

## **PHYLUM PORIFERA (Ch. 17)**

### **1. KINGDOM ANIMALIA**

animals - multicellular eukaryotes

- no cell wall or chloroplasts
- ingestive mode of nutrition

3 subkingdoms

- (Mesozoa) - Phylum Mesozoa
- **Parazoa** - Phylum Porifera
- **Metazoa** - 32 phyla

### **2. PHYLUM PORIFERA**

sponges - 5k species, size mm to 2 m

- symmetry irregular or radial

- multicellular - cells still independent
- cellular grade - no true tissues yet
  - mesoglea (gelatinous matrix)
  - totipotent (can transform into any cell)
- internal fertilization
  - sperm reaches ova inside mesoglea

ecology - marine bottom-dwelling

- colonial & sessile, commensalism

evolution - diverged early from other animals

### **3. CANAL SYSTEMS**

pores - water into canal system

canals - lined by flagellated cells

spongocoel - large central cavity

osculum - water exits through large opening

asconoid system - simple vase-shape, no canals

- flagellated cells in spongocoel

syconoid system - many canals in thicker walls

leuconoid system - most complex & common  
- branched canals fill up spongocoel

#### **4. SKELETAL SYSTEMS**

spicules - pointed needles inside mesoglea  
- prevent collapse of canal system

calcareous spicules - 2, 3, or 4 points, reacts with acetic acid

siliceous spicules - 2, 4, or 6 points  
- reacts with sodium hypochlorite (bleach)

spongin - spongy protein inside mesoglea

#### **5. CLASSES**

1. calcareous sponges - simplest, usually vase-shaped  
- calcareous spicules (2-3-4 points), all 3 canal systems
2. glass sponges - deep sea, flower-basket shape  
- siliceous spicules (6 points), syconoid or leuconoid
3. bath sponges - most species, spongin, leuconoid only  
- some with siliceous spicules (2-4 points)

#### **6. NUTRITION**

filter-feeding - choanocyte (collar cell, flagella beats water thru collar to trap food)

mutualism - symbiotic green algae

digestion - intracellular, amebocytes

#### **7. REPRODUCTION**

asexual - budding (form colonies)  
- gemmule (freshwater if drought)

sexual - monocious (not simultaneous)  
- panmixia (release sperm into current)  
- internal fertilization (ova in mesoglea)

#### **8. OTHER SYSTEMS**

diffusion - food, oxygen, waste

locomotion - adults sessile, larvae swim