Echinoderms

- “spiny skin”

- starfish, brittle stars, sea cucumbers, sand dollars, sea urchins, and sea lilies

- radial symmetry

- **coelom** present

- Endoskeleton (inner skeleton)

* limy spines that project out from it
* gives echinoderms their characteristic rough skin

**- Water Vascular System**

* fluid-filled canals that end in a large number of tube feet
* tube feet expand and shrink to create a partial vacuum (act as suction cups which will attach an echinoderm to a surface)
* involved in many processes including: feeding, respiration, circulation, excretion, and locomotion

- most starfish have the ability to regenerate parts of themselves

Classification

(1) Crinoidea – sea lilies, feather stars

(2) Asteroidea – starfish (five large arms, ventral mouth)

(3) Ophiuroidea – brittle stars, serpant stars

(4) Echinoidea – sea urchins, sand dollars (spherical, disk-shaped bodies)

(5) Holothuroidea – sea cucumbers (flattened cyclinders wihout arms, mouth surrounded in tentacles)

Reproduction

- sexual

- most species have separate sexes

- others are hermaphroditic - each arm has either two ovaries or two testes

- fertilization takes place in the water – both sperm and eggs are released into the water

- if fertilization occurs a zygote develops – the zygote develops into a **larvae**

- a larvae will swim around for some time and eventually settle at the bottom of the sea to metamorphose into an adult

Homeostasis

Digestion

* tube feet obtain food
* one-way tube with anus

Circulation

* water vascular system
* coelomic fluid

Respiration

* tube feet absorb gases
* skin gills – projections that extend between the skeletal plates into water

Excretion

* diffusion
* ameboid cells engulf nitrogenous wastes and exit via gills

Nervous System

* nerve ring around mouth – nerves extend to each arm
* touch sensitive, may have a light sensitive eye spot





