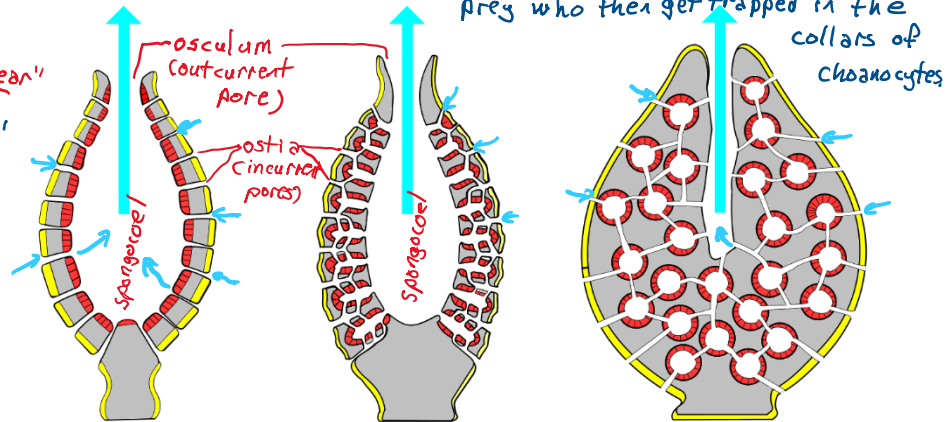


Phylum Porifera

The movement of H_2O through the sponge is to draw in their prey who then get trapped in the collars of choanocytes

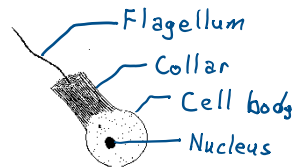


Porifera body structure.

Colour-coding: Yellow: pinacocytes; Red: choanocytes; Grey: mesohyl; Pale blue: water flow

Structure types: Left: asconoid; Middle: syconoid; Right: leuconoid

By Philcha - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=5100738>

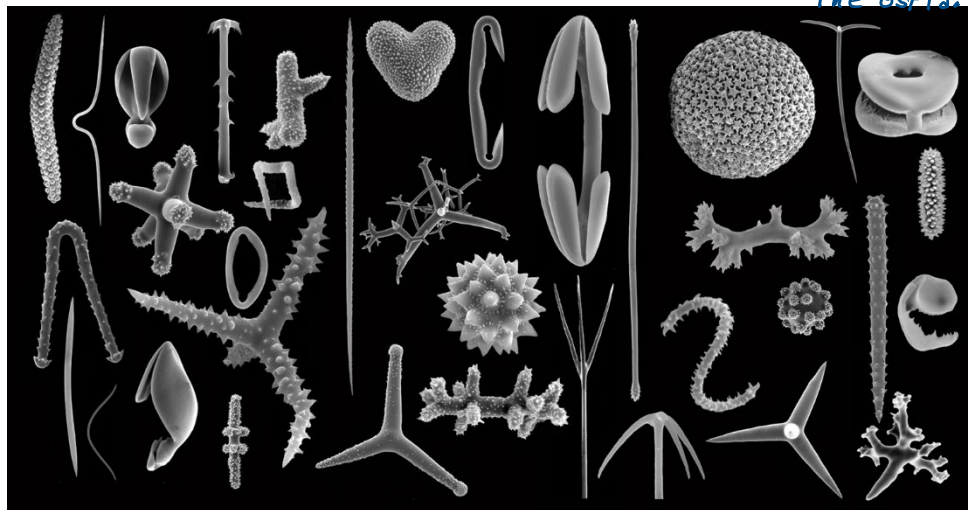


Choanocyte

"collar" "cell"

Choanocytes line the channels and cavities of sponges. The coordinated beating of the flagella pushes the water into the spongocoel and out the osculum. This creates negative pressure in the sponge and draws H_2O into the ostia.

Sponges are considered to be the first animals. (Some genetic evidence indicates the Ctenophora, the comb jellies, are older.) Sponge evolution dates to more than 600 mya, predating the Ediacaran biota. Presently there are thousands of species of sponges, both marine and freshwater. All sponges are aquatic. Sponges use the cellular communication first evolved in the bacteria, and the evolution of collagen, the most common protein in the animal kingdom to build multicellular bodies. Their bodies are often reinforced by spicules made of protein (spongin), $CaCO_3$ and SiO_2 (in the glass sponges), seen at right. Collagen is the "glue" that keeps sponges together.



By Rob W. M. Van Soest, Nicole Boury-Esnault, Jean Vacelet, Martin Dohrmann, Dirk Erpenbeck, Nicole J. De Voogd, Nadiezhda Santodomingo, Bart Vanhoorne, Michelle Kelly, John N. A. Hooper - Van Soest RWM, Boury-Esnault N, Vacelet J, Dohrmann M, Erpenbeck D, et al. (2012) Global Diversity of Sponges (Porifera). PLoS ONE 7(4): e35105. doi:10.1371/journal.pone.0035105, CC BY 2.5, <https://commons.wikimedia.org/w/index.php?curid=34595288>



By Alcinoe at English Wikipedia - Own work by the original uploader, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=56733276>

Sponges play an important part in filtering water in their ecosystems. They filter 1 ton of water to extract one ounce of food from their environment. Humans have taken advantage of the sponge body to use for cleaning, their bodies, habitat and possessions.

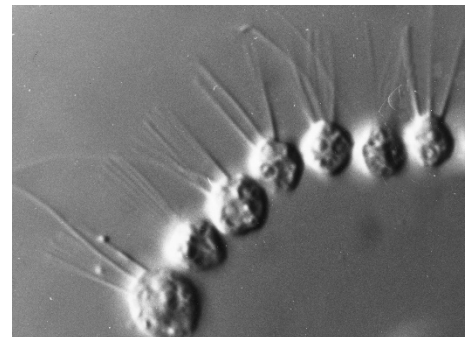
The bath sponge is from the Mediterranean and is "fished" with long handled forks that stick into the sponges. When on the boat pieces are torn off and thrown back to grow into bigger sponges. This asexual reproduction, fragmentation, ensures sustainability. Sponges also reproduce sexually. Most are hermaphrodites, have both sexes. Most sponges release sperm into the water which gets picked up by other sponges' choanocytes. If of the same species, the choanocyte metamorphosize into amoebocyte and carries to the eggs. Fertilized eggs develop larvae and swim to new location — locomotion.

Solitary choanoflagellate at left and a small colony of choanoflagellates at right. Their structure and behaviour link them to the ancestors of the sponges, and thus, the ancestors of all animals.

Sponges evolved from free-living **choanoflagellates** (at right), single-celled organisms with collars and flagella that will form small colonies. One of the descendants of the direct ancestor may be Protospongia, seen at right.



By Daniel Stoupin - http://www.choano.org/wiki/Choanoflagellate_Gallery#Codosiga_sp._Gallery, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=17880698>



By Sergey Karpov - http://www.choano.org/wiki/Choanoflagellate_Gallery#Desmarella_moniliformis_Gallery, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=17880584>