STEMBugs Workshop 2018

Materials contributed by Robert W. Matthews, University of Georgia, Athens, GA

Use WOWbugs to Teach Microscope Skills

a. Your name and affiliation: Robert Matthews, Professor of Entomology, *Emeritus*, University of Georgia, Athens, GA 30602. rmatthew@uga.edu
b. A catchy name for the activity: **Use WOWBugs to Teach Microscope Skills**
c. Targeted age-group: k-12
d. A 1-2 page detailed description/instructions/supply list for the activity:

Introduction This activity teaches microscope, observational, measuring, and drawing skills while students work with a harmless fruit fly sized insect (the WOWBug) that is large enough to be seen by the naked eye, but small enough to fit into view under a microscope.
The most basic meaningful questions about any living thing have to do with what it is, what it looks like, and what it does. Thus, upon encountering a new organism, another important task for a scientist is to measure and describe its appearance and behavior.
By the end of this activity, students should be able to:

1. Identify the parts of the microscope and describe the functions of each part.
2. Prepare a dry mount slide and place it properly on the microscope stage.
3. Bring the image into focus under low power, then under successively higher powers.
4. Prepare a drawing of WOWbug as viewed in the microscope with scale bar to show length

Begin by viewing 3 minute Youtube video https://www.youtube.com/watch?v=-dkfYj6x8vs

Additional Resource: guided and open-ended inquiry activities and cross-curriculum teaching suggestions using WOWbugs are available in the 318 page resource book, ***WOWBugs: New Life for Life Science***, by R. W. Matthews, et al., available from the author ($12)

Procedure: Place a concavity (culture) slide on the white paper. Dip a toothpick into the flour or corn starch. Tap a very few specks into the well of the slide. Release 3-6 WOWBugs to crawl on the paper. Using the pipe cleaner, transfer one WOWBug into the well of the slide. Quickly place a flat slide on top of the depression slide, confining the insect inside without injuring it. Tape the ends of the two slides

making a 'sandwich' to hold everything together. Corral the extra WOWBugs by inverting one of the shell vials over them until they crawl up inside and secure vial with cotton ball.

Place the dry mount slide onto the microscope stage. Focus on the WOWBug under the lowest magnification. If it is moving around, practice keeping it in the field of view. Move the slide slowly and smoothly while you look through the eyepiece. The WOWBug will soon stop moving and begin to clean dust from its legs or antennae. Observe and record how this grooming is done.

Prepare a scientific drawing of the WOWBug. Start by drawing a circle on your paper that represents the circular field of view. An easy way is to simply trace around a petri dish or similar round container. Adjust the magnification (magnification is the product you get by multiplying the powers of the eyepiece lens and the objective lens; magnification is written with an X that means "times.") so that the entire WOWBug is visible. Use the transparent ruler placed below your slide for scale.

Draw the WOWBug in the circle, making it the same size relative to the circle as it is relative to the field of view. Include as much detail as you can easily see. You may have to adjust the focus to see various parts more clearly. Title your drawing "Female WOWBug", label the body parts, and record the scale.

Materials **(for each student, pair, or group)**	**Source** **(Numbers from Carolina.com catalog)**
be dispensed to each student, pair, or group by the instructor: About 5 WOWBugs from a *Melittobia digitata* culture	44570 (WOWBug culture) #144574 (culture kit)
croscope (e.g., any dissecting microscope, Shinco®Scope)	nco®Scope # 597115
ncavity (culture) microscope slides	32200
ndard (flat) microscope slides	31920
ss shell vial	lram shell vial #715051
hite pipe cleaner or cotton swab	tained locally
eet of unlined white paper	tained locally
tton ball	tained locally
l of transparent cellophane tape	tained locally
stic petri dish or equivalent round container	tained locally
t or round toothpick	tained locally
nch" of all-purpose flour	tained locally
nsparent ruler fragment (about 5 cm, divided into mm units)	ke by photocopying a transparent ruler (e.g., #702605) repeatedly onto a transparency sheet and cutting out individual ruler fragments
ncil	tained locally
nch ruler	tained locally
oratory notebook	tained locally