Phylum Cnidaria

Hydra, jellyfish, coral, & sea anemones

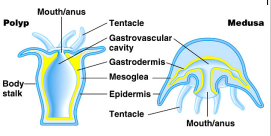
I. Body Structure

A. Polymorphism = more than one body form

- Pro:
  - Specialized structures for:
    1. Feeding (reduce competition)
    2. Reproduction
    3. Defense

Forms:

1. Polyp
2. Medusa

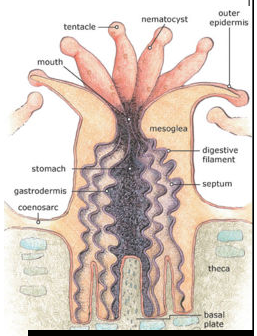


(a) Sea anemone: a polyp

(b) Jelly: a medusa

B. Polyp

- Tube with tentacles around the mouth
- Sessile
- **Pros:**
  1. **Live as a colony (protection in numbers)**
  2. **Attached so they aren't swept away**
  3. **Food settles on them**



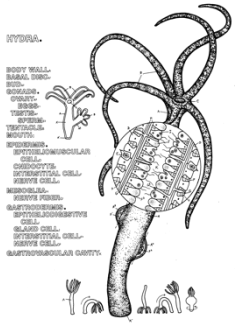
Coral polyp

C. Medusa

- Umbrella shape
- Tentacles around mouth
- Motile, Free-swimming
- **Pros:**
  1. **Live individually (don't share, less competition)**
  2. **UNattached so they move with te current and there movement draws in food**
  3. **Go to food**

Class Hydrozoa: The Hydras

- **Polyp phase is dominant** (spend life mostly in polyp stage)
- Generally microscopic
- Generally freshwater



Class Scyphozoa: The Jellies

- **Medusa stage is dominant** (spend life mostly in medusa stage)
- Come in a variety of forms
- Aggressive predators, and can be dangerous to humans

Jelly

Portugese Man-o-war

Class Anthozoa: Anemones & Corals

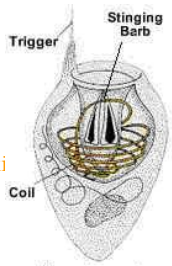
- Appear like plants but are animals.
- **Polyp form is dominant.**
- SKELETAL SYSTEM
  - Corals build calcium shells to protect themselves
    - Have symbiotic relationship with algae.
- Can build extensive masses which can form land masses.

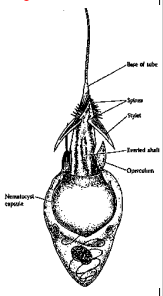
Anemone

Coral Polyps

Unique Character: Nematocysts

- Have nematocysts (stinging cells)
- Coiled thread discharges like a harpoon
- Contains neurotoxi
- Paralyzes prey





Discharged nematocyst

Discharged nematocyst

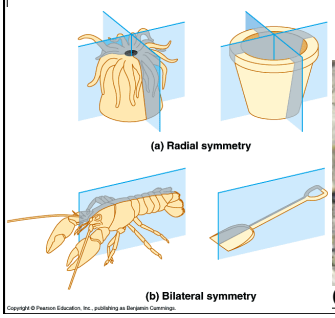
II. Level of Organization

A. Tissue

B. No organs

III. Symmetry:

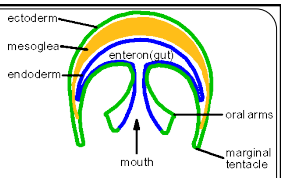
Cnidaria are the first of the animals to develop symmetry



Radial

Compass jellyfish

V. Digestive System



A. Carnivores (predators)

B. Process of feeding

1. Tentacles sting prey with nematocysts
2. Tentacles grab prey
3. Prey pulled into mouth using cilia and contraction of tentacles

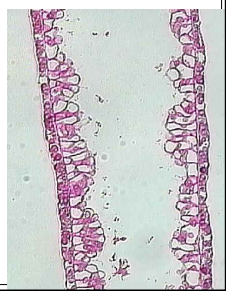
Digestive System: Process of feeding

4. Prey stuffed into gastro-vascular cavity (GVC)*
5. GVC makes enzymes, extra-cellular digestion (outside cell)
6. Undigested food back out mouth

*incomplete digestive tract (no separation between anus & mouth = MANUS)

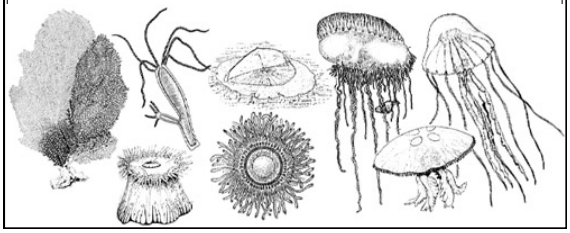
VI. Respiration

- Via diffusion
  - Pull O_2 out of the water and release CO_2 into the water across the surface of the organism
- Body is two cell layers thick
  - Facilitates diffusion



IX. Response

A. No cephalization (development of a head)
B. No Central Nervous System (CNS)
C. Nerve net around mouth – So they do have nerves



IX. Nervous System: Response to Environment

C. Sensory cells
1. Chemoreceptors (chemicals)
2. Thigmoreceptors (touch)
3. Photoreceptors (light)
   Ocelli (eyespots)
4. Statocysts (balance)

XI. Reproduction

Reproduction
- Sexual:
  - Reproduction can occur sexually by fertilization of egg and sperm forming larvae.
- Asexual:
  - Reproduction can also occur asexually through **budding**

Summary: Phylum Cnidaria

- Cnidarians Include **Hydras, jellyfish, sea anemones & corals**
- Radially symmetrical
- Acoelomate
- Two basic forms:
  - **Polyp**: Cylindrical form which attach bases to substratum
  - **Medusa**: Flattened, mouth down version of the polyp. Moves freely