

# Electronic Tools and Media for Teaching Microscopic Skills

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## ABSTRACT

The most common digital visual media used to teach microscopic skills are still images of significant findings. More recently, whole-slide imaging applications are available, which allow for slide-scanning simulations. Both are important innovations for teaching and assessment, but both have limitations. The single still image is easily delivered and embedded into interactive tools, but the single image does not simulate the discovery aspect of microscopy, nor does it provide sufficient contextual information necessary for the critical thinking aspects. The whole-slide imaging method provides this context but requires the delivery of gigabyte quantities of digital data and thus requires special host servers and viewers. These limit the usefulness of the media and preclude embedding the media into interactive learning tools. Neither method allows for exploration of focal planes, which is often necessary to the discovery and interpretation of findings. We created a new media alternative yielding interactive teaching applications that address some of the limitations of the commonly used methods. These applications

provide for both scanning simulation and focal plane exploration. The applications also model the critical thinking components of practice. All media are prepared in standard formats requiring, at most, single-digit megabyte levels of data transfer. This allows for versatility in embedding into a variety of interactive learning and assessment tools. Applications will be demonstrated in hematology, urinalysis, parasitology, and body fluid analysis. We are prepared to discuss the image collection, preparation, and implementation of the tools.

## Note

A short silent video of a body fluid teaching exercise can be found here.

[http://alliedhealth.lsuhs.edu/ClinicalLaboratory/bodyFluids/lsuhsc\\_demo.mp4](http://alliedhealth.lsuhs.edu/ClinicalLaboratory/bodyFluids/lsuhsc_demo.mp4)

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