

Dye of Excitement

Excite your fluorophores

Fluorescence imaging has been an invaluable tool for the life sciences illuminating the way for researchers. This issue has some impressive new products. Take a look below.



Image supplied by Nikon

Nikon Instruments launches the **A1Si spectral detector option** for its A1 series of confocal laser scanner systems. The A1Si spectral detector option provides fast 32-channel spectral imaging with speeds of up to 16fps at 512 x 64 pixels and real-time spectral unmixing. This cell-friendly system reduces light exposure during multiprobe studies, capturing full spectral data in just one fast scan. Fast fluorescence unmixing during image acquisition is possible, with a 512 x 512 pixel, 32-channel image unmixed in less than one second. Coupled with high-speed spectral imaging, a clearly resolved image with no crosstalk between closely overlapping fluorophore emissions can be created in real time. In addition, a new virtual filter function freely utilizes the 32-channels, providing the flexibility to handle any new fluorescence probes. Desired spectral ranges can be selected and the total intensity of each range adjusted individually. Broader band spectral imaging is achieved on the A1Si, which requires only one pass of the laser to capture all the spectral data in the sample. The A1 and A1R are powerful, fully-automated imaging systems capable of capturing high-quality confocal images of cells and molecular events at high speed and enhanced sensitivity; and now allowing high-speed spectral data acquisition with a single scan. The A1 utilizes conventional paired galvanometers producing high resolution images (up to 4096 x 4096 pixels); the high specification A1R features an innovative hybrid resonant-non-resonant scanning system capable of capturing images at 30fps (512 x 512 pixels). This facilitates ultra-high-speed imaging of up to 230fps (512 x 64 pixels). Furthermore, it offers the ability to perform time-lapse imaging and simultaneous PA-GFP or FRAP with reduced photobleaching and phototoxicity. Nikon's increased light detection efficiency provides high image quality – allowing

brighter images, minimizing laser exposure intensity and reducing damage to cells. One scan fluorescence imaging reduces image acquisition time, and protects cells from further light exposure.

Fujifilm Life Science introduces the **FLA-9000**, the first modular image scanner capable of proteomic applications in radioisotopic, fluorescent, chemiluminescent, and digitized imaging. FLA-9000, also referred to as Starion, has been purposely designed to allow for customized upgradeability to suit researchers specific imaging needs. The FLA-9000 is ideal for fluorescence detection of 2D gels by SYPRO. Ruby stain and digitization of CBB-stained or silver-stained samples and a large scanning area of 40 x 46cm extends the FLA-9000's imaging versatility. The FLA-9000 can be configured in three different models to best accommodate researchers' needs: IP Model, ideal for storage phosphor imaging; RGB Model, ideal for multi-spectral 2D gel imaging; and the IR+IP Model, ideal for conducting near infrared and radioisotope imaging. In addition to its three configurations, the FLA-9000 offers five different excitation wavelengths (473nm, 532nm, 635nm, 685nm, and 785nm) with a dynamic range up to five orders of magnitude. FLA-9000 software includes ImageReader, for image capture, MultiGauge, for image analysis and processing, and is compatible on both Macintosh and Windows operating systems.

Olympus announces the addition of the new **Optigridd M structured illumination system** to its life science microscopy range. Optigridd M yields ultra-rich, multi-channel fluorescence and 3D/4D imaging, while still using standard illumination. Compatible with Olympus BX2, IX2 and MVX10 microscopes, Optigridd M controls are fully integrated into Olympus cell imaging software to provide all users with confocal-like images. The Optigridd M is fully

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Cellavista from innovatis, combines brightfield and fluorescence optic capabilities.



The LSM 710 system from Carl Zeiss.



red from Alpha Innotech

controlled using Olympus cell software via a USB connection, which also ensures simple system integration. Furthermore, it provides users with excellent imaging throughput and programmable experiment repeatability for parallel multiple-specimen imaging. The Optigrad M is an excellent and cost efficient system for expanding the imaging capabilities of new or existing microscopes without taking up valuable laboratory space. Offering confocal-like image quality, the Optigrad M integrates quickly and easily with Olympus BX2, IX2 and MVX10 microscopes.

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. Assay-specific analysis algorithms have been fully developed to identify cell clusters or colonies and are applicable to stem cell research. Using a powerful graphical user interface, researchers can view a whole plate, zoom in on specific wells or colonies of interest, and view histograms, scatter plots

and time charts. Cellavista works with microplates, microscope slides, chamber slides and culture dishes. Automated image stitching capabilities enable complete whole-well analysis as one image. Gating capabilities give the user the power to select specific objects and colonies of interest. 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.

Alpha Innotech introduces **red**, a plug and play gel documentation system with simple installation and an intuitive user interface. red's advanced design uses a touch screen panel to control all aspects of imaging, from lighting control to image capture. red's on board computer with embedded Windows XP means that no additional computer is required to operate the system, saving precious lab space. The scientific-grade imaging sensor and innovative optical design of red provides the flexibility critical to imaging a wide variety of fluorescent 1-D gels. Images can be saved to a memory stick or printed directly to any USB compatible printer.

Carl Zeiss launches the **LSM 710** system. The new microscope boasts a more than doubling in sensitivity and unequalled signal-to-noise performance that will enable users to examine fluorescently-labeled biological systems, including thick living tissue samples, in more detail than ever before. Its high performance is due to the LSM 710's new illumination and detection systems. Zeiss' unique QUASAR filter-free spectral detection unit is more sensitive and flexible than any detector previously released on the market and may be configured with 2-, 3- or 34-channels. The 34-channel QUASAR allows rapid simultaneous spectral collection of images

with a resolution of 9nm over the entire wavelength range. In addition, there is a sequential acquisition mode available that increases spectral resolution to 3nm (available on 2-, 3- and 34-channel systems). Significantly, a spectral recycling loop increases the efficiency of the spectral splitting of the fluorescence emissions to almost 100%. The definite focus module maintains a constant focal plane throughout experiments to ensure that images are always in focus. The new microscope also incorporates PTC (pig-tailed chain) laser capability, enabling plug-and-play use of up to 8 lasers. In addition, the innovative main beam splitter, TwinGate, supports up to 50 laser line combinations, features individually exchangeable filters and offers unparalleled suppression of the excitation laser light for brilliant, high-contrast images. Up to 10 different fluorescent dyes may be resolved and imaged simultaneously, opening up new possibilities for researching multi-labeled cell systems.

Companies mentioned in this Product Focus:

- Alpha Innotech – www.alphainnotech.com
- Carl Zeiss – www.zeiss.com
- Fujifilm Life Sciences – www.fujifilm.lifescienceusa.com
- innovatis – www.innovatis.com
- Nikon – www.nikoninstruments.com
- Olympus – www.olympus.com

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