



InstantImager problems:

The Packard InstantImager, used for digitally acquiring data from radioactively labeled gels, is currently unavailable. The instrument has a damaged detector and repairing the system will cost approximately \$22,000. Dr. Runyan asks that any investigators interested in using the InstantImager (*past or future users*) please contact him at <rrunyan@email.arizona.edu>. Several current users have offered to contribute funds towards the repair, however, Dr. Runyan would like to be able to show the COM Research Council a broad base of support before asking them to supply the remainder of the funds needed.

Mixing and matching microscope objectives:

We are occasionally asked the question “can I use an objective lens from ‘company X’ on a ‘company Y’ microscope?” The answer is “sometimes” and “it depends”. Just because the threads on the objective allow it to be screwed into the microscope nosepiece does not mean that the lens will work as hoped. The images may be acceptable for casual observation “by eye”, but use of digital or film photography may reveal a number of possible optical aberrations. Here are a few issues to be aware of:

Microscopes purchased in the last 10-15 years are probably “infinity corrected”. Older microscopes are “fixed tube length”. Infinity corrected lenses will have the ∞ symbol on the barrel of the lens. Fixed tube length lenses will usually have the number 160 (*occasionally 170 or 180*) on the lens barrel. (*For an interesting essay on identifying the properties of objectives, see: <http://micro.magnet.fsu.edu/primer/anatomy/specifications.html>*) **LENSES MUST BE OF THE SAME TUBE LENGTH AS THE MICROSCOPE.**

The major microscope manufacturers use different optics in the microscope to correct for chromatic aberrations (*see: <http://micro.magnet.fsu.edu/primer/anatomy/aberrations.html>*). As a consequence, users need to know which manufacturer’s lenses are corrected in a similar fashion to avoid adding optical aberrations to their microscope. The following table summarizes objective lenses that can **probably** be interchanged between microscopes with few optical problems.

Type	Compatible lenses	Comments
160mm fixed tube length	Leitz, Olympus, Zeiss	Olympus & Zeiss are considered “closest” in compatibility. Note, older American Optical (AO) microscopes used infinity correction, but this may not be marked on the lens.
Infinity corrected	Nikon CF	Objective thread does not match that of other manufacturers. Adapters for the objective thread are available, however, non-Nikon lenses may not be fully optically compatible.
Infinity corrected	Leica, Olympus, Zeiss	Olympus & Zeiss are considered “closest” in compatibility.

Note: the information in this table is based on the empirical experiences of scientists and vendors in the field, as well as some known general characteristics of the design of vendor’s microscopes. We are not aware of a definitive source for this type of information. Users should be aware that the best optical characteristics of an objective lens will almost always come when it is used on the microscope system that it was designed for. Many thanks to **Dave Chiasson** of Carl Zeiss Inc, **Dr. Russell Carey** of Scientific Instruments (Olympus America), **Kate Hendricks** of Nikon USA, and **Dr. Bob Chiovetti** of GTI Microsystems (Leica) for their assistance with this table.

A reminder that objective lenses are a critical component of the optics of a microscope. The lenses should be handled and cleaned with great care. For help with using, cleaning and/or aligning optical microscopes feel free to contact the Core.

Invite the Core to your lab meeting:

We would like to tell your staff, students and post-docs about the Cellular Imaging Core. In particular we’d like to introduce a number of possible cutting-edge applications that can be performed on the new Zeiss multiphoton microscope.

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