

Endomicroscopy and the New Microscopic Microscopes

We don't routinely report microscopy news in *The Microscope* journal, but when it involves what may be some of the world's smallest microscopes, it seems important enough to the editors to mention it here and now. This year, several organizations are currently reporting success with fluorescence and confocal laser systems on new microscopes that are being used by some hospitals to help medical doctors practice and improve gastrointestinal and lung endoscopy.

Called endomicroscopes, these new instruments allow doctors to image cells in real time with high magnification (1,000X) and resolving power ranges between 1 and 3 micrometers. These new microscopes are said to be easy-to-use and compatible with existing endoscopes. The "objective" tube of the microscope is only about 2.5 mm in diameter and can be used to visualize the actual mucosal-layer cells in vivo so that the physician can look with subcellular resolution in hard-to-reach places, map areas of interest, and choose between benign and malignant cell regions for biopsies. In some designs, both low- and high-magnification endoscopic and endomicroscopic images may be viewed simultaneously on a split screen.

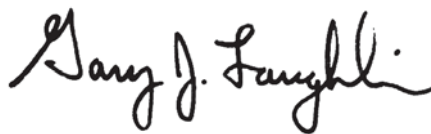
The goal is for doctors to learn to "read" the new, unfamiliar microscopical images while remaining with their patient and the microscope is still in the patient's

body. This may someday allow for the immediate treatment of patients without necessarily waiting days or longer for a pathologist's report. The images can be used to detect cancer in the early stages, which could lead to smarter biopsies.

Of course, until further studies are completed and the effectiveness of using the microscopes can be compared to not using them at all, pathologists will still be employed to double-check the results. One of the manufacturers is expected to have some preliminary results of their comparative study available before the end of this year.

The endomicroscope — a new microscope for this decade — is improving diagnosis and treatment quickly and accurately.

The new endomicroscopes are easy-to-use and allow doctors to image cells in real time with high magnification.



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