

Purpose: This study guide will help you identify the information you should know in order to discuss how sponges address the challenges of life in lecture and that you should study for the first Lecture Exam.

Learning objectives: By completing this study guide, students will be able to:

- Identify the Clade and Phylum to which sponges belong
- Answer the seven “Meet the Phylum” Questions
- Recognize distinctive features of sponges
- Identify the three body forms of sponges
- Label diagrams of the anatomical features of the three sponge body forms
- Provide examples of each sponge body form
- Diagram the flow of water through the three sponge body forms

CLADE METAZOA

Phylum Porifera

Habitat(s) – Freshwater and Marine

Distinctive characteristics - answer the questions:

Level of organization:

Symmetry:

Diplo or Triploblastic: **Not applicable**

Protostome or Deuterostome: **Not applicable**

Acoelomate/Pseudocoelomate/Coelomate: **Not applicable**

Schizo or Enterocoelous: **Not applicable**

Segmented?: **No**

1. List the three main cell types found in ALL sponges (pages 252-253):

2. Which type of sponge cell has the following subtypes: sclerocytes, spongocytes, and collencytes (page 253)?

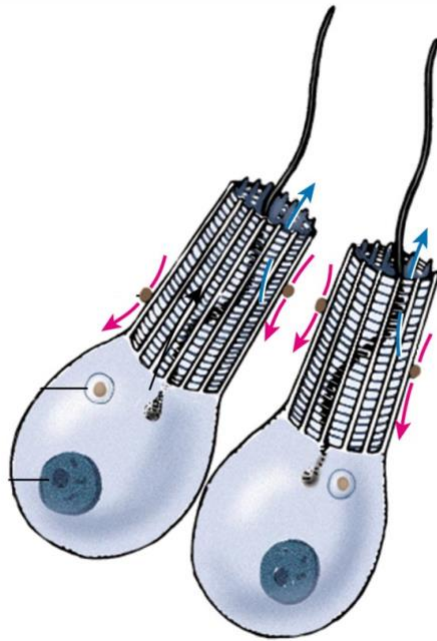
3. Identify what each of these cell types secretes (page 253):

Collencytes:

Sclerocytes:

Spongocytes:

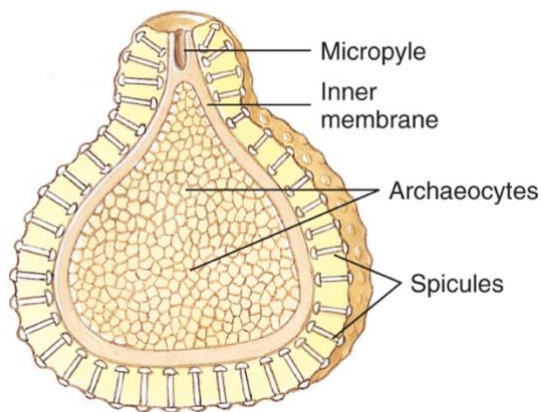
4. Which type of sponge cell is diagrammed below, and what is its function (pages 248 – Figure 12.2 - and 252-253?)



5. List three structures that act as the skeleton (support structure) of sponges (page 253):

6. What is the name of the structure diagrammed below, and what is its function (page 253 – Figure 12.11)?

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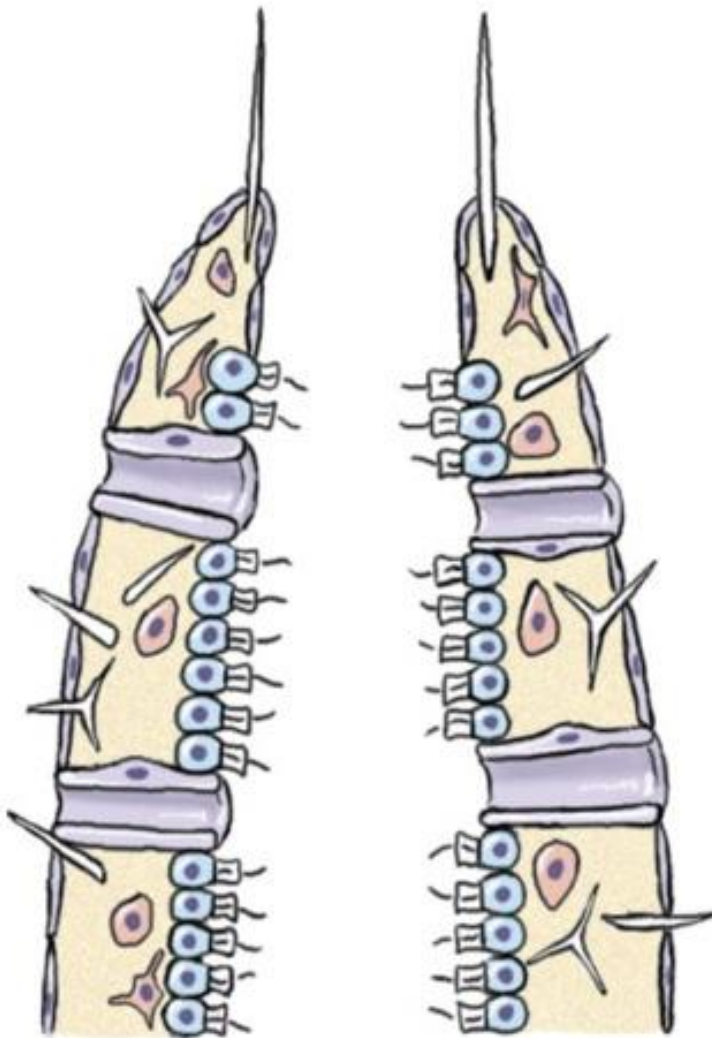


7. Body forms (pages 250-252) - list the three sponge body forms:

- 1.
- 2.
- 3.

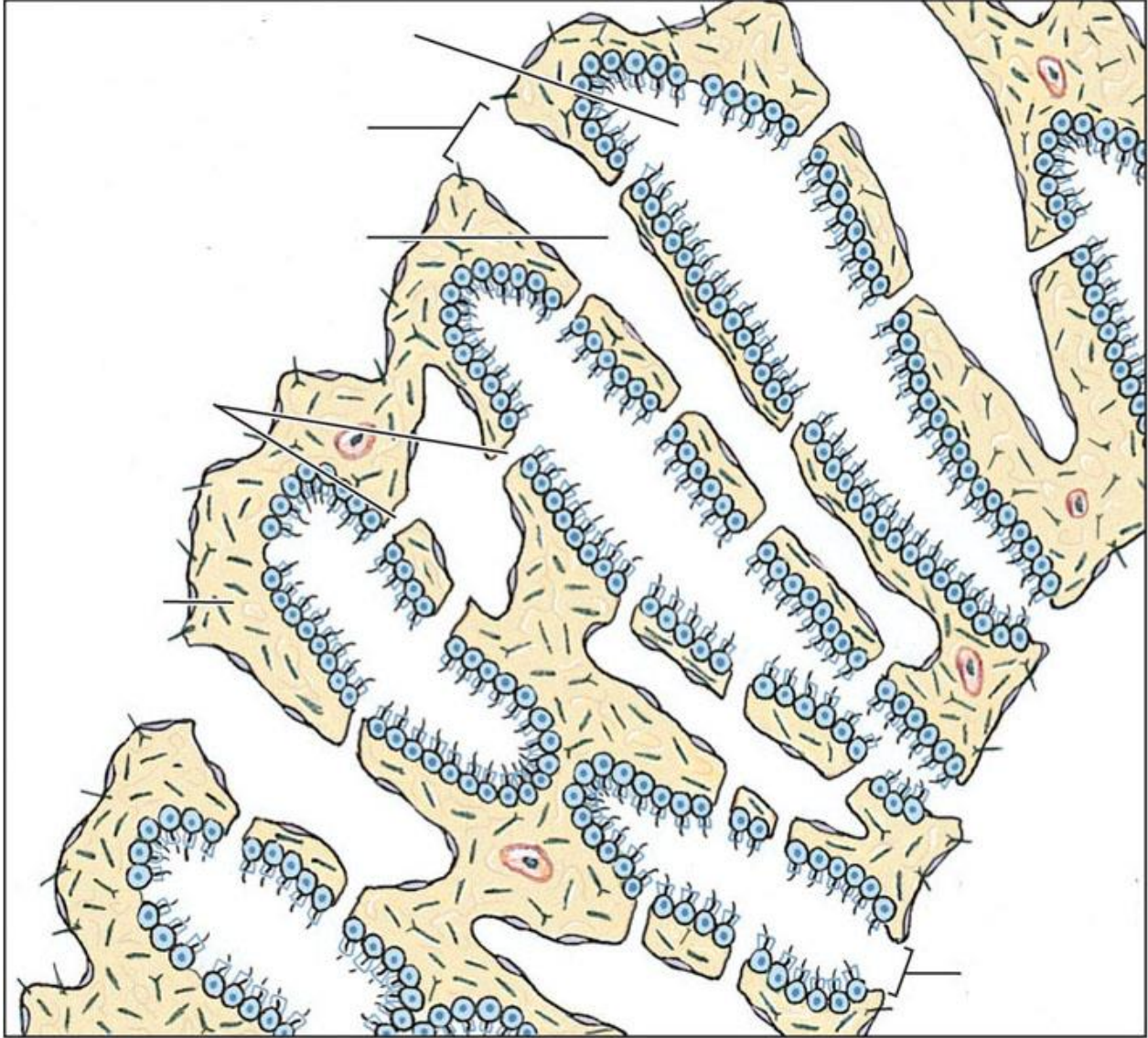
8. Which body form is diagrammed below (page 250 – Figure 12.5)?

Label the diagram using the following terms: choanocyte, osculum, ostium, pinacocyte, porocyte, spicule, and spongocoel.



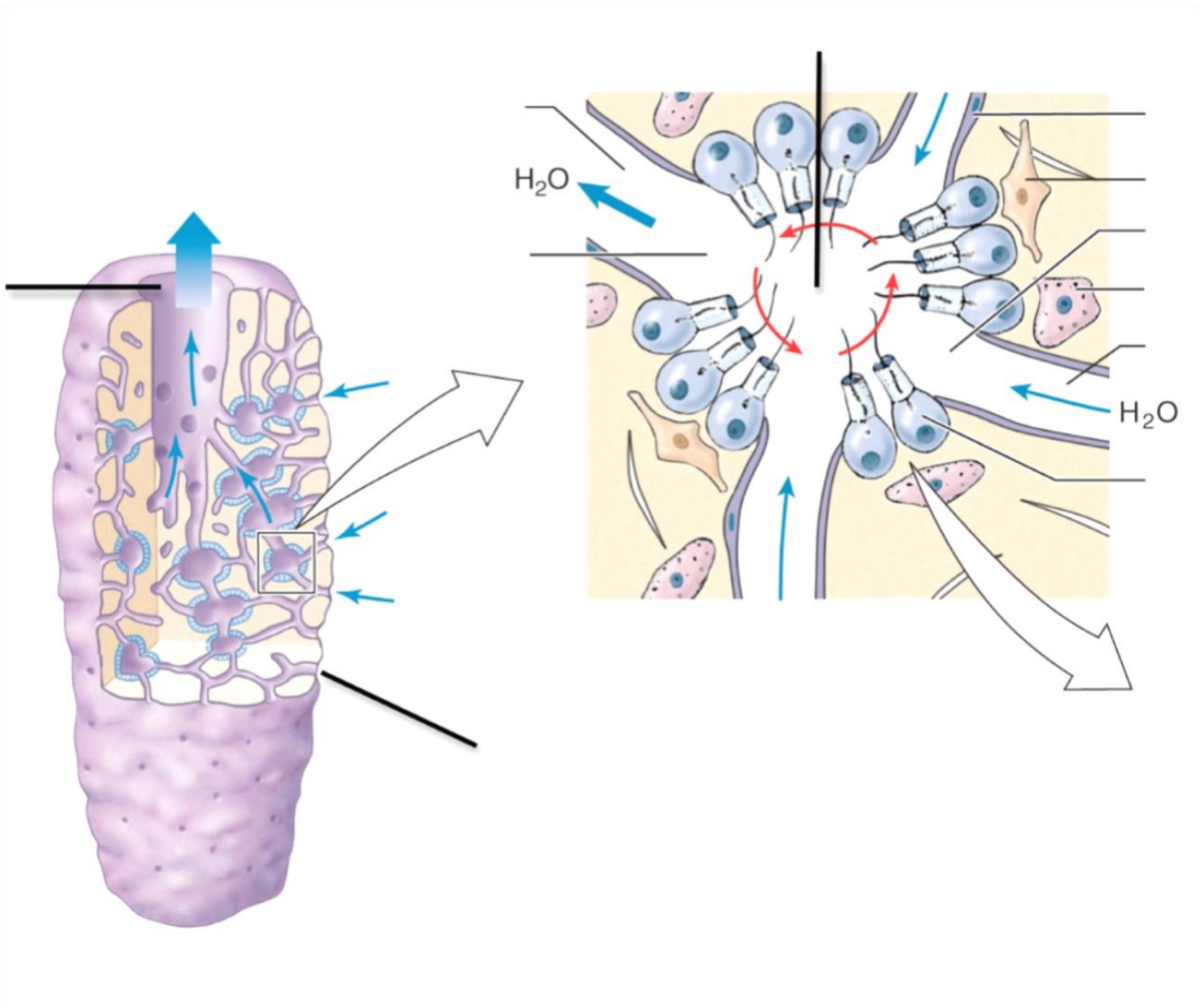
9. Which body form is diagrammed below (page 251 – Figure 12.7)?

Label the diagram using the following terms: apopyle, dermal ostium, incurrent canal lined with pinacocytes, mesohyl, prosopyles, radial canal lined with choanocytes, and spongocoel.



10. Which body form is diagrammed below (page 252 – Figure 12.10)?

Label the diagram using the following terms: apopyle, archaeocyte, choanocyte, collencyte, excurrent canal, flagellated chamber, incurrent canal, osculum, ostium, pinacocyte, and prosopyle.



Examples include – which body form does each of these sponges exhibit?:

11. *Grantia/Scypha* sp. (Lab Manual – page 19):

12. *Leucosolenia* sp. (page 250):

13. *Mycale* sp. (page 251):

14. Diagram, in words, the flow of water through the three sponge body types, and circle the structure in EACH flow that is lined by the cells whose movements create the water current (Lab Manual – pages 17, 19, and 22):

1.

2.

3.

Additional examples of sponges: boring, encrusting, finger, tube, and barrel sponge, etc.

Hickman Chapter 12

The Origins of Multicellularity

Phylum Porifera: Sponges

Characteristics of Phylum Porifera (page 248)

Figure 12.2 (page 248)

Form and Function

Figure 12.5 (page 250)

Types of Canal Systems

Asconoids

Syconoids

Figure 12.7 (page 251)

Leuconoids

Figure 12.10 (page 252)

Types of Cells in the Sponge Body

Choanocytes

Archaeocytes

Pinacocytes

Cell Independence: Regeneration and Somatic Embryogenesis

Gemmuules

Figure 12.11 (page 253)