

Mrs. Wilkie

Your Name: _____

Partner's Name: _____

Date: _____

Block: _____

Algae, Mosses & Ferns Lab

- Purpose:**
- (1) To examine the characteristics of algae, mosses and ferns.
 - (2) To view examples of unicellular, colonial, and/or multicellular green algae to illustrate their increasing complexity
 - (3) To describe features of mosses and ferns that have enabled adaptation to a land environment.

Materials:

prepared slide of algae
various algae samples
various moss samples
various fern samples
microscope slides
coverslips

eye dropper
compound light microscope
dissecting light microscope
ruler
dissecting scissors
ruler

Procedure:

Part A: Algae

1. Examine an example of unicellular algae under the compound light microscope. You can either select a prepared slide or live sample (in which you will prepare a slide).
2. Complete Table 1 (in the Data & Observations section) by making detailed observations of the algae sample viewed.
3. Complete Figure 1 (in the Data & Observations section) by making a detailed, labelled illustration of the algae sample viewed. Be sure to include the drawing magnification calculation.
4. Examine an example of either a filamentous or multicellular algae. You may choose to view this sample under either the compound light or dissecting microscope.
5. Complete Table 1 (in the Data & Observations section) by making detailed observations of the algae sample viewed.
6. Complete Figure 1 (in the Data & Observations section) by making a detailed, labelled illustration of the algae sample viewed. Be sure to include the drawing magnification calculation.

Part B: Mosses

1. Remove a single moss plant from a clump of moss.
2. Place the plant in the middle of a microscope slide and prepare a wet mount (as demonstrated by Mrs. Wilkie).
3. View the moss plant under low-power using the compound light microscope. If possible, view both the gametophyte and sporophyte generations of the moss plant.
4. Complete Table 2 (in the Data & Observations section) by making detailed observations of the moss sample viewed.
5. Complete Figure 2 (in the Data & Observations section) by making a detailed, labelled illustration of the moss sample viewed. Be sure to include the drawing magnification calculation.

Part C: Ferns

1. Examine a fern frond. Complete the following:
 - (a) Observe the top and bottom surfaces of the frond. Is either side shinier than the other? _____
 - (b) Gently bend the fern frond back and forth. Does it bend easily? _____
2. Cut off the tip of a fern leaflet (be sure that the clipping contains at least one sori).
3. Prepare a wet mount slide of the portion of the leaflet (sori side up).
4. Examine the leaflet under low-power using the compound light microscope.
5. Complete Table 3 (in the Data & Observations section) by making detailed observations of the fern sample viewed.
6. Complete Figure 3 (in the Data & Observations section) by making a detailed, labelled illustration of the fern sample viewed. Be sure to include the drawing magnification calculation.

Data & Observations:

Table 1: Qualitative & Quantitative Observations of Algae Samples

Type of Algae Sample (i.e. unicellular, filamentous, multicellular)	Detailed Observations
unicellular	

Table 2: Qualitative & Quantitative Observations of Moss Sample

Type of Plant	Detailed Observations
moss	

Table 3: Qualitative & Quantitative Observations of Fern Sample

Type of Plant	Detailed Observations
fern	

Figure 1: Illustration of Algae Samples

Type of Algae Sample (i.e. unicellular, filamentous, multicellular)	Illustration	Drawing Magnification
unicellular		

Figure 2: Illustration of Moss Sample

Type of Plant	Illustration	Drawing Magnification
moss		

Figure 3: Illustration of Fern Sample

Type of Plant	Illustration	Drawing Magnification
fern		

Questions:

1. What characteristics do both algae samples have in common? (1 mark)

2. Describe how the filamentous or multicellular algae sample is more complex than the unicellular sample viewed. (1 mark)

3. Provide two reasons (one structural, and one related to the performance of a particular life function) why the mosses are most frequently found in shaded areas rather than in full sun. (2 marks)

4. Why is the fern frond so firm? (1 mark) _____

5. Why is the fern able to grow larger than the moss? (1 mark) _____

6. (a) Why is the surface of the fern frond shiny? (1 mark) _____

(b) How is this an adaptation to life on land? (1 mark) _____

7. Of mosses and ferns, which plant shows adaptations that make it better able to survive on land? Explain. (2 marks) _____

8. Which life function performed by ferns limits the spread of this plant species into dry areas on land? Explain. (2 marks) _____

9. Prior to the invention of modern plumbing, people fought fires with the help of a bucket brigade (a line of people who passed buckets hand to hand from the source of water to the fire). In reference to mosses and ferns, which plant's water delivery system is more like a bucket brigade and which is more like modern plumbing? Explain. (4 marks)
