

Train Your Lab Instructors for Basic Microscope Troubleshooting and Preparation!

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It can be a daunting task for student lab instructors (LIs) to deal with common microscope problems during a lab exercise. We prepare our LIs for this with a simple exercise. Microscopes are set out on the bench-tops with items (stage stop, iris diaphragm, condenser, illuminator, etc.) “mal-adjusted.” The LIs must troubleshoot any problems and focus on a prepared microscope slide specimen in a specified time or “race” to see who can clean the scope and focus first. They must also deal with other additional common student errors (i.e. slide upside down on the stage) to win a small reward.

Keywords: lab instructors, microscopes

Expanded Abstract

How well do your lab instructors handle basic microscope troubleshooting during a lab exercise? Have your lab instructors ever sworn, “the bulb must be burned out” when the illuminator is simply turned down all the way? Are you ever called to repair a microscope that doesn’t need to be repaired? We often assume that graduate student lab instructors already know how to deal with the simple and common stumbling blocks encountered during a lab exercise involving the microscope. However, this can be a daunting task when there are 30 students vying for the instructor’s attention and class time is running out. Participants will complete a quick, interactive and simple problem based exercise that helps lab instructors learn how to troubleshoot the most basic problems encountered by freshman biology lab students when using the microscope.

This exercise is conducted with Sam Houston State University biology lab instructors each year and they have found it very valuable. Microscopes are set out on the lab bench tops as if ready for the first day of labs. Items such as the stage stop, iris diaphragm, condenser, illuminator, rheostat switch, etc. on each microscope are “mal-adjusted” before the LIs arrive. The LIs must clean the lenses (using lens paper, cotton-tipped swabs and xylene or other methods recommended by the microscope manufacturer), troubleshoot any problems and focus on a prepared microscope slide specimen in a given amount of time, or they race to see who can finish first. A few microscopes are also set up with prepared slides that are “upside down” or just plain dirty etc. This exercise gives the lab instructors practice in quickly dealing with these relatively minor problems. As an added bonus, this training exercise leaves the microscopes clean and ready for the first day of labs!

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