

Adaptive Structures and Reproduction of *Fucus*

Pre-Lab

Nonvascular plants that live in water are called algae. Algae can be unicellular or multicellular. Most are multicellular. Some species of multicellular algae are commonly seen along the shoreline or washed up on the beach. These algae are called seaweeds. Seaweeds come in a variety of colors, including green, brown, and red. The brown alga *Fucus* is one of the more familiar seaweeds and is often seen attached to rocks and wharf pilings at the intertidal zone. At the intertidal zone, the seaweed is exposed at low tide and under water at high tide.

Purpose: What are the parts of an algae?

Materials: — Brown alga — Magnifying Glass

Safety: No special precautions.

Procedure:

1. Place the *Fucus* in a large shallow bowl. Cover the plant with water.
2. Carefully remove a piece of *Fucus* from the bowl and place it on the dissecting tray.
3. Look for the main stem. At its base, notice a tough, fibrous pad of tissue called the holdfast. Label the HOLDFAST on diagram A.
4. Feel the stems in their mid-regions until you come across a small lump. This is the air bladder. Air bladders sometimes come in pairs on either side of the midrib. Label the AIR BLADDER and MIDRIB on diagram A.
5. Using scissors, cut out a small section of the stem containing an air bladder. Place it back in the bowl and observe what happens.
6. Look at the leaflike structures or blade on the seaweed. Find the flattened forked stem tips. Special cells called apical cells located at the tips divide by mitosis and produce the forked branching pattern. Label the BLADE on diagram A.
7. Examine the stem tips for swollen areas called receptacles. Receptacles contain eggs and sperm. Label the RECEPTACLES on diagram A.
8. Look for the most swollen receptacles because they are the most mature and are the best ones for examination. Orange-yellow receptacles contain gametes that are ready to be dispersed.
9. With a hand lens, notice the tiny bumps on the surface of a receptacle.

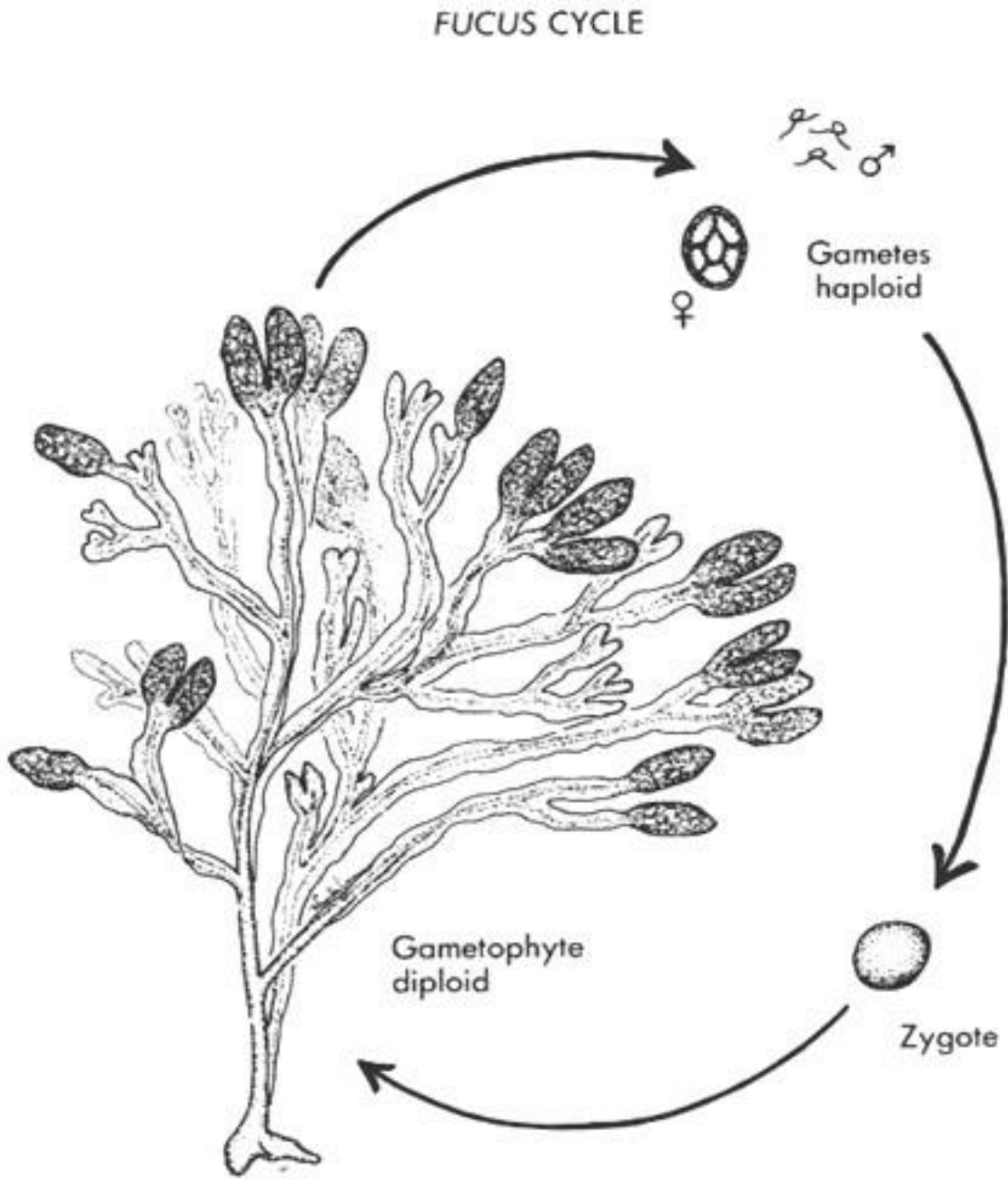


Figure 1: Life Cycle of Fucus (Note this is very similar to humans...not typical of a plant).



Observations:



Diagram A: Please label!

Discussion:

1. What structure enables *Fucus* to attach itself to rocks and wharf pilings?
2. What happens when you put the *Fucus*' air bladder in water?
3. What is the adaptive value of the holdfast on an alga?
4. What is the adaptive value of the air bladder on an alga?
5. Of what value is the flat, branching system of seaweed?