COLONIAL LIFE

Sponges
Archaeocythans
Cnidarians

Taxonomy of Fossil Life Review

- Kingdom Monera – Stromatolites
- Kingdom Protista
  - Foraminifera (amoeba)
  - Radiolaria (amoeba)
  - Dinoflagellates
  - Diatoms
  - Acritarchs
- Kingdom Animalia
Kingdom Animalia

- Metazoan - multicellular
  - Larger size than Protista (usually)
  - Tissue level of organization or higher
  - Division of labor between cells
  - Do not photosynthesize
  - Heterotrophic (eat other organic material, living things)

- Colonial Life
  - Multicellular colonies or organisms
  - Without fully developed systems e.g. digestive, respiratory, etc.

Kingdom Animalia

- Phylum Porifera (Sponges)
  - Class Hexactinellida (glass sponges)
  - Class Calcarea (calcareous sponges)
  - Class Demospongea (organic sponges)
  - Class Sclerospongea (Stromatoporids)

- Phylum Archaeocyatha

- Phylum Cnidaria
  - Class Anthozoa
    - Order Tabulata (tabulate, honeycomb, chain corals)
    - Order Rugosa (horn corals, regular and irregular)
    - Order Scleractinia (modern and fossil hexacorals)
Phylum Porifera

- Next level of organization after Protista
- 2 types of cells (flagellate and guard cells)
- Cells live short time separated from whole
- Aquatic (marine and fresh water)
- Protist group so resembles choanocytes, may be ancestral
Sponge

Length 90 mm, Demospongiae
Hydnoceras tuberosum glass sponge, NY Upper Devonian
*Girtyoclia typica* clacareous sponge, Penn. TX

Stromatoporid
Phylum Archaeocytha

- Extinct Phylum similar to sponges
- Unique perforated double-walled conical construction
- Formed enormous reefs in early and middle Cambrian, then extinct.
- Preferred shallow 20-30m carbonate shelf, not muddy, in photic zone.

Reconstruction of an archaeocyathid
Silicified archaeocyathids, etched out of limestone

Phylum Cnidaria

- Next level of organization- 2 tissues
  - Ectoderm (may produce hard skeleton)
  - Endoderm (digestion, respiration, etc.
- No head or tail – one cavity (coelenteron)
  - Mouth, tentacles, nematocysts
- Life stages – medusa, polyp
Diagram of Corallite with soft tissue

Paleozoic Rugose horn coral
Reefs