**The Microscope Lab:**

**Seeing is Believing**

**30 Points Possible**

**Introduction**

The compound microscope is one of the most important instruments used by biologists today. Through observation of microscopic organisms and microscopic structures, scientists have discovered many things about the world around us and how it operates.

Today you will be examining several prepared slides at different stations around the lab. You will be able to use the microscope safely, efficiently and effectively and properly demonstrate the use of the compound microscope.

You will be working with the following types of light microscopes today:

* Dissecting/Binocular Microscope
* ****Compound/Monocular Microscope

**Prelab Questions**

1. List the 2 major different types of microscopes discussed in the notes today.

a.

b.

2. What are some differences and similarities between the two major types of microscopes?

**Station A: Red Grouper & Grunt Otoliths**

 **Materials:** dissecting microscope, petri dish, 2 red grouper otoliths, 1 grunt otolith

 **Procedure:**

1. Become familiar with the parts of the microscope you were asked to label on your Microscope WS.
2. Do not touch or move the specimen in the petri dish with your hands or any utensil.
3. Move the petri dish by carefully and slowly sliding it around on top of the light source.
4. Adjust the coarse focus knob.
5. Adjust the fine focus knob.

 **Data collection and analysis:**

1. Record your total magnification here.
2. Describe what you see for each otolith.
	1.
	2.
	3.
3. Draw and color what you see through the oculars at this time.

**Station B: Human hair and fiber**

 **Materials:** dissecting microscope, one strand of team member’s hair, woven thread sample

 **Procedure:**

1. Become familiar with the parts of the microscope you were asked to label on your Microscope WS.
2. Place one of the two items on the stage above the light source.
3. Adjust the coarse focus knob.
4. Adjust the fine focus knob.
5. Repeat with the last of the two items.

 **Data collection and analysis:**

1. Record your total magnification here.
2. Describe what you see for the hair and the fiber sample.
	1.
	2.
3. Draw, label, and color what you see through the oculars.

**Station C: Penny, rock, and fossil**

 **Materials:** dissecting microscope, penny, rock sample, fossil

 **Procedure:**

1. Become familiar with the parts of the microscope you were asked to label on your Microscope WS.
2. Place one of the two items on the stage above the light source.
3. Adjust the coarse focus knob.
4. Adjust the fine focus knob.
5. Repeat with the last of the two items.

 **Data collection and analysis:**

1. Record your total magnification here.
2. Describe what you see for each sample.
	1.
	2.
	3.
3. Draw, label, and color what you see through the oculars.

**Station D: Pond Water**

 **Materials:** compound microscope, prepared pond water slide

 **Procedure:**

1. Become familiar with the parts of the microscope you were asked to label on your Microscope WS.
2. The prepared slide must remain untouched.
3. Check to see that the slide is held in place by two stage clamps.
4. Adjust the coarse focus knob.
5. Adjust the fine focus knob.

 **Data collection and analysis:**

1. Record your total magnification here.
2. Describe what you see for the pond water slide.
3. Draw and color what you see through the oculars at this time

**Station E: Temporary Wet Mount “e”**

 **Materials:** compound microscope, prepared wet mount with lowercase e from a newspaper

 **Procedure:**

1. Become familiar with the parts of the microscope you were asked to label on your Microscope WS.
2. The prepared slide must remain untouched.
3. Check to see that the slide is held in place by two stage clamps.
4. Adjust the coarse focus knob.
5. Adjust the fine focus knob.

 **Data collection and analysis:**

1. Record your total magnification here.
2. Stand so that the ocular is facing you and the stage is facing away from you. Describe what you see as you look at the slide on the stage of the microscope.
3. What happens to the “e” when you move the stage controls forward? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Backward? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Right side? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Left side? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Draw what you see through the ocular.

**Post-Lab**

1. How were the samples different that you viewed from the dissecting (binocular) microscope compared to the compound (monocular) microscope?
2. What was the phenomenon of the lowercase “e” caused by?

**Conclusion (20 points possible each)**

Each group member is to *individually* write a paragraph that summarizes the differences in the 2 microscopes you used. Use examples from the lab: what you saw, sample size, magnification differences, etc.

Once completed, each group member needs to staple their summary to this sheet and turn it all in at the white period basket.