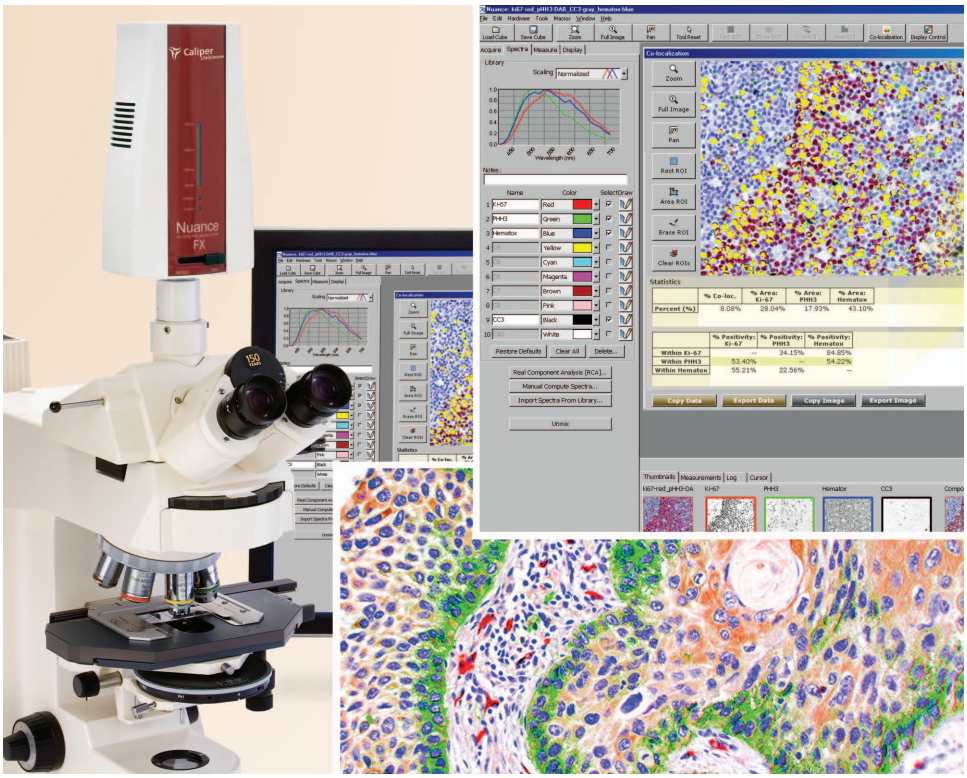
Caliper LifeSciences



Nuance | Multispectral Imaging Systems

Multi-label imaging without cross-talk

Adding Nuance to your lab is a simple, cost-effective means of upgrading your microscope to a powerful multispectral imaging system. Multiplexed labeling can now be achieved while retaining intact morphology, so highly informative spatial information is maintained. The Nuance system enables imaging of multiple molecular markers in tissue sections for both fluorescence and brightfield, even when they are co-localized. Nuance can also eliminate problems stemming from the presence of autofluorescence, and can pull apparently absent signals out of the noise, making them visible and quantitatable. Increase the signal-to-noise of your fluorophores, gaining access to information you can't get any other way.

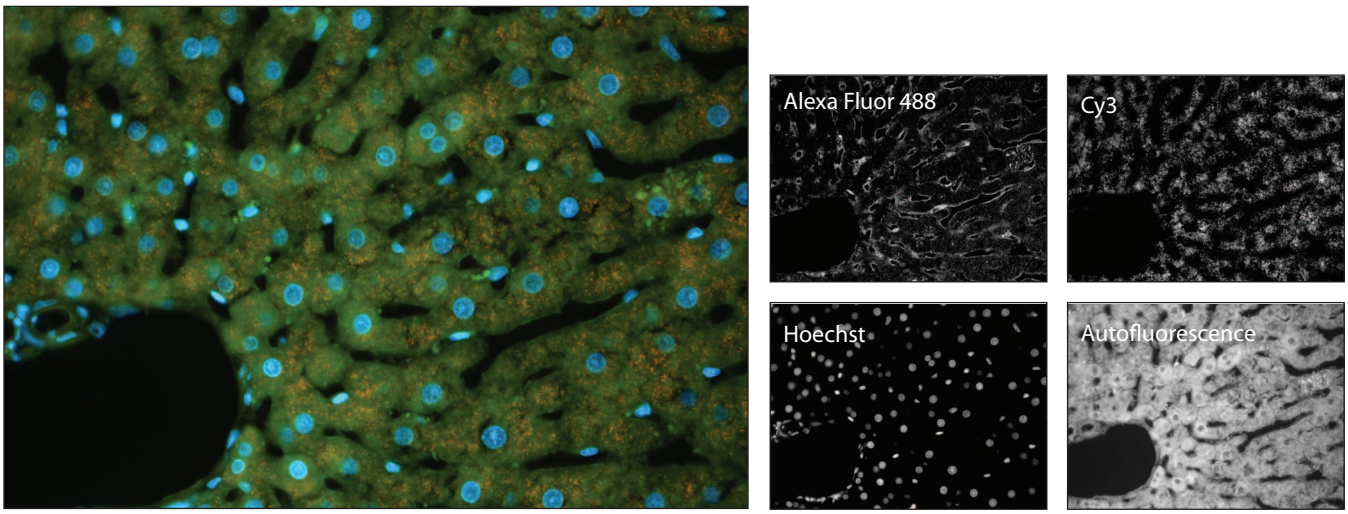
Yes, it's amazing. And yes, you can do it.

With Nuance, it is no longer necessary to stain many serially sectioned slides to monitor the expression of multiple markers. Nuance can visualize multiple nuclear, cytoplasmic and membrane markers, all in the same tissue section, and all with intact morphology. Cell-by-cell expression of various markers can easily be appreciated, and captured quantitatively, providing information similar to that achievable with flow cytometry, but with the advantage that the physical location of markers, cells, and tissue architectural elements are maintained.

Eliminate autofluorescence

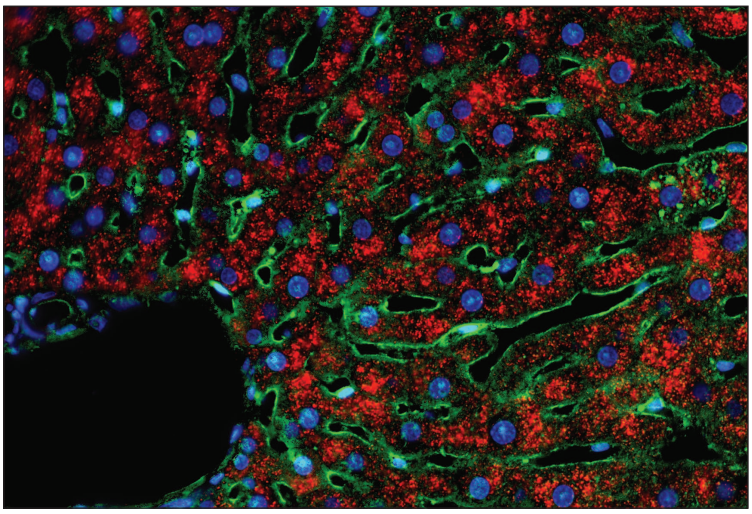
Solid, formalin-fixed, paraffin-embedded tissues are challenging for fluorescence techniques because of the abundance of autofluorescence. Nuance unmixing technology can separate the autofluorescence bringing even very faint specific labels to the fore. Much more sensitive than multispectral confocal systems, there isn't a more robust solution to your image-based data capture and analysis needs available.

Before



The "Before" image represents what would be seen with a conventional color camera. From the spectral information that Nuance generates, each spectral element is isolated even if overlapping, as shown in the panels to the right. The "After" image is a color composite of each element.

After

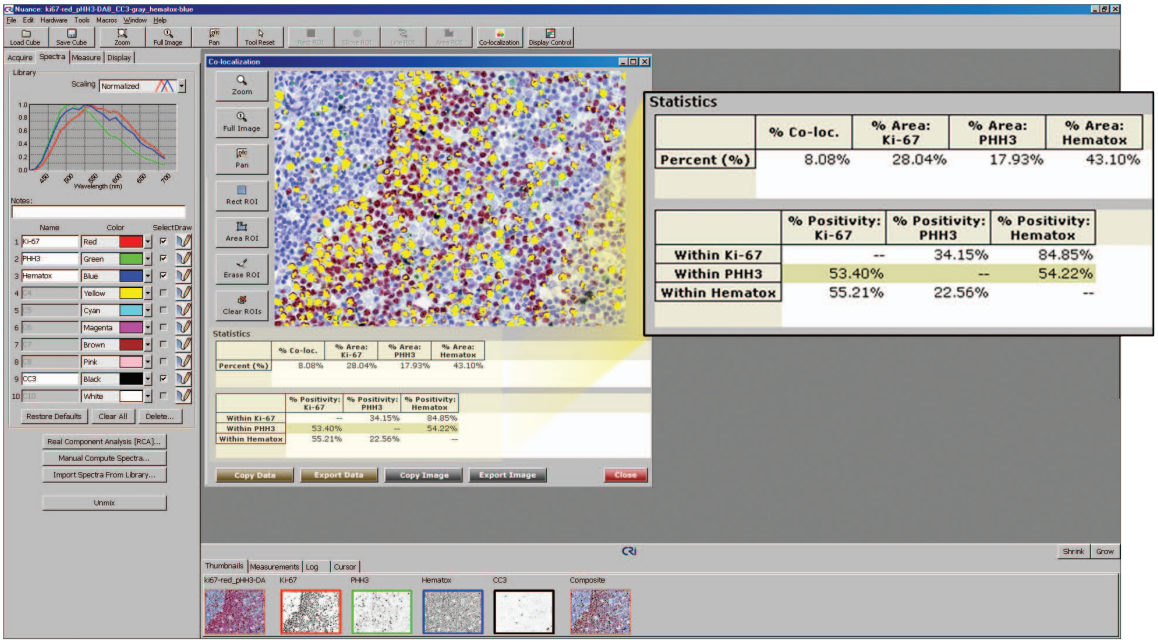


By separating tissue autofluorescence and unmixing three fluorophores in this liver sample, Nuance provides a high-contrast image showing a composite of four unmixed components.

Resolve and quantitate multiple markers.

Nuance can spectrally characterize all the spectral components in a sample, and use this information to automatically separate and quantitate each signal into its own channel—for both fluorescence and brightfield immunohistochemistry.

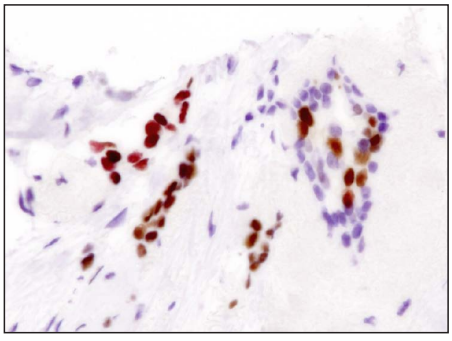
microscope not included



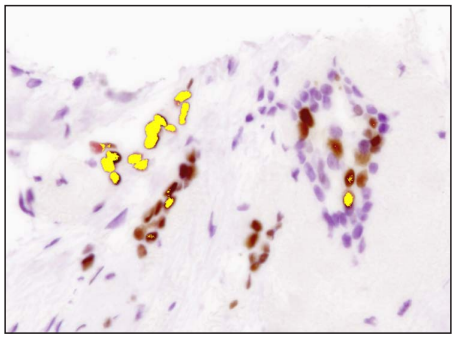
Nuance makes a whole new level of research possible.

Even if your imaging facility has multiple microscopy systems, including laser scanning, none of them delivers the performance of Nuance. The versatility of the Nuance in being able to work with both fluorescence and brightfield samples makes it a unique and valuable addition. With its intuitive operation, powerful analysis tools, compatibility with existing microscopes and lower price-point, you'll quickly get a return on your Nuance investment.

Before



After



On the left, breast cancer section labeled for ER, PR and a nuclear counterstain shown as a standard color image. On the right, a Nuance image showing co-localized ER and PR in yellow. Percent co-localization can be calculated in the Nuance software using the Co-localization tool (please see the screenshot above for an example).

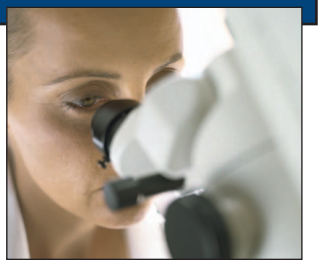
Nuance Multispectral Imaging Systems

Model	EX	FX	VX
Spectral Range	450 – 950 nm	420 – 720 nm	420 – 720 nm
Bandwidth Flexibility	20 and 40 nm	20 and 40 nm	20 nm
Scientific-Grade CCD	Cooled Sony ICX285	Cooled Sony ICX285	Cooled Sony ICX285
Mount Required*	1x c-mount	1x c-mount	1x c-mount
Acquisition and Analysis Software	✓	✓	✓
Applications:			
Brightfield		✓	✓
Fluorescence	✓	✓	
NIR Fluorescence	✓		

* An F-mount macro lens is available for macroscopic applications.

"The Nuance system is the best hardware investment we ever made."

Dr. Shuming Nie, Winship Cancer Institute, Emory University School of Medicine



Photography Credits • Front — Nuance composite image of cerebellum stained with QDMap ™ 605 for gfap and 655 for NFT, image courtesy Ventana Medical Systems
• Before/after shot and component images — Liver section stained with Hoechst (blue), AlexaFluor 488 (green) and Cy3 (red), images courtesy Laszlo Komuves, Genentech.

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www.caliperLS.com

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