Cnidaria (Coelenterates)

1. Introduction
    a. Jellyfish, Hydra, corals and sea anemones
    b. Mainly in tropical oceans
2. From and function
    a. Alternation of generations
        1. Two forms
            a, Polyp - tubular bodies attached to substrate
            b. Medusa - free-swimming - bell-shaped bodies
        2. Hydrozoans alternate between two forms
        3. Scyphozoans - medusa dominates
        4. Anthozoans - polyp dominates
    b Nematocysts - stinging organelles - really important distinguishing structure
        1. Present in all Cnidaria (nettle animal)
        2. Little cells that have a filament with barbs coiled up in it
            a. Discharges poison
            b. Has a little trigger called a cnidocil
            c. Brushes against animal, nematocyst discharges
        3. Mechanism of discharge
            a. High osmotic pressure
            b. When discharge occurs water rushes into capsule, operculum opens
            c. Forces thread out
    c. Nerve net
        1. Cnidarians have a neural net
            a. Nerve impulses transmitted from one cell to another
            b. Only nerves that transmit in both directions
        2. No central nervous system
        3. Neuromuscular system
            a. Nerves attached to muscles

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4. Result is rudimentary behavior

a. Coordinated swimming movements - ring nerves

3. Classes

a. Hydrozoa

1. Hydra

1. Body plan

a. Pedal disc for attachment

b. Hypotome - location of mouth

c. Gastovascular cavity - coelenteron

1. Open cavity in middle

2. Communicates with tentacles

2. Body wall

a. Two layers

a. Epidermis - ectodermal origin

b. Gastrodermis - endodermal origin

c. Mesoglea - stuff in between

3. Feeding and digestion

a. Feed on variety of small crustaceans, worms and insect larvae

b. Brush against tentacles - nematocysts fire - capture prey

4. Reproduction

a. Budding

b. Sexual reproduction - zygotes form cysts to overwinter

2. Hydroid colonies

1. Alternation of generations

a. See picture

3. Other hydrozoans

1. *Physalia*

a. Float - pneumatophore

b. colony of polyps hangs down

b. Class Scyphozoa

1. Float with minimal swimming ability

2. Life cycle

a. Polyp stage reduced

b. Planula larva - settles - becomes schypistoma

c. Breaks into smaller units - strobila

d. Bud off medusae

b. Feed by entangling prey in tentacles

c. Class Anthozoa

1. Sea anemones

a. Form like *Hydra* polyp, but more muscular

b. Gastrovascular cavity divided into 6 chambers by septa (mesenteries)

1. Aconital threads - have nematocysts and can be everted to capture prey or for defense

c. Food

1, Predators - catch fish on nematocysts

2. Symbiotic zooxanthellae - recurrent theme in Anthozoa

a. Provide photosynthate in exchange for mineral nutrients

2. Corals

a. Polyp forms an exoskeleton of calcium carbonate

b. Lay down calcium carbonate

1. Living coral tissue covers the calcium carbonate skeleton

2. Polyps are located in cups on the surface of the calcium carbonate

c. Hermatypic corals - form reefs

1. All have symbiotic zooxanthellae

2. Solution to the problem of nutrient poor tropical seas

3. Reefs have a complex structure

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