

Comparison of Plants

Biology B

Name: _____ Lab Table# _____
Compound Scope # _____ Dissecting Scope # _____

Introduction

A closer look at a plant can reveal a number of similarities and differences among plant species. Plants without seeds are classified as either vascular or nonvascular. Vascular plants have specialized tissues that carry water and nutrients throughout the plant. These tissues, among other characteristics, allow certain plants to live on dry land. Nonvascular plants do not have these specialized tissues and therefore lack true roots, stems, and leaves. Because these plants lack tissues that transport material over long distances, they must live in a moist environment.

Part A: Comparison of Mosses and Ferns

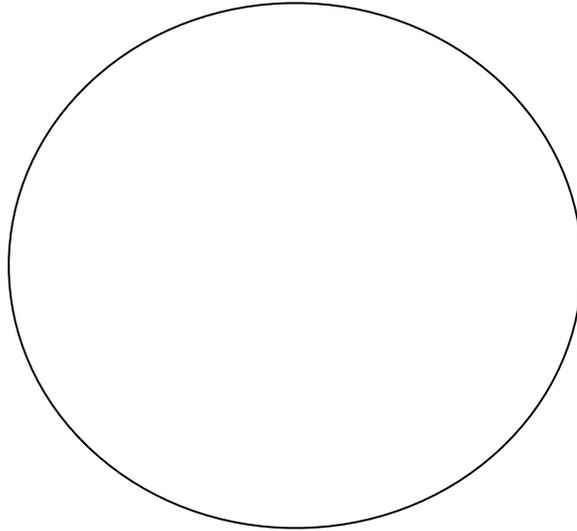
Materials (only take the item(s) you will be using in the section of the lab on which you are working)

- Moss
- Fern
- Microscope
- 1 microscope slide
- 1 cover slip
- dissecting microscope

Procedure

1. Remove a one moss plant from a clump of moss.
2. Remove a small piece of a fern frond from your fern plant.
3. Gently bend the moss plant and the fern frond back and forth. Which one is more flexible? _____
4. Examine the size and thickness of the moss and fern plants. Which one is thicker? _____
5. Use tweezers to remove one of the leaf like structures from the moss.
6. Place two drops of water on the center of a slide. Then, place the leaf like structure in the water. Cover the moss with a cover slip.
7. Examine the slide under the compound microscope. You may choose what magnification to use. Find a thin section of your moss and make a detailed sketch of what you see.

“Moss viewed with a **compound** microscope”



Magnification: _____

8. Use a magnifying glass or a **dissecting** microscope to examine a fern leaf. Note whether there are veins in the leaf. Draw what you observe.

“Fern viewed with a **dissecting** microscope”



Part B: Comparison of Spores and Seeds.

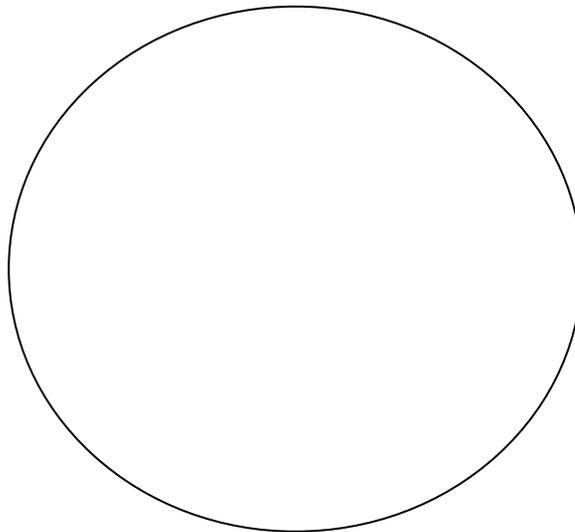
Materials

- seed (bean)
- fern
- microscope
- iodine
- 1 microscope slide
- 1 cover slip
- razor blade
- magnifying glass or dissecting microscope

Procedure

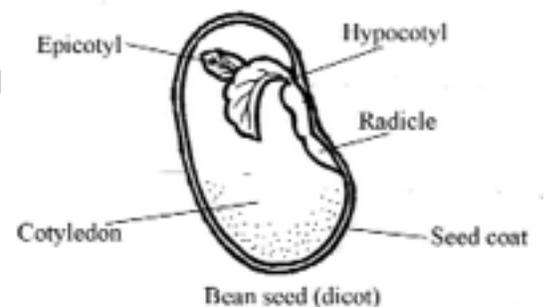
1. Get a piece of a fern.
2. Use a razor blade to scrape sori from the underside of a fern onto a microscope slide. Add a drop of water and a cover slip. **Caution:** *Use care with the razor blade.*
3. Examine the slide under the **compound** microscope. You may choose what magnification to use. Find a section where you can see spores and make a detailed sketch of what you see.

“spores viewed with a compound microscope”

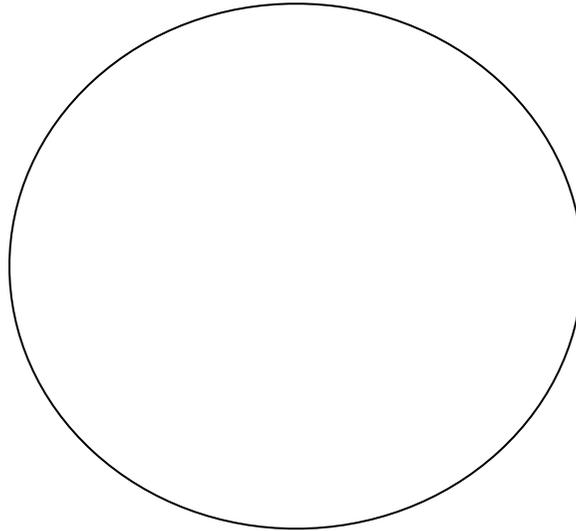


Magnification: _____

4. Get a bean. Using your fingers, separate the two halves of your bean seed.
5. Find the half with the embryo and examine it with a **dissecting** microscope. Make a detailed sketch of the embryo in the space provided on the next page. (The embryo has three parts, the epicotyl, hypocotyl, and radicle; see diagram to the right)



“embryo viewed with a **dissecting** microscope”

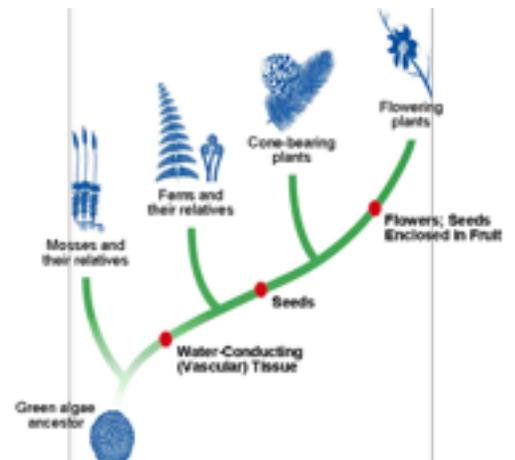


6. Place a drop of iodine on the seed near the embryo and observe for three minutes. (*Iodine turns darker when it comes into contact with starch.*) Take note of any color changes.

7. Place a drop of iodine on a fern near the sori and observe for three minutes. Take note of any color changes.

Analysis

Use your observations, the information in the introduction to this lab, and the diagram below to answer the following questions.



1. Do ferns have vascular tissue? _____
2. Do mosses have vascular tissue? _____

3. Why do mosses have to live in moist environments? (Hint: read the introduction.) _____

4. Why do you think the fern is able to grow larger than the moss? _____

5. What evidence did you observe that nutrients (starch) are stored in the seed? _____

6. A spore and a seed are deposited in an area where the soil is poor in nutrients. Based on your observation in this activity, which is more likely to survive in a nutrient-poor environment – the spore or the seed? Explain.

7. What are the advantages of a plant disseminating millions of tiny spores as it reproduces?

8. What are the advantages of a plant disseminating a relatively few seeds? _____
