PHYLUM PORIFERA

- Level of body organization?
- Symmetry?
- Name of Middle layer? = Acellular matrix
  - location of structural elements & has cells moving through it.
    - Name the structural elements.
    - Which components are used to ID sponges?
    - Name the moving cells. Form of locomotion?

- Diagnostic cell type for sponges?
  Diagnostic = unique – occurs only in sponges.

- How do we classify sponges?
PORIFERA

- **CELLULAR** level of body organization
- **ASYMMETRICAL** (entire body) or RADIAL (not perfect)
- **Middle layer** = **MESOHYL**
  - Spongin (a collagen protein) & Spicules
  - Spicules (Ca or Si) are used to ID sponges
    - Calcarea (Ca)
    - Demospongiae (Ca &/or Si)
    - Hexactinellida (Si)
  - Amoebocytes = archaeocytes are amoeboid

- **Diagnostic cell type**: **CHOANOCYTE**
  - flagellated collar cell.
  - *(Collar cells exist in other phyla but they are not flagellated.)*
Classification of sponges is by BODY TYPE

Asconoid = smallest

Syconoid = middle-sized

Leuconoid = Largest

TYPES are not taxa but basic groups ... based on their internal architecture ... i.e. the location of their WHAT?
In lab you could only look at a whole specimen (as above) in a jar or at prepared slides.

**PHYLUM** Porifera

**TYPE** ?
PHYLUM *Porifera*
TYPE *Asconoid*

NOTE: Many of our slide specimens have been stained red or green. *(Look like ........??????)*

This is the smallest and simplest sponge type. *(i.e. they are **too small** to dissect.)* Name often used for this most unit?
BSU – Basic Sponge Unit.
Choanocytes are located in the spongocoel.

What is the function of a gemmule?
PHYLUM Porifera

What is this?

Name this aperture?

What is this?
Terms you need to know: spicules, spongocoel, bud & osculum. Compare to fig 1.3-A in your lab manuals.
Incurrent Pores (Ostia), Porocytes and Prosopyle

- Incurrent pores or ostia are the openings through which water first enters a sponge. These are usually formed by several cells.

- The PROSOPYLE is the name given to the entryway (pore) leading into the area of choanocytes. It is formed by one donut-shaped cell, the porocyte.
Asconoid Sponges

As an **incurrent pore or ostium**, this opening brings **water directly into the sponge**. (BLACK)

It also serves as a **prosopyle**, (BLUE) bringing water into contact with the **choanocytes** lining the **spongocoel**. Thus it has a dual function, serving as the **incurrent pore or ostium** and as a **prosopyle**.

The actual opening is formed by a single cell, the porocyte.
Syconoid Sponges

The **ostia/incurrent pores** in syconoid sponges are generally made of several cells (pinacocytes).

(DOTTED BLACK) Water enters the sponge through this entryway and moves into the incurrent canal.

Water leaves the incurrent canal area to enter the **radial canal** (area of **choanocytes**) via the **prosopyle** (a porocyte cell)

Water leaves the area of choanocytes via a much larger pore, made by many cells = the **apopyle**.
Sycons (Syconoid sponges) are the ‘middle-sized’ sponges. Their choanocytes are located in the ? canals.
Water flow: Ostium -> Incurrent canal (I) -> Prosopyle channel (P)
(a porocyte) -> Radial canals (R) (area of choanocytes) -> Apopyle channel (A) -> Spongocoel (S) -> Osculum (O)
Phylum?
Class?
Choanocytes are located where?
No classes! TYPES! Leucons/Leuconoid sponges the most complex. Choanocytes are located in flagellated chambers. Any large sponge is most likely a leuconoid - type sponge.
Leuconoid Sponges

The **ostia** (several cells) allow water to enter incumbent canals.

Water leaves these to enter the flagellated chambers (area of choanocytes) via the **prosopyles (porocytes)**.
Sponge Reproduction
Sponges are usually monoecious but can be dioecious

**ASEXUAL**
- Marine
  - Budding
  - Fragmentation
  - Regeneration
- Freshwater sponges
  - Gemmules
  - + 3 methods above

**SEXUAL**
- Male & female gametes are formed.
  - Archeocytes → eggs
  - Choanocytes → sperm
- Fertilization is involved.
- Planktonic larvae or mini flagellated colonies are released to colonize new areas.