



Cellavista by Roche Innovatis

# A Brave New Image

## Advancing Fluorescence Imaging

Since the invention of fluorescence microscopes almost a century ago, current advancements in digital imaging, instrumentation and optics has greatly changed the way scientists conduct *in vivo* studies of molecular processes in cells. This article discusses the latest developments in fluorescence imaging products designed to aid researchers in providing faster, accurate and simplified results.

**Alpha Innotech's FluorChem Xplor** is designed to provide a single system for performing rapid and quantitative 2D gel, chemiluminescent Western and 1D gel imaging. The FluorChem Xplor is capable of imaging large gels faster than a laser scanner with broader flexibility. It includes integrated, protocol-driven AlphaView software enabling imaging of multiple samples under reproducible lighting and exposure conditions. Also included is powerful Xpedition software that can detect spots, quickly normalize to a loading control, and automatically correct for background levels. The FluorChem Xplor detects a wide array of 2D detection dyes, including Coomassie Blue, Sypro Ruby, and Silver stain and is compatible with imaging chemiluminescent western blots, and all 1D gels.

**Leica** announces the new **Leica TCS SMD Series** which performs more precise verification methods for molecule concentrations and interactions, FCCS (fluorescence cross-correlation spectroscopy) and FLCS (fluorescence lifetime correlation spectroscopy). This system integrates hardware/software from PicoQuant with the Leica TCS SP5 II. Researchers can now control a complete SMD experiment via one interface, the LAS AF software. Ease of operation is ensured by application wizards guiding the user through SMD experiments and significantly maximizing the reproducibility of data. With the universal SMD raw data format, a data file can be analyzed in various ways providing quantification with maximum content. Field upgrades of Leica TCS SP5 and SP5 II confocal systems to any of the Leica TCS SMD systems - FCS, FLIM and

FLCS, are possible.

**Marinpharm** introduces **stably transfected fluorescent cell lines** in four different colors - green, red, yellow and blue. Live cell imaging techniques provide a critical insight into the fundamental nature of cellular and tissue function. Biophysical properties of the expressed fluorescent protein dictate suitability in different applications and Marinpharm has established several near and far-red fluorescent tumor cell lines. In addition to whole fluorescent cells, Marinpharm produces cell lines that stably express fluorescent fusion proteins such as actin, tubulin or mitochondria-targeted proteins.

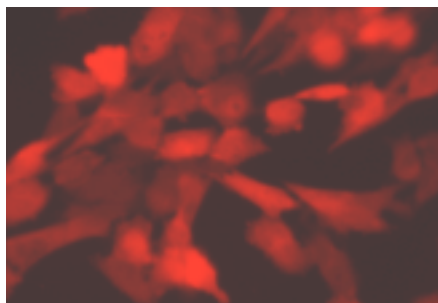
Combining the groundbreaking AZ100 Multizoom and advanced C1 Confocal Microscope, **Nikon** is introducing a tool that permits viewing large specimens in confocal mode, enabling the capture of more information. Designed for macro imaging, the **AZ-C1** can not only capture fields of view of larger than 1cm, but also permits deeper confocal imaging than conventional microscopes thanks to its large working distance objectives. Offering exceptional flexibility, the C1 confocal system is expandable from personal point scanning systems to spectral point scanning systems which will separate closely associated fluorophores and auto fluorescence.

**Olympus** announces the all-in-one **FSX100 Fluorescence and FluoView FV10i Confocal Laser Scanning Microscope Systems** to enable even inexperienced users the ability to create high-end research images. Designed for ease in set up, this new system ensures that users concentrate on the images and data without the hassle of

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Far Red Fluorescent A375-cells from Marinpharm



FluoView FV20i and FSX100 by Olympus



Evolve EMCCD camera from Photometrics

numerous microscope components. All components are motorized and controlled via software thus automating it for the user. Advanced imaging such as time-lapses, Z-stacks and multi-position image capture are easily executed.

The **Evolve EMCCD** camera from **Photometrics** is the first camera to make experimental imaging data quantifiable and reproducible by measuring images in photoelectrons. Current CCD and EMCCD cameras read out imaging data in analog-to-digital units and are arbitrary, depending on the camera's gain settings. Quant-View uses the camera's gain settings to automatically back-calculate pixel values to the number of photoelectrons in real time. Because EMCCDs age over time, the Evolve features Rapid-Cal, which re-characterizes the camera's gain settings in less than three minutes and uses this calibration to accurately quantify data in photoelectrons.

**G:BOX iChemi** chemiluminescent imaging systems, from **Syngene**, include four different models, each containing a high-resolution, 16 bit, CCD camera with control software for chemiluminescence and low-level light emitting samples. The G:BOX iChemi processor assesses the sample, sets exposure time and sensitivity, and auto-scales the captured image. New for the G:BOX iChemi XT and XL models is a computer controlled lens that moves simultaneously with the motorized sample stage enabling the systems to quickly and consistently produce focused initial blot images with minimum user intervention.

**Carl Zeiss** introduces the **Laser TIRF 3** designed to enhance visualization of near-cell membrane dynamic processes while maintaining optimum specimen incubation conditions. The module may be equipped with up to four solid-state lasers and may be

operated entirely from the AxioVision software interface. The TIRF 3 microscope offers the combination of TIRF and transmitted-light contrasting techniques, such as DIC and brightfield, and enables the sequential recording of image pairs. By selectively exciting cellular fluorophores absorbed, adhered, or bound to the surface and combining it with conventional epifluorescence, researchers can relate surface effects to internal cellular structures.

**PTI** introduces a line of **Photo Uncaging upgrades** for their **EasyRatioPro** fluorescence imaging system. The EasyRatioPro system collects and analyzes ratio-metric imaging data for calcium, pH, and intracellular ion imaging. The EasyRatioPro is a comprehensive system featuring dramatic power and high-speed image acquisition via its revolutionary user interface, Warp Drive. This interface allows users to efficiently gather superb quality data. PTI's introduction of photo uncaging upgrades for the EasyRatioPro system offers full field illumination or fixed spot illumination upgrades allowing you to do FRAP, uncaging, photoactivation or flash photolysis. It greatly complements the current applications available on the standard EasyRatioPro system.

**Roche Innovatis** introduces **Cellavista**, an image-based system that can be used for rapid visualization of a broad range of cellular assays, while performing image analysis simultaneously. Combining brightfield and fluorescence optic capabilities, Cellavista enables users to acquire and analyze images for a wide array of cell-based assays including, but not limited to, single cell cloning, cell confluence, suspension cell count, FACS seeding efficiency control, cell nuclei count and characterization, transfection efficiency,

microplate quality control, viral plaque assays, fluorescent protein expression, and apoptosis assays. In as little as five minutes, Cellavista can scan a 96-well microplate with simultaneous image acquisition and analysis. Cellavista employs specially designed optics combined with an exceptionally fast auto-focus to deliver images of extraordinary quality. The automation-friendly design allows for integration with robotic plate loaders and automated incubators for smooth operation 24 hours a day, seven days a week.

#### Companies mentioned in this Product Focus:

Alpha Innotech –[www.alphainnotech.com](http://www.alphainnotech.com)  
 Carl Zeiss –[www.zeiss.com](http://www.zeiss.com)  
 Innovatis –[www.innovatis.com](http://www.innovatis.com)  
 Leica-Microsystems –[www.leica-microsystems.com](http://www.leica-microsystems.com)  
 Marinpharm –[www.marinpharm.com](http://www.marinpharm.com)  
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