

Making a Custom Microscope Shield

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Microscopists, especially those in the forensic field, face two main challenges: contamination and loss of sample. With training and practice, these challenges are generally overcome. However, technological advancements continue to extract information from smaller and smaller samples. Full DNA profiles are now developed from a single hair root and even from just a few cells.

While a skilled microscopist is able to manually minimize sample loss and contamination, there is still a need to be cleaner and safer. This is paralleled by the increase in personal protective equipment used in a laboratory. But there is an overriding concern of never having enough protection for your sample.

The very use of a microscope puts the microscopist in close proximity to the sample. The sample is generally exposed for best viewing and sample preparation, especially when it is under a stereomicroscope. Exhaling, sneezing or sighing may blow away a small sample from the microscope stage. Talking may cause minute amounts of saliva to fall on the sample and contaminate it. Therefore, additional protection for the sample is preferred.



TDI International

Figure 1. Commercial microscope shields available from science supply companies cannot be custom fitted for any microscope. This shield from TDI International retails for \$38.

Safety glasses or a face shield are not practical when using a microscope. Instead, a microscope shield provides an ideal barrier of protection. The least expensive microscope shields available from science supply companies sell for around \$40 (Figure 1). These shields have fixed dimensions and cannot be customized. This “Tricks of the Trade” method explains how to make an inexpensive alternative that can be easily fitted on any microscope.

A microscope shield can be created with custom dimensions from one transparency sheet (typically used for overhead projector presentations), a marker and scissors (Figure 2) for a fraction of the cost. A package of 100 transparency sheets can be purchased for less than \$40.

To make a shield, hold a blank transparency up to the eyepieces of the microscope. Note the approximate center and diameter of each eyepiece. For stability, make sure there is at least a 1.5-inch margin at the top. Draw circles around each eyepiece; these circled outlines will later be cut out. From the center of each circle, draw a line to the top edge of the transparency sheet. The transparency should resemble the example

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Figure 2. Transparency sheets used for overhead projector presentations are an inexpensive alternative to commercial shields and can easily be customized to fit any microscope.

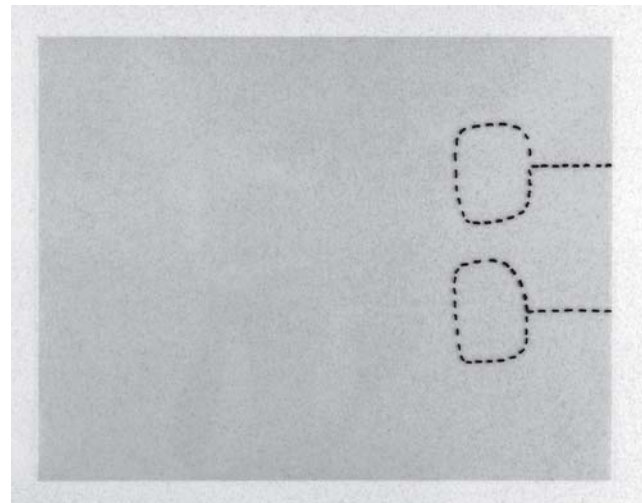


Figure 3. A blank transparency is marked with the approximate diameter of each microscope eyepiece. The two straight lines indicate where the sheet will open and fasten onto the microscope.



Figure 4. A finished microscope shield made from a plastic transparency.

in Figure 3.

Cut along the marked lines to produce two eye holes and fit the eye holes over the eyepieces of the microscope. The two straight cuts at the top make this fitting easier. The eye hole cutouts should be large enough to allow adjustment of the eyepieces. The length of the shield is customized by cutting off a desired amount of the transparency sheet from the bottom. The finished shield is shown in Figure 4.

I prefer a shield with two eye holes, but some microscopists may choose to cut one oblong hole so the shield resembles the product in Figure 1. For about 40 cents per transparency, it is inexpensive and worthwhile to try different shapes and cutouts until you find the best fit for your microscope.

The transparencies may be discarded or cleaned and reused. To clean the shield, use bleach instead of alcohol-based products, which cause transparencies to become cloudy.

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