

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



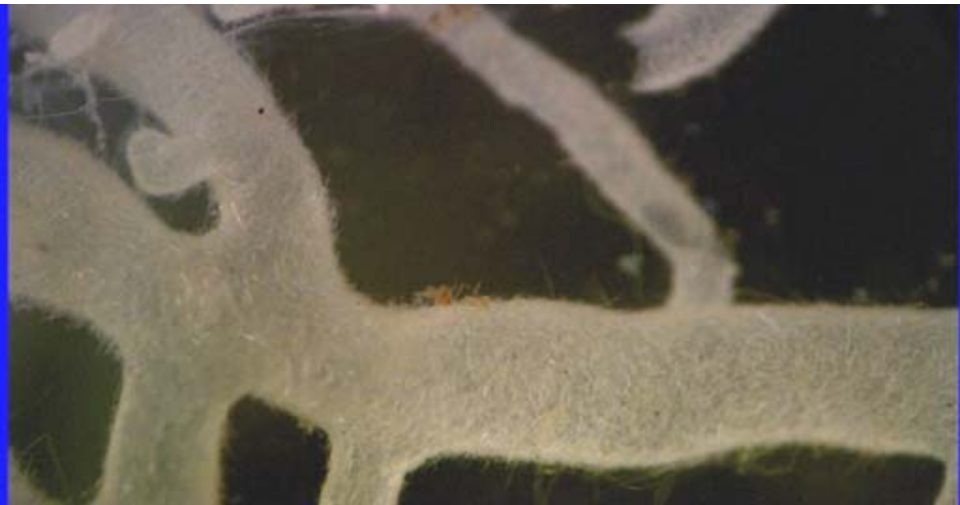
Syconoid = middle-sized

TYPES are not taxa but basic groups ...based on their internal architecture ...i.e. the location of their **WHAT?**

Leuconoid = Largest



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



PHYLUM Porifera

TYPE ?

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 unit?**



PHYLUM Porifera
TYPE Asconoid



BSU - Basic Sponge Unit.

Choanocytes are located in the spongocoel.

What is the function of a gemmule?

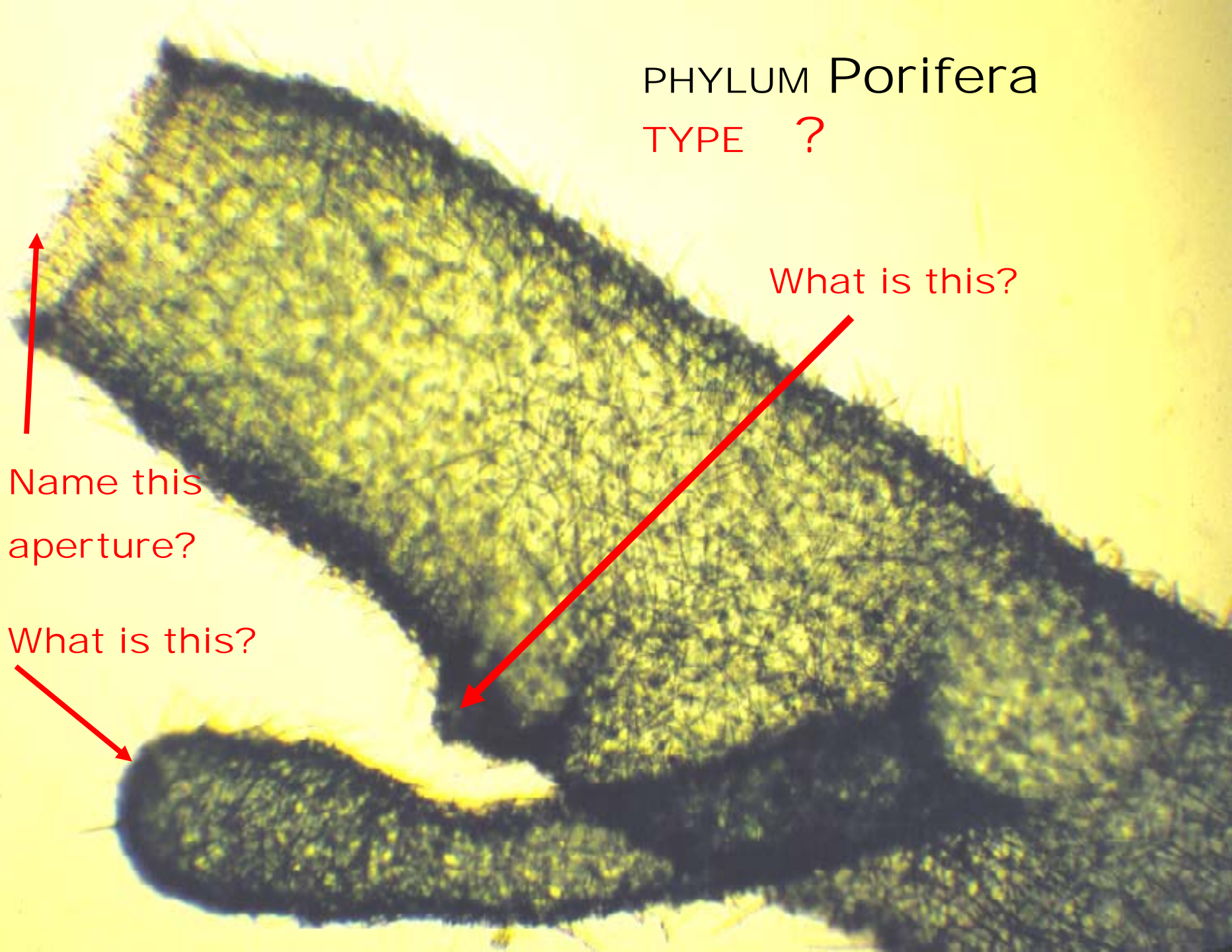
PHYLUM Porifera

TYPE ?

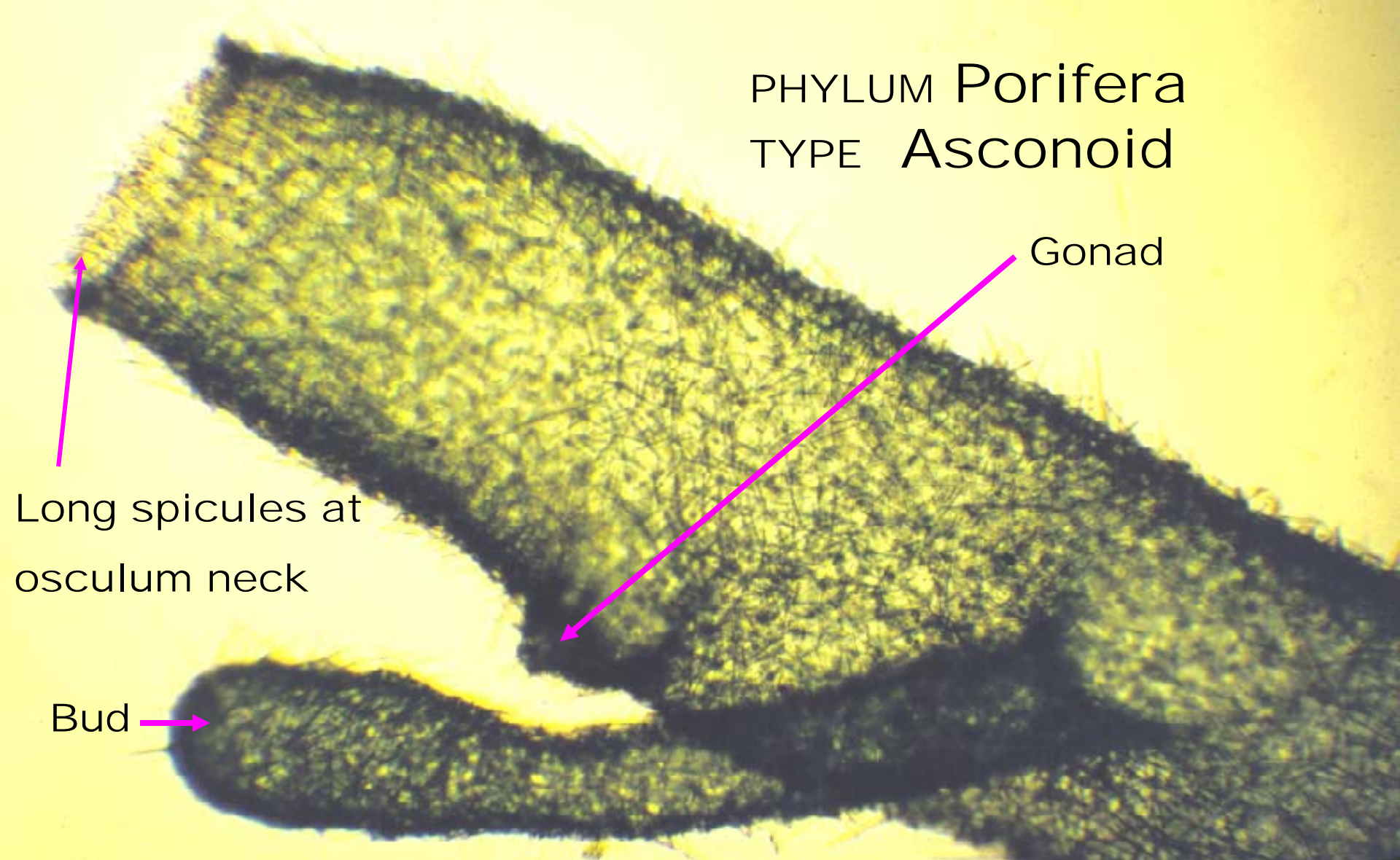
What is this?

Name this
aperture?

What is this?



PHYLUM Porifera
TYPE Asconoid



Gonad

Long spicules at
osculum neck

Bud

Terms you need to know: **spicules**, **spongocoel**, **bud**
& **osculum**. Compare to fig 1.3-A in your lab manuals.

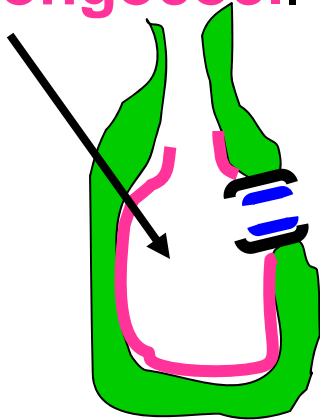
Incurrent Pores (Ostia), Porocytes and Prosopyles

- 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**.

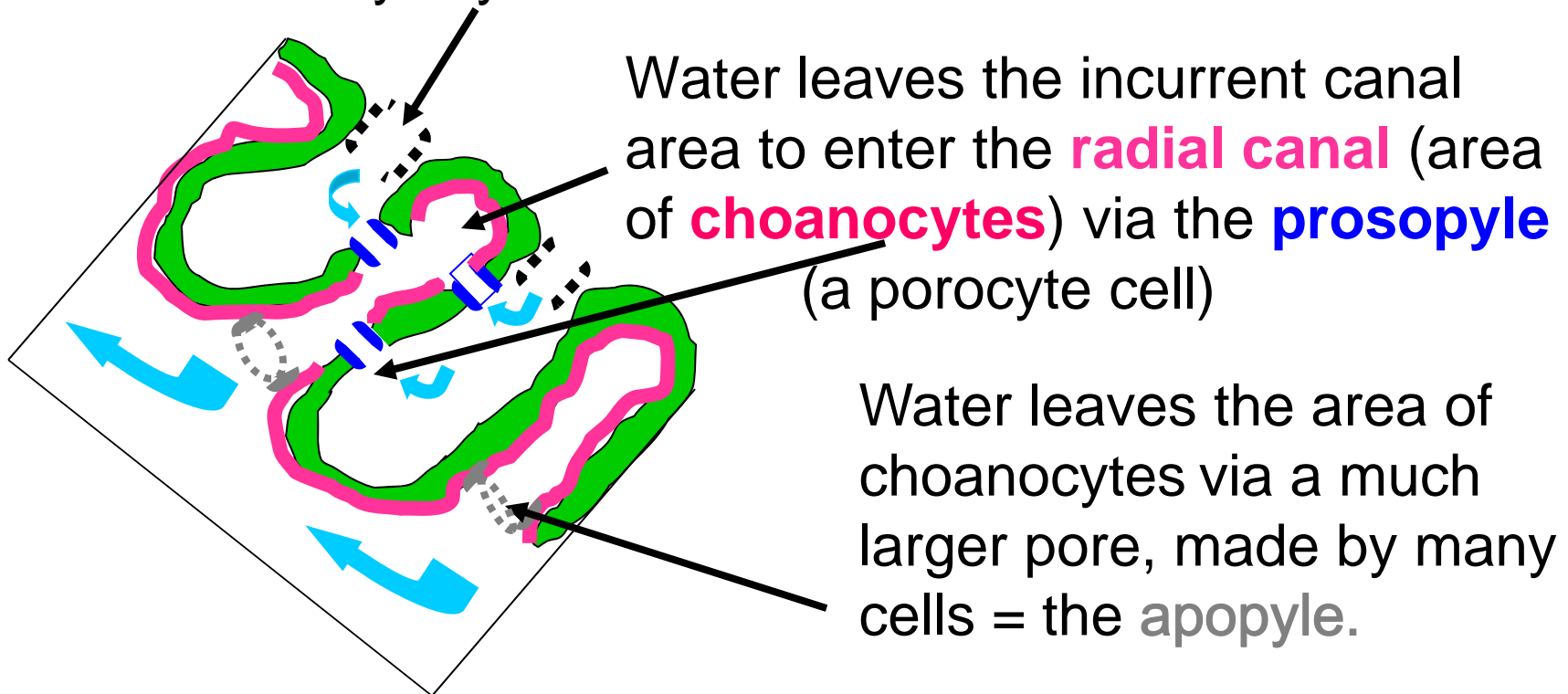


Thus it has a dual function, serving as the incurrent pore or ostium and as a **prosopyle**.

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.

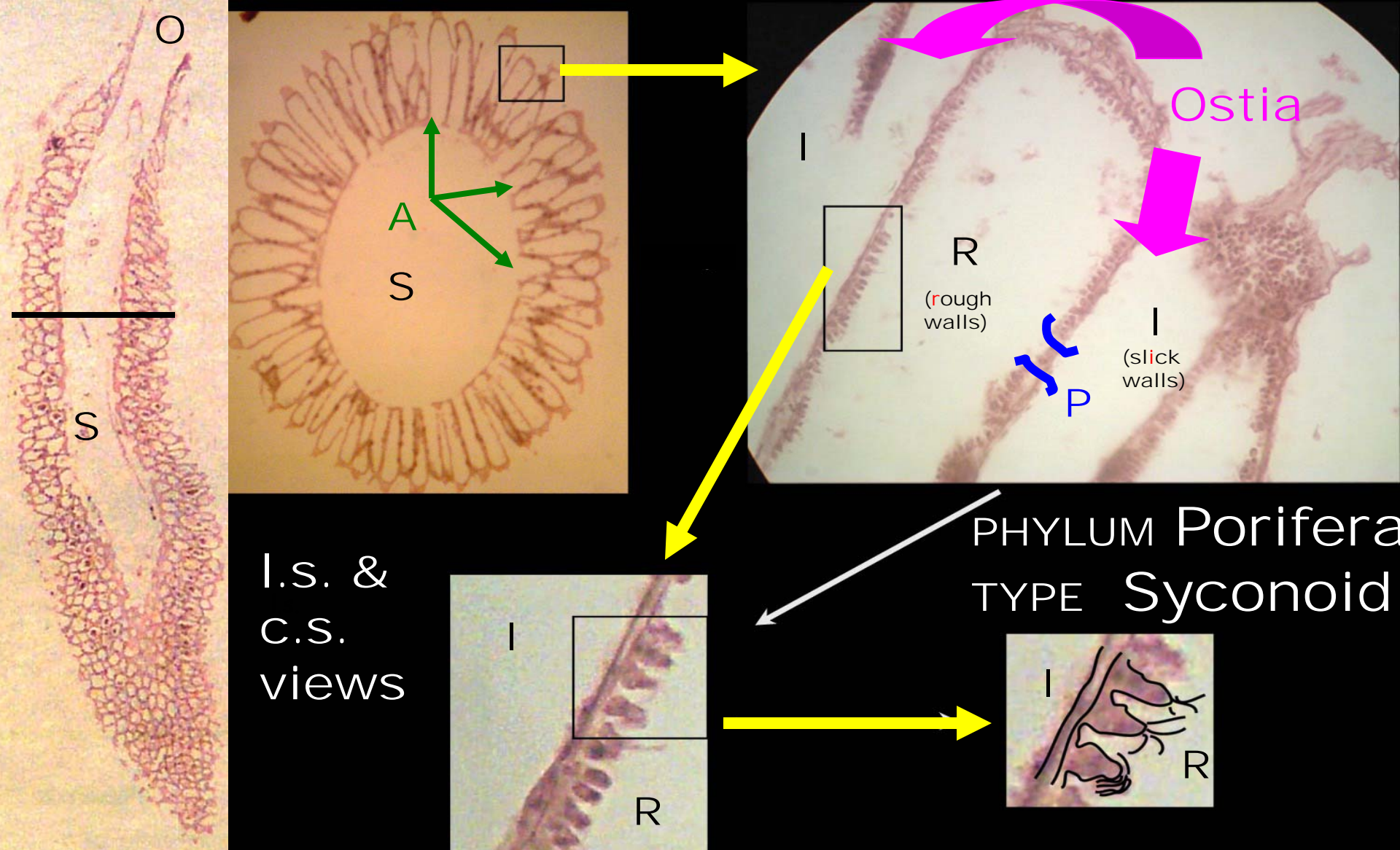


Note the prominent spicules



PHYLUM Porifera
TYPE Syconoid

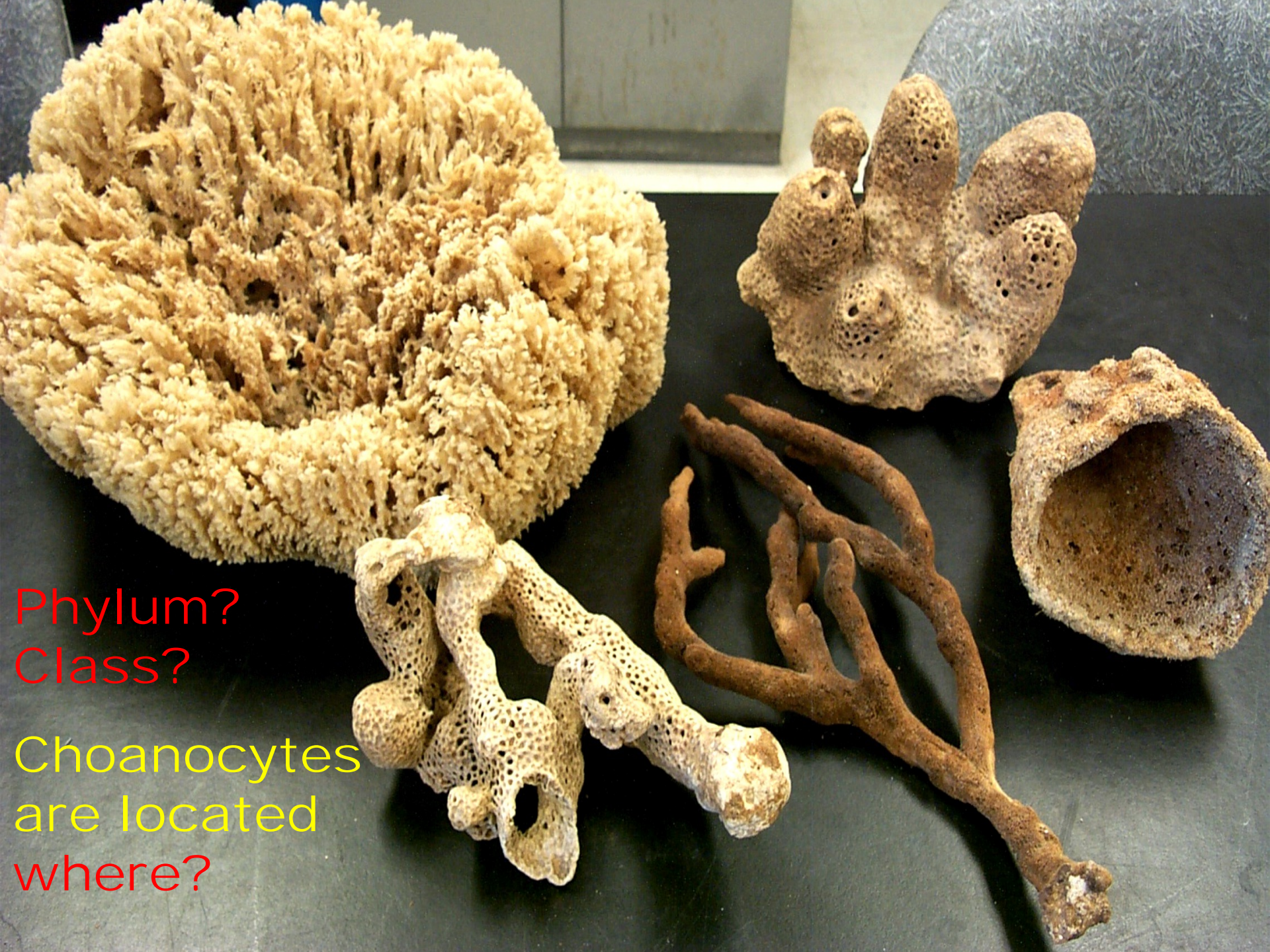
Sycons (Syconoid sponges) are the 'middle-sized' sponges.
Their choanocytes are located in the ? canals.



PHYLUM Porifera
 TYPE Syconoid

I.S. &
 C.S.
 views

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?

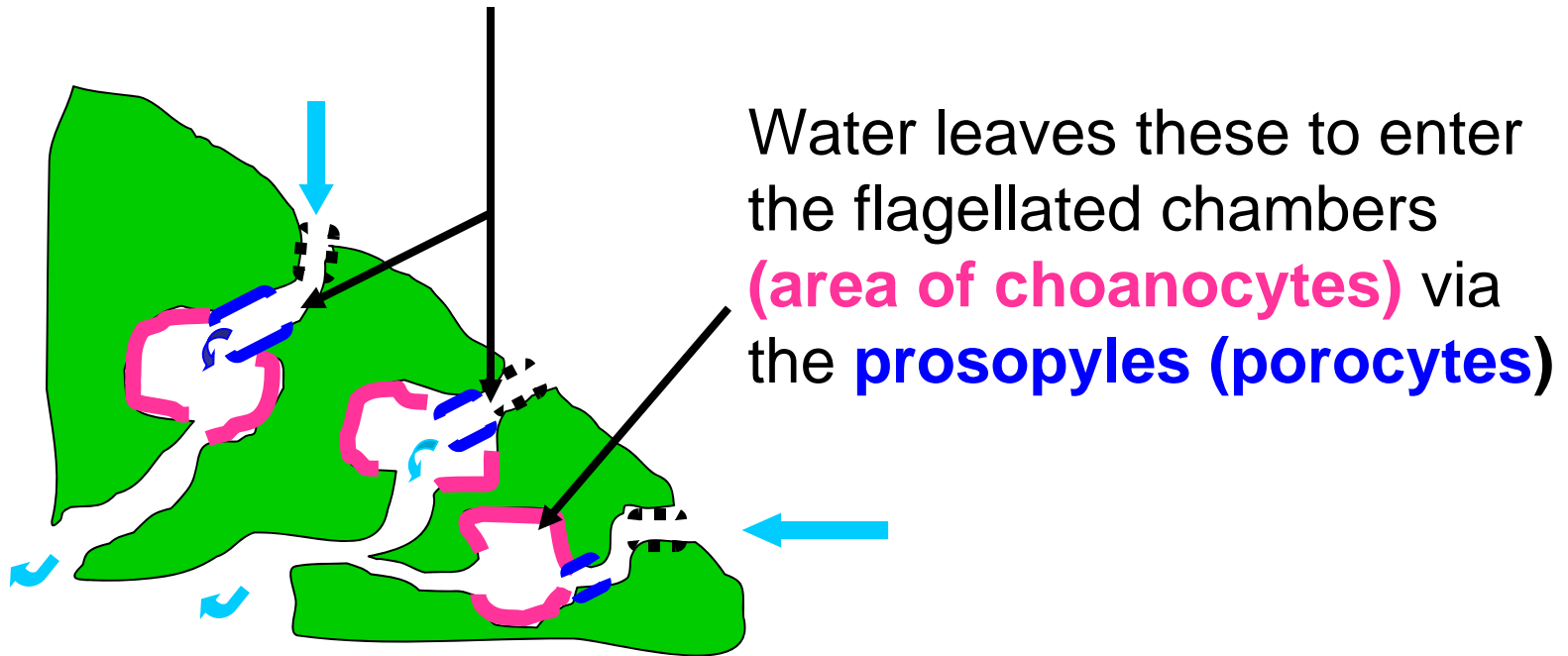


PHYLUM Porifera
TYPE Leuconoid

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 incurrent canals.



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.