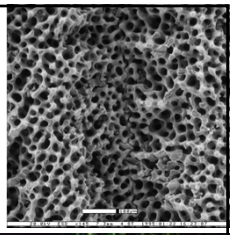
Pincer jaws (pedicellariae) on aboral surface



Echinoderms

Sea Star Form & Function

- Endoskeleton of calcareous plates (ossicles)
- Meshwork pattern called stereom
- Large fluid filled coelom
- Excretion and respiration at dermal branchiae and podia

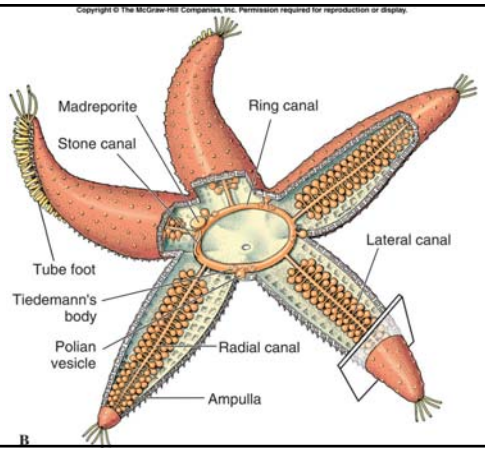


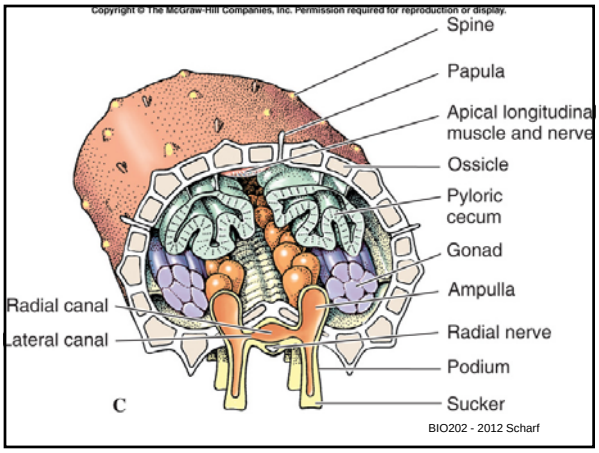
Echinoderms

Sea Star Form & Function

- Unique water-vascular system
- Canal system with opening (Madreporite)
- 1 radial canal with lateral canals to podia
- Podia with suckers and muscular sac (ampulla)
- Hydraulic pressure for movement

Pacific sea star





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Internal anatomy of a sea star

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