

ARC 440/640: Computer Applications

Relational Geometries

Spring 2011

University at Buffalo

The State University of New York

Instructors: Omar Khan and Nicholas Bruscia



Aggregate Structures: Sponge

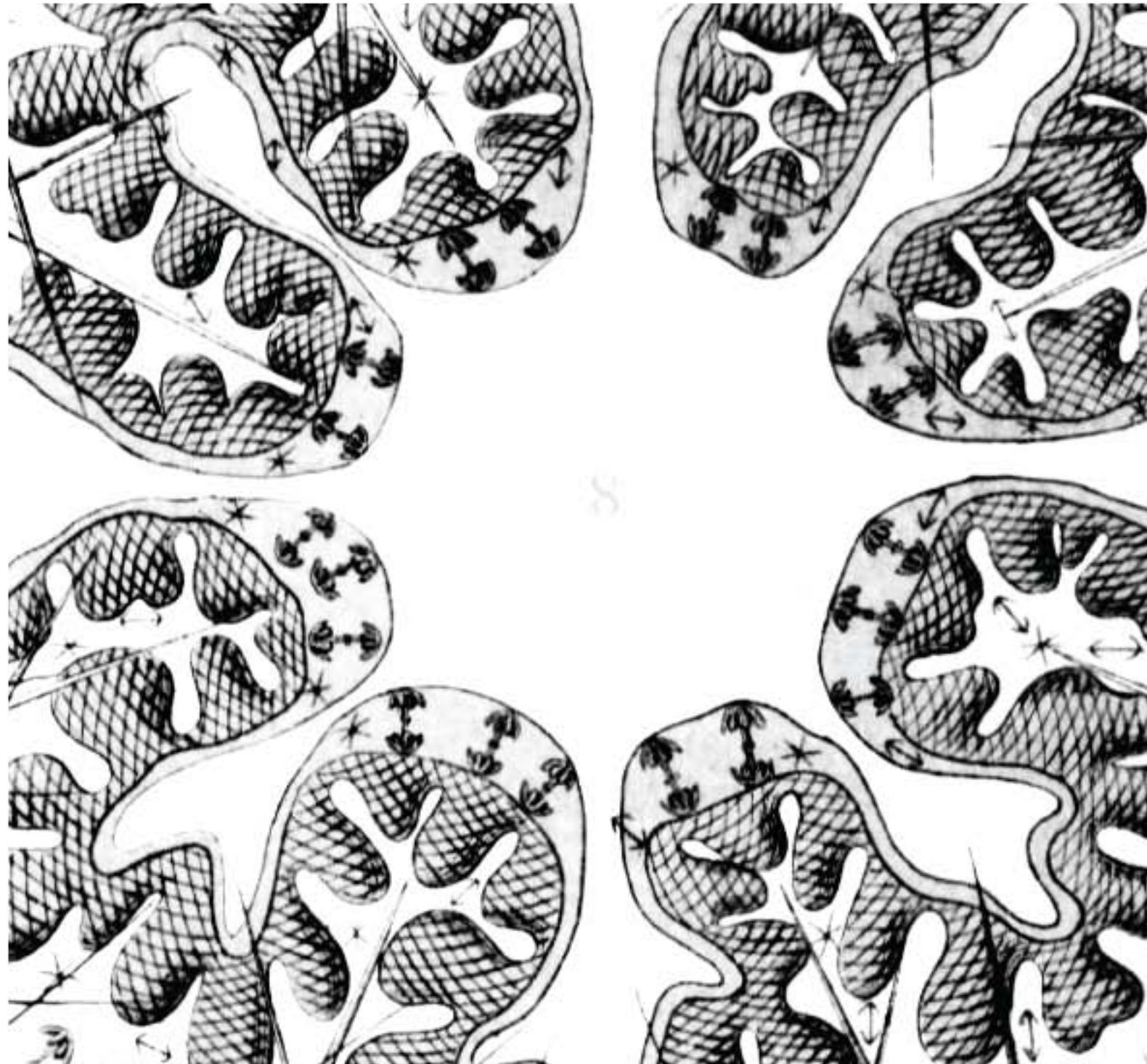
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Sponges are animals of the phylum Porifera. Their bodies consist of jelly-like mesohyl sandwiched between two thin layers of cells. While all animals have unspecialized cells that can transform into specialized cells, sponges are unique in having some specialized cells that can transform into other types, often migrating between the main cell layers and the mesohyl in the process. Sponges do not have nervous, digestive or circulatory systems. Instead, most rely on maintaining a constant water flow through their bodies to obtain food and oxygen and to remove wastes, and the shapes of their bodies are adapted to maximize the efficiency of the water flow.

Sponge

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Adaptation

The shapes of sponge bodies are adapted to maximize the efficiency of the water flow.



Control

(The speed of water flow)

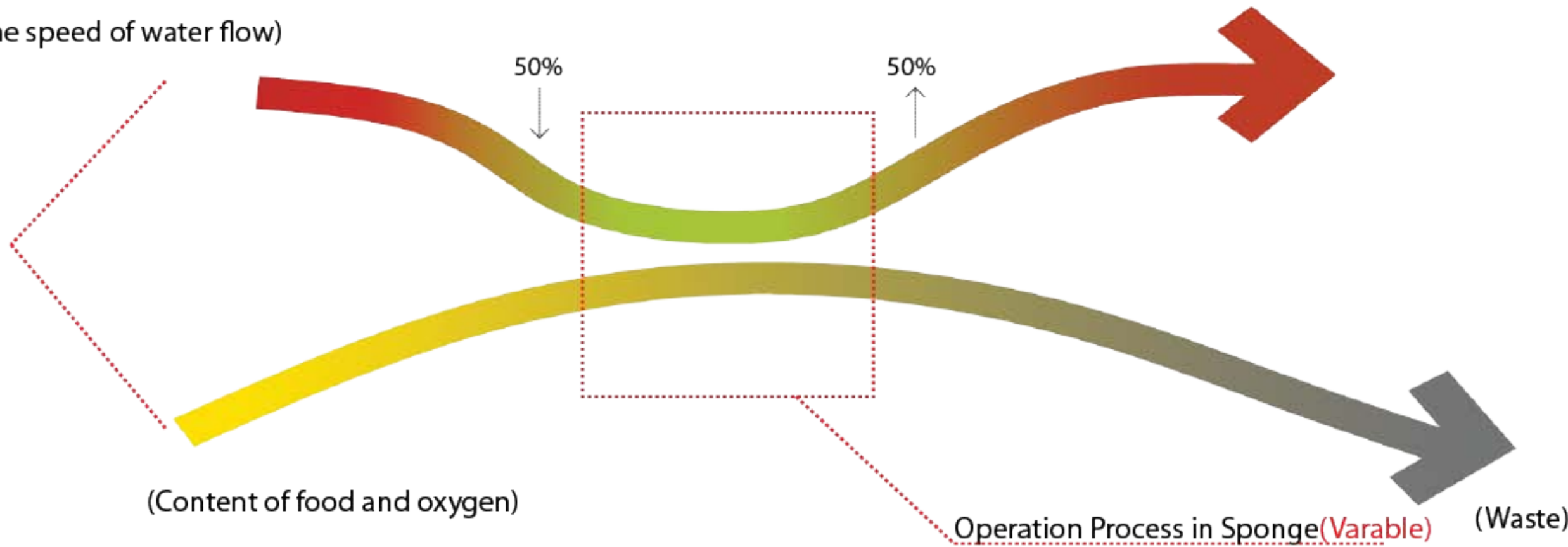
50%

50%

Water Environment
(Parameters)

(Content of food and oxygen)

Operation Process in Sponge(Variable) (Waste)



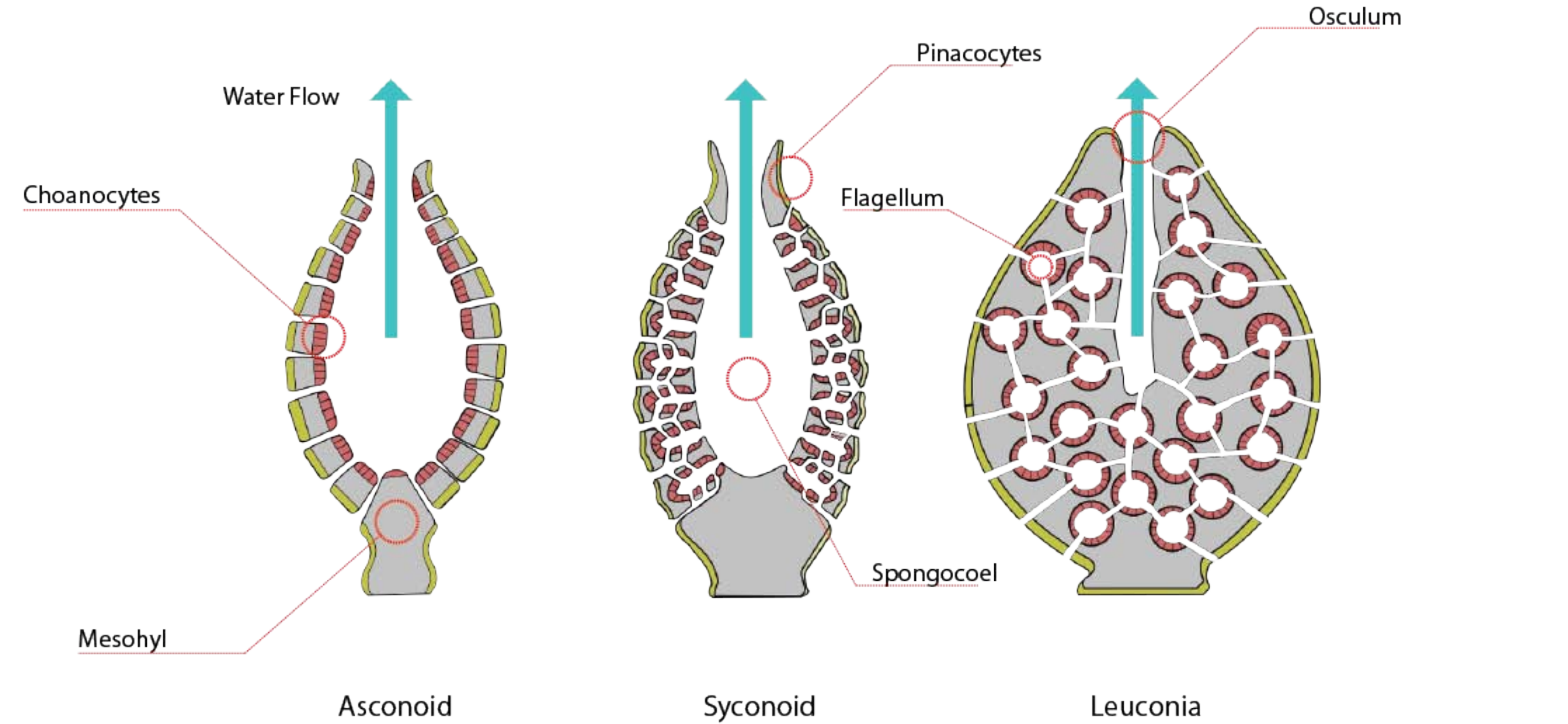
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Structure Type of Sponge

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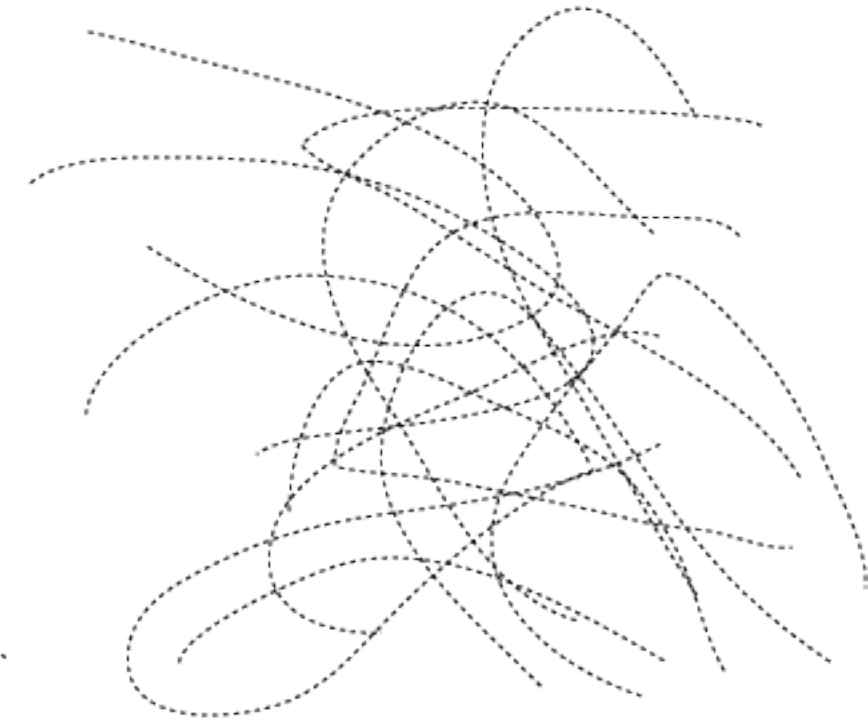
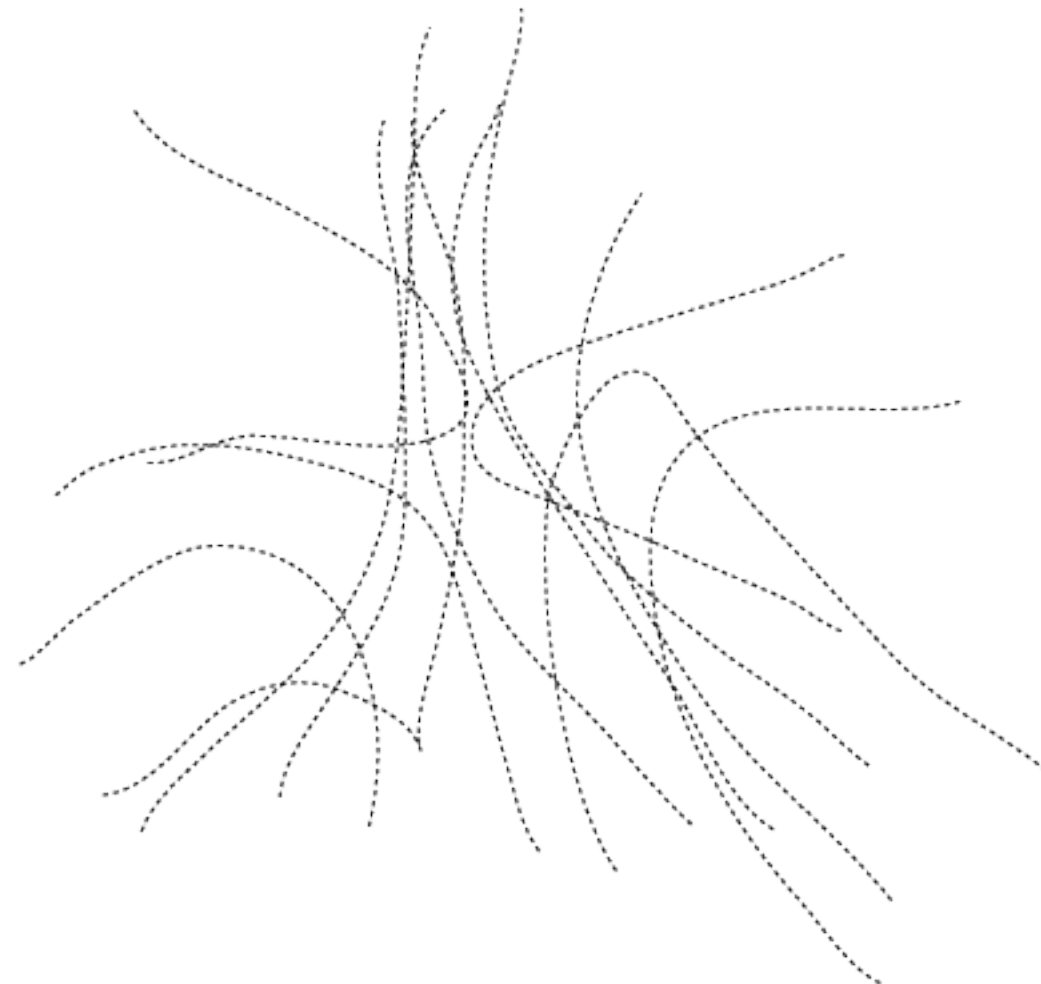
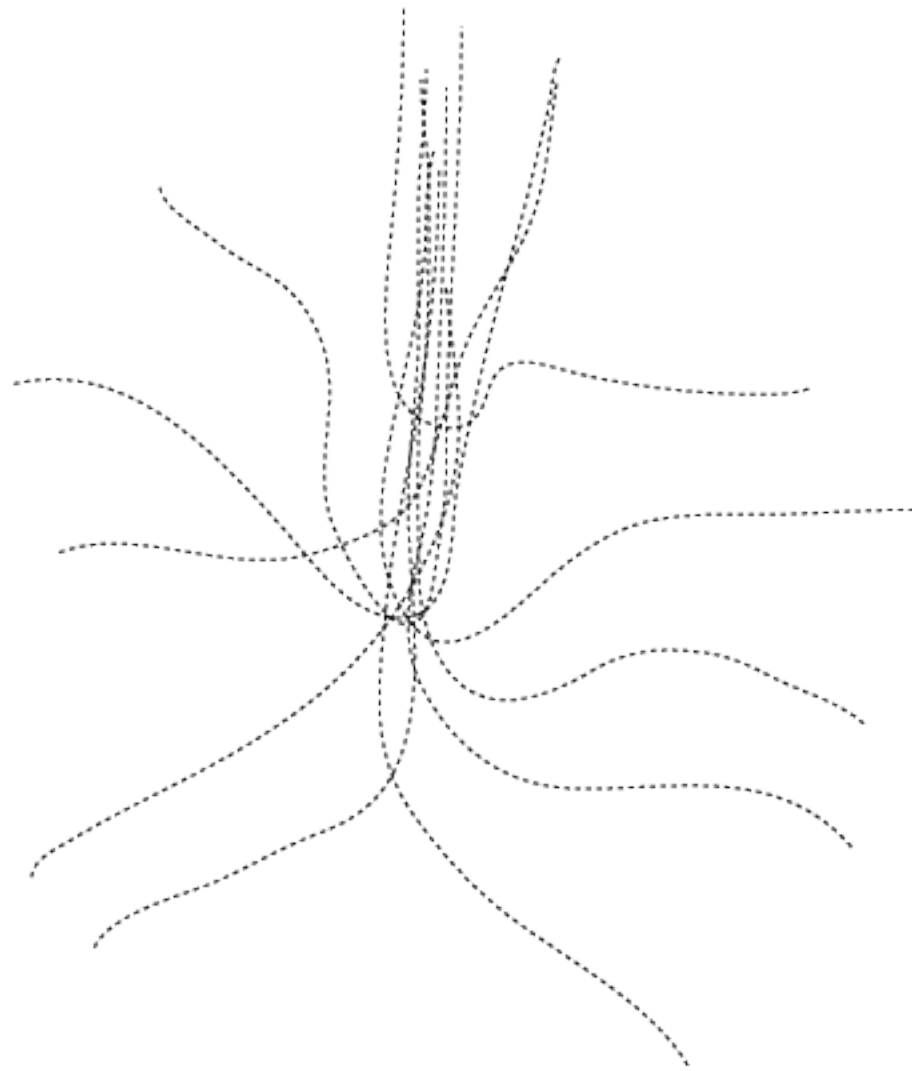
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Sponge can control the water flow by changing the cavity structure and form.



Sponges can control the water flow by various combinations of wholly or partially closing the osculum and ostia (the intake pores) and varying the beat of the flagella, and may shut it down if there is a lot of sand or silt in the water.

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