PORIFERA

• Level of body organization?

• Middle layer = ?
  Acellular matrix = location of structural elements (spicules & spongin) & has cells moving through it = archeocytes

• Diagnostic cell type: ?
PORIFERA

- **CELLULAR** level of body organization

- Middle layer = **MESOHYL**
  Acellular matrix = location of structural elements (spicules & spongin) & has cells moving through it = archeocytes

- Diagnostic cell type: **CHOANOCYTE**
  = flagellated collar cell
The Three TYPES of Sponges

Asconoid = smallest

Syconoid = middle-sized

Leuconoid = Largest
In the jar, these sponge specimens look like white or transparent plant roots.

In lab you could only look at a whole specimen (as above) in a jar or at prepared slides.
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 primitive 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 hole?
PHYLUM Porifera
TYPE Asconoid

Terms you need to know: spicules, spongocoel, bud & Osulum. 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 entry hole/channel/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**.

It also serves as a **prosopyle**, bringing **water into contact with the choanocytes** lining the **spongocoel**. Thus it has a dual function.

Thus the **incurrent pore or ostium** is serves as a **prosopyle**.

The actual opening is formed by 1 cell, the porocyte.
Syconoid Sponges

The **ostia/incurrent pores** in syconoid sponges are generally made of several cells. Water enters the sponge through these pores and moves into the incumbent canal.

Water leaves this 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**.
The choanocytes are located in the radial canals. These are the ‘middle-sized’ sponges.
Water flow: **Ostium** -> **Incurrent canal (I)** -> **Prosopyle channel (P)** (a porocyte) -> **Radial canals (R)** (area of choanocytes) -> **Apopyle channel (A)** -> **Spongocoel (S)** -> **Osculum (O)**
Choanocytes are located where?
These are examples of the most complex sponge type. The choanocytes are located in the many flagellated chambers. The phylum is Porifera and the type is Leuconoid.

The choanocytes are located in the many flagellated chambers.
The **osti**a (several cells) allow water to enter incumbent canals. Water leaves these to enter the flagellated chambers (*area of choanocytes*) via the prosopyle (porocyte).
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 become eggs*
  *Choanocytes filter sperm out of the water*
- Fertilization is involved.
- Planktonic larvae or mini flagellated colonies are released to colonize new areas.