

Radially symmetric animals

General features

- Two phyla: Cnidaria and Ctenophora
- Radial symmetry
- Tissue level of organization
- 2 well-defined germ layers: ectoderm and endoderm
- Gastrovascular cavity



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Radially symmetric animals

More features

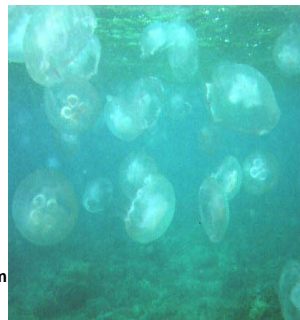
- Tentacles for food capture
- Nerve cells organized into nerve net
- Some locomotion
- Morphological variation within species
- Stinging and adhesive organelles



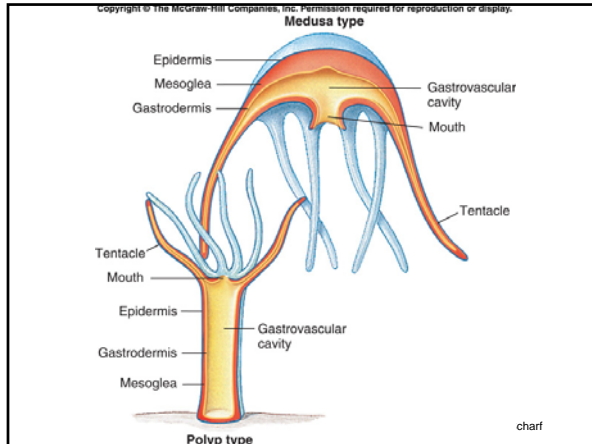
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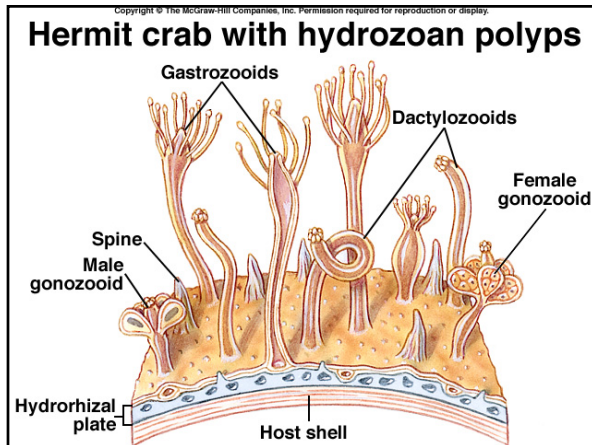
Phylum Cnidaria

- Nearly 10,000 species
- Most in shallow, warm marine habitats
- Very important ecologically
- Two main body types:
 - Polyp – sessile form
 - Medusa – free-floating form
- Dimorphism and Polymorphism



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Function in Cnidaria

Acquisition of food

Stinging organelles (nematocysts)

- Enclosed in cells (cnidocytes)
- Capsule with a coiled thread
- Thread contains toxic barbs

Stimuli for discharge

- Most have modified cilium = **cnidocil**
- Some have mechanoreceptor cells

Very abundant on tentacles

After firing, cell is absorbed and another produced

Filament
Barb
Cnidocil
Operculum
Cnidocyte

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Function in Cnidaria

Reproduction

Asexual

- Budding in polyps

Sexual

- Male and female gametes
- All medusae and some polyps reproduce sexually
- Either monoecious or dioecious

Some species reproduce both asexually and sexually

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Cnidaria taxa

Class Hydrozoa

- Most marine and colonial
- Typically include polyp and medusa
- Freshwater hydra most studied
 - Only polyp stage
 - Basal or pedal disc to attach
 - Feeds with nematocysts



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Cnidaria taxa

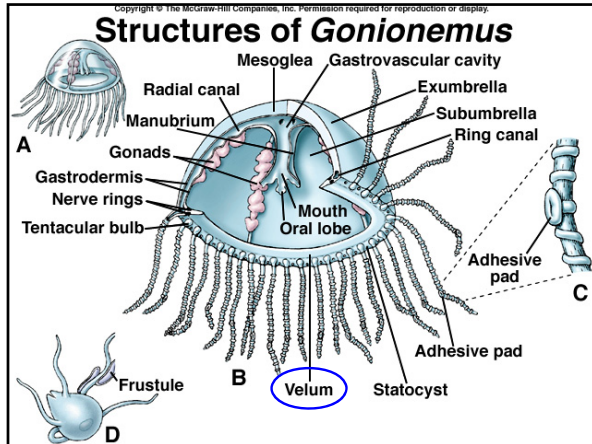
Class Hydrozoa

- Colonial hydroid groups more common
- Medusa stage present = hydromedusa (morphology distinct)



Portuguese man-of-war

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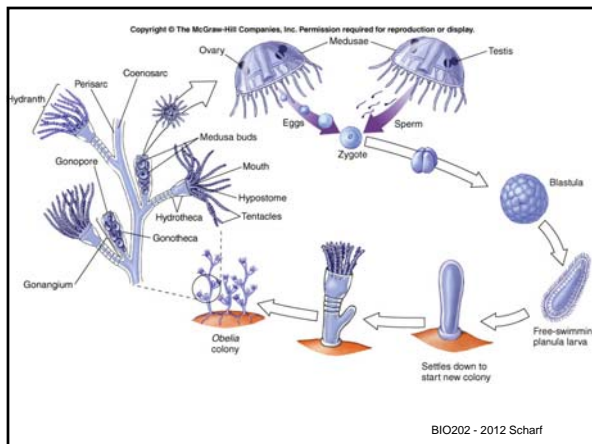
Cnidaria taxa

Class Hydrozoa

- Colonial hydroid groups more common
- Medusa stage present = hydromedusa (morphology distinct)
- Typical colony organized as branching stalk of polyps
- Asexually produce polyp and medusa buds, then medusae swim off to reproduce sexually
- First appearance of sense organs

Portuguese man-of-war

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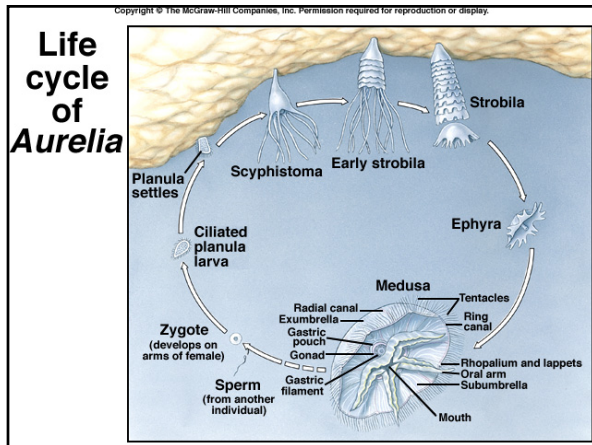
Cnidaria taxa

Class Scyphozoa

- True jellyfish, mostly floating
- No **velum** or shelf on bell
- **Manubrium** develops into 4 arms
- Pouches in gastrovascular cavity contain nematocyst lined filaments
- Dioecious, with some internal fertilization



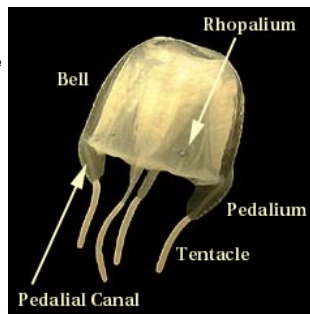
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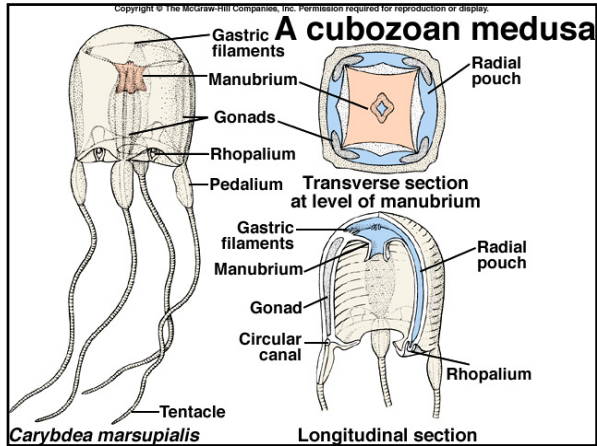
Cnidaria taxa

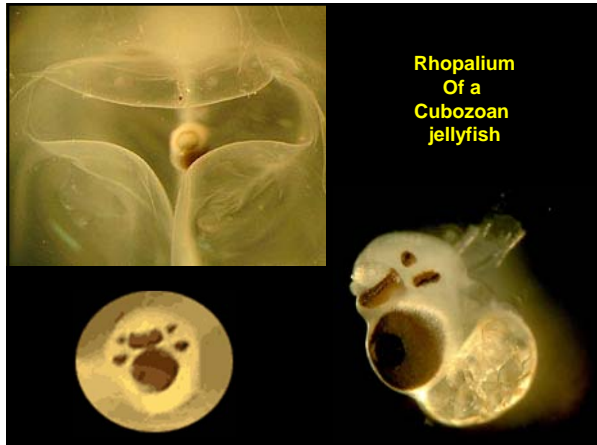
Class Cubozoa

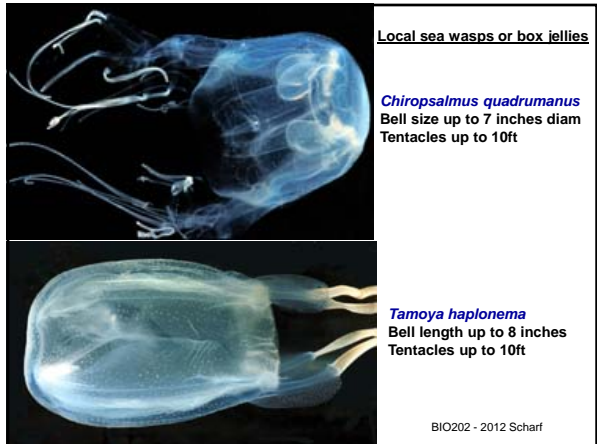
- Box jellies with bells almost square
- Tentacles found at corners
- Base of tentacles forms **pedalium**
- Bell edge not scalloped, but inner edge forms **velarium**
- Fast swimmers
- Can produce fatal stings



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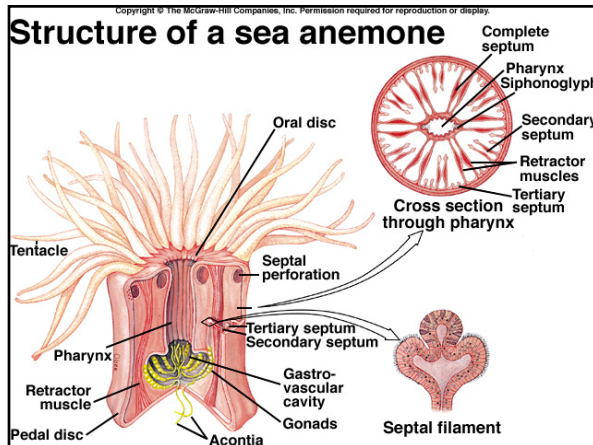
Cnidaria taxa

Class Anthozoa

- All polyps, NO medusa stage
- Largest class (6000 species)
- 3 subclasses (2 primary)
 - Hexacorallia (anemones, hard corals)
 - Octocorallia (soft corals)
- Mouth leads into pharynx
- Gastrovascular cavity is divided by **septa** (longitudinal mesenteries)



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Phylum Ctenophora

- Comb jellies, 150 species
- Rows of comblike plates for locomotion
- NO nematocysts, but have adhesive **colloblasts** instead
- Bioluminescent **photophores**
- No dimorphism; monoecious
- Anal canals for waste removal



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