

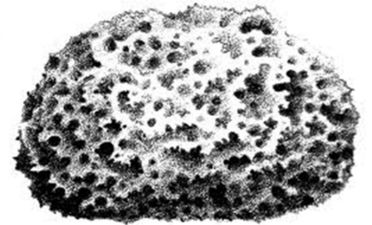
Phylum Porifera - Sponges (Section 26-2)

What is a Sponge?

- Sponges are in the phylum **Porifera** which means " _____ "
- Sponges live their entire _____ attached to a single spot (_____ - DO NOT move)
- Asymmetrical
- Most *ancient* of all living animals. They first appeared about 580 million years ago!

Sponges are classified as animals because they are:

- multicellular
- _____
- heterotrophic
- have _____
- contain a few specialized cells



Form and Function in Sponges

Sponges DO NOT have a mouth or gut, and they have _____ or _____

Body Plan

Sponges are **asymmetrical**; they have no front or back ends, no left or right sides

The body of a sponge forms a wall _____ through which water is circulated continually

Structure:

- Epithelial-like cells

Function:

- _____ in response to _____ or *irritating chemicals* to close the pores in the sponge

Structure:

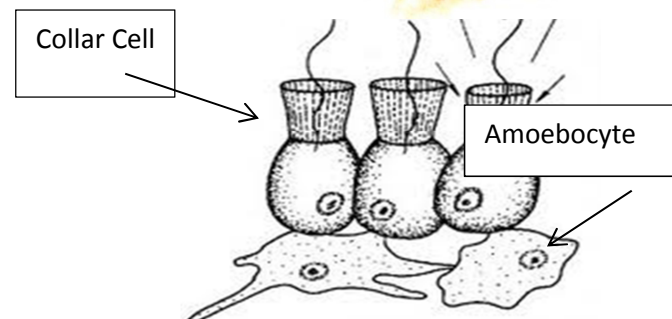
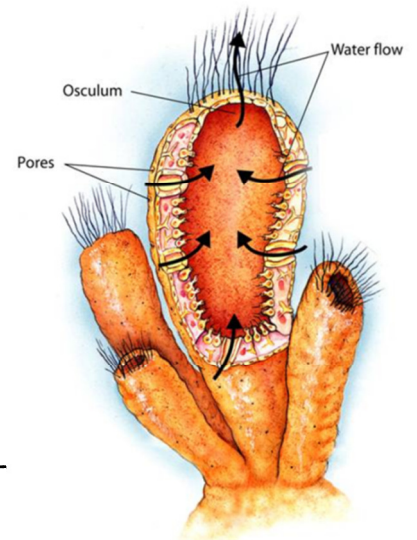
- Pore Cell (Porocyte)

Function:

- _____ carrying food and oxygen _____ the sponge's body

Structure:

- Collar Cell (Choanocyte)



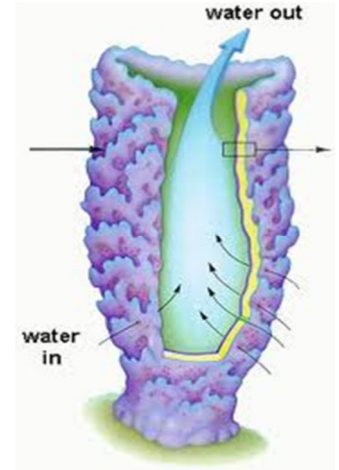
Function:

- Has a flagellum that _____ back and forth, _____ into the sponge

_____ through _____ located in the body wall and _____ through the _____, a large hole at the top of the sponge

Importance of Water Flow

- To allow for **respiration** (gas exchange) and **excretion** of cellular wastes, _____, from the cells lining the _____ of the sponge cavity
- To provide a _____ (for filter-feeding)
- _____ cells and the resulting larvae out of the sponge's body (**reproduction**)



Form and Function in Sponges - Body Plan

Structure:

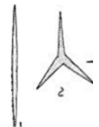
- Amoebocyte

Function:

- Specialized cells that move around within the walls of the sponge to _____ to other cells, aid in reproduction, and _____ that help make the _____

Structure:

- Spicules
 - spike-shaped structure, made of _____ or _____
 - *Note:* Softer sponges have **spongin protein**, instead, to give them structure



Function:

- Form the _____ systems of sponges

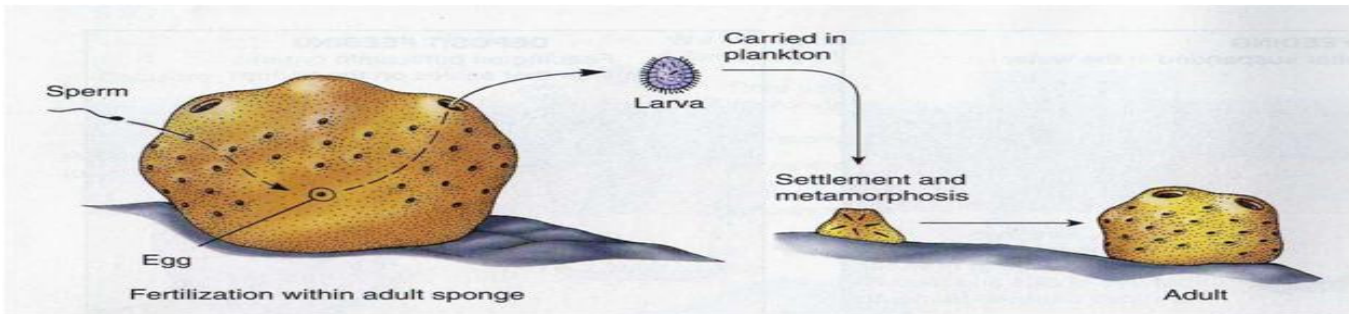
Feeding

Sponges are _____

- As water moves through the sponge, microscopic _____ particles are _____ on the _____, and then engulfed *via endocytosis*, by the **collar cells** that line the body cavity
- Collar cells can then _____ to the **amoebocytes**, so it can be _____/shared throughout the sponge's body

Reproduction

- Most sponges are **hermaphrodites** (produce _____ eggs & sperm)
 - Fertilized eggs develop into _____ (or *motile*) **larvae**



Sexual Reproduction

- Sponges can reproduce _____
- In sexual reproduction, _____ from the osculum, into surrounding water
 - Neighbouring sponges' eggs are _____ the sponges' body, in a process called **internal fertilization**

Asexual Reproduction

Budding

- External growth on sponge called a _____, floats away, settles, and grows
 - Can create a colony of sponges if it doesn't float far

Fragmentation

- _____ the parent and grows into a new sponge

Gemmules

- Sphere of _____ surrounded by _____ formed under stressful conditions
 - Survive harsh conditions that would kill adults
 - Gemmules grow into adults when conditions are favourable

Support and Defense

- Soft-bodied
- Spicules
 - Made of glasslike material or calcium carbonate (CaCO_3)

- Internal framework made of silica or _____ (fibrous protein-like material)
- Toxic chemicals

Ecology of Sponges

- Sponges _____ for marine animals such as snails, sea stars, and shrimp
- Filter feeding helps clean the water
- "Boring sponges" _____ that _____ old shells, coral & other hard items requiring recycling in the water

Try This:

In sponges, a spike-shaped structure made of chalklike calcium carbonate or glasslike silica is a(an)

- Spicule
- archaeocyte
- choanocyte
- epidermal cell

Sponges are

- detritivores.
- carnivores.
- filter feeders.
- herbivores

An immature stage of an organism that looks different from the adult form is a(an)

- gemmule.
- larva.
- archaeocyte.
- choanocyte.

Specialized cells that use flagella to move water through the sponge are

- gemmules.
- pores.
- spicules.
- choanocytes

Sponges can reproduce

- sexually only.
- asexually only.
- both sexually and asexually.
- -by metamorphosis

How do sponges feed, respire, eliminate waste?