

Sponge Spicule Lab

Grade Level: 8th grade and above

Summary: Students will discuss the basic anatomy of a sponge, feeding, reproductive and defense mechanisms that these simple organisms possess. Sponge spicule composition and function will be discussed before students dissolve various species of sponges in order to locate and identify spicules with the use of a compound microscope.

Program Objectives:

After completion, students will be able to:

- Draw a simple diagram of the body of a sponge
- Describe two methods sponges use to defend themselves
- List three common characteristics within Phylum Porifera
- Use a compound microscope

Concepts Covered:

- Basic sponge anatomy
- Function and composition of sponge spicules
- Cellular organization of sponges
- Survival characteristics amongst Phylum Porifera
- Use of compound microscope for spicule/sponge identification
- Importance of sponges in the subtropical marine ecosystem

Vocabulary: holdfast, filter feeder, spicule, spongin, chemical defense, calcium carbonate, silica oxide, asymmetry, sclerocyte, spongocoel, choanocyte, archaeocyte, totipotent

Procedures: Activity is preceded by a discussion on sponges: feeding, reproduction and defense. Basic sponge anatomy described and diagrammed. Students work in pairs to break up pieces of dried sponge and soak in diluted bleach to isolate sponge spicules. Microscope slides of this spicule solution are made and compound microscopes are used to identify spicules and correlate with appropriate species.

Extensions:

Resources: Pechenik, Jan. "Biology of Invertebrates." 2015



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Last Updated: 7/9/2018

Standards Addressed:

Next Generation Sunshine State Standards

SC.5.L.17.1: Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

SC.912.L.14.4: Compare and contrast structure and function of various types of microscopes.

Ocean Literacy Principles

Principle 5. The ocean supports a great diversity of life and ecosystems.

d. Ocean biology provides many unique examples of life cycles, adaptations and important relationships among organisms (symbiosis, predator-prey dynamics, and energy transfer) that do not occur on land.



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