

Discovering Microscopes

Please use this checklist to confirm that all of the parts of this station are in this bag both when it is unpacked before the OSF Science Night AND when it is re-packed after your event.

- Table sign, laminated
- Explanation / What to Do sheet, laminated
- 6 – question sheets, laminated, one for each microscope station
- Sheet with all questions to copy (optional)
- 6 – Petri dishes, one each with the following contents
 - green and roasted coffee beans
 - cinnamon bark
 - tropical bird feather
 - butterfly
 - tropical flower (empty)
 - tropical leaf (empty)

What you will need to provide for this activity station:

- Tape to attach table sign
- 6 - Stereomicroscopes
- Copies of the question sheet (optional)
- Tropical leaf – suggestions: wandering jew, begonia
- Tropical flower – suggestions: orchid, begonia, African violet

DISCOVERING MICROSCOPES

Explanation/Background:

Scientists and doctors use microscopes to help them see many things not visible to the naked eye. These are important instruments for scientific advancements. There have been many discoveries based on the use of microscopes – medicines, diseases, physiology of plants and animals.

By using microscopes, we are able to get a closer look at everyday objects and get a whole new perspective. We can see past the petals of a flower to the pollen. We can see the individual parts of a feather. We can see how smooth or rough the coating of a seed is.

While doing so, we get experience with an important scientific tool. This can spark interest at a young age, a desire to see more, to learn more, and to continue to reach beyond the obvious.

What You Will Do:

Students will understand the uses of microscopes and use them to recognize different objects and their parts (seeds, petals, feathers, etc.)

What You Need:

- Stereo-microscopes (Dissecting Microscopes)
- Observation sheets for each station
- Objects to be observed: tropical flower, rainforest leaf, butterfly wing, butterfly proboscis, cinnamon bark, coffee beans, tropical feather.

What To Do:

Set-up:

1. Put a microscope at each station.
2. Focus the microscopes on the object to save time once the students arrive.
3. Place the Microscope Observation sheets at each station with its corresponding object. (Print from master copies if needed)

Activity:

1. Gather the students for a discussion before allowing them to go to the microscopes.
2. Discuss:

What is a microscope?

- Tool of scientists.
- Can see many things not visible to the naked eye.
- Briefly discuss types of microscopes
- Important discoveries of scientists based on use of microscopes.

3. Demonstrate how a microscope is used, showing the focusing mechanisms. Tell the children to ask for help if they are unable to see the object rather than trying to focus it themselves. A “hands off the microscopes” approach is usually best (this includes the objects being looked at).
4. Discuss the objects that they will be viewing through the microscopes. Flower, leaf or insect parts, seeds, bark, feather, etc.
5. Explain that they will have about 1 minute at each microscope (depending on the size of the group and time allotted) and then will rotate to another station. Approximately 5 minutes per station is customary.
6. As they are viewing items through the microscope, explain what they are looking at, asking them the given questions.

Follow-up:

Go through the different objects, reviewing the questions given at each station. Ask what their favorite object was and why.

MICROSCOPE OBSERVATIONS

TROPICAL FLOWER

Observation 1: What colors do you see?

Observation 2: What parts of the flower do you see? Petals? Stamens?
Pistils?

RAINFOREST LEAF

Observation 1: Locate the veins on the leaf. They look like lines. What do you think is carried in the veins?

Observation 2: Can you see the spots on the under side of the leaf? What do you think the plant uses them for?

TROPICAL FEATHER

Observation 1: What colors are the feathers? How can colors of feathers help birds?

Observation 2: Notice the feather structure. What else do feathers help birds do?

BUTTERFLY

Observation 1: Can you see the scales on the butterfly wing?

Observation 2: Can you find the straw-like tongue called the proboscis? What shape and color is it?

Observation 3: What is the large round object near the proboscis?

CINNAMON BARK

Observation 1: What texture and color is the bark?

Observation 2: What foods have you eaten that were seasoned with cinnamon?

COFFEE BEAN

Observation 1: What are two words to describe the coffee bean?

Observation 2: What color is the seed?

Observation 3: What will the seed grow into?