

How To Methods

Compound Microscope Use

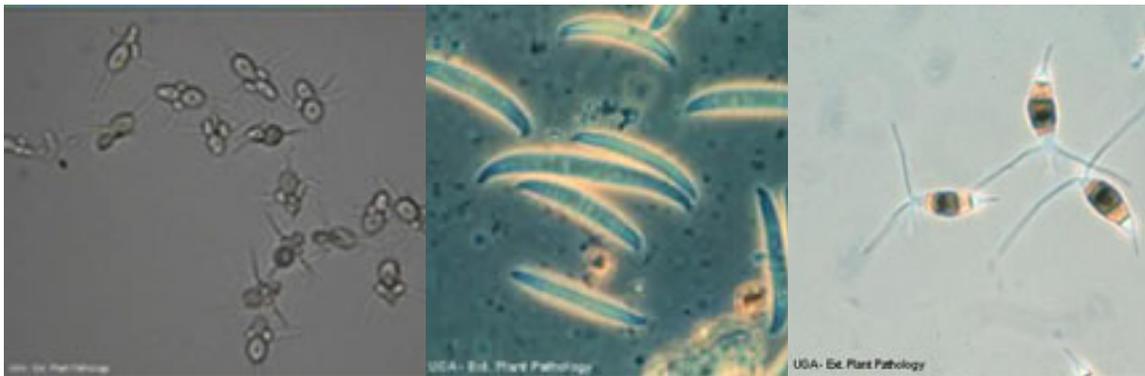
The compound microscope typically has a total magnification range of 40-1000x. There are usually 3 to 4 objectives on each microscope. Objectives provide 4x, 10x, 40x, 100x (sometimes a 20x objective may replace the 4x) magnification. Another 10x magnification is gained through the eyepieces.

The compound microscope is used to view wet mount or stained slides for fine details of fungal fruiting structures and spores. It is usually not possible to identify a fungus solely on spore characteristics. Many fungi produce similar spores. An example is *Cercospora* and *Septoria* fungi. Both produce thin, elongated, multi-celled conidia and if only the spores are viewed, the fungi are virtually indistinguishable from one another. To accurately identify the fungus, you must see where the spores were produced. *Cercospora* conidia are produced on darkly pigmented naked conidiophores, whereas *Septoria* conidia are produced within a pycnidium.

Some fungi can be identified based upon spore characteristics such as pigmentation, shape, size, and ornamentation. A few examples are *Entomosporium*, *Pestalotia*, and *Fusarium*. Some fungi produce no spores such as *Rhizoctonia* and *Sclerotium* (cause of southern blight). These fungi are identified based on mycelial characteristics including hyphae septation, color, size, etc.

When viewing a slide of a disease sample, look through the eyepieces and focus your view using the coarse and fine focus control knobs while on the lowest power objective (usually 10x). To increase magnification move the 20x or 40x objective into place and focus your view while looking through the eyepieces using only the fine focus control knobs. Using the coarse focus control knobs can often raise the slide into the objective breaking the cover slip making viewing the slide difficult.

For most fungi the highest magnification needed is 400x which is obtained using the 40x objective. The 100x objective is an oil immersion objective and is only used for viewing bacterial stains.



Entomosporium

Fusarium

Pestalotia