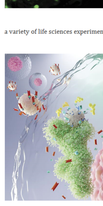
Wednesday, September 18, 2024

BioPhotonics
Bringing Light to the Life Sciences

Monthly newsletter focusing on how light-based technologies are being used in the life sciences. Includes news, features and product developments in lasers, imaging, optics, spectroscopy, microscopy, lighting and more. Manage your Photonics Media membership at BioPhotonics.com/subscribe.



Optical Parametric Amplifiers: The Workhorse of Time-Resolved Studies

Scientific techniques, such as time-resolved spectroscopy and fluorescence, which contribute to advancements in biochemistry and biology applications, all require light that is tuned to very precise wavelengths. Many experimental situations rely on femtosecond tunable pulses with energy levels supported by the combination of chirped-pulse amplification and nonlinear conversion processes. Technical improvements to the instrumentation addressing these needs have resulted in compact solutions that can be integrated into a variety of life sciences experiments. Read Article

Engineering with DNA: Molecular Structure Guides Raman Spectroscopy

In biomedical applications, in which the target analyte is often at nanomolar or picomolar concentrations, the effectiveness of Raman spectroscopy is limited. Furthermore, in biological milieus, distinguishing the vibrational signatures of target molecules from other Raman-active molecules can be challenging. Beyond the conventional label-free modality, several strategies have been adopted to overcome the limitations of the inherently weak Raman effect, of which surface-enhanced Raman spectroscopy remains the most widely used. Read Article

Optogenetics Identifies Sugar Regulating Pancreatic Cells

An international team led by Professor Nikolay Ninov at the Center for Regenerative Therapies Dresden, part of Dresden University of Technology, used optogenetics to analyze transparent fish pancreases to understand how the body controls blood sugar. They found a special group of "first responder" cells in the pancreas that are crucial for triggering blood sugar response. Read Article

Featured Products & Services

OQ LabScope 3.0 Bench-Top OCT System

Lumedica Inc.

The OQ LabScope 3.0 is a compact bench-top SD-OCT imaging system tailored for biomedical research and industrial inspection. Starting at $11,995, it includes acquisition and visualization software, making it an affordable choice for researchers and engineers. Lumedica is dedicated to delivering innovative and scalable OCT solutions.

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High-Speed Imaging Enables Rapid Sepsis Detection

Vision Research Inc., Phantom Digital High-Speed Cameras

To assist medical professionals in preventing sepsis-related deaths, Cytovale®, a life sciences technology company, has developed the IntelliSep® test, a commercially-available medical device that can detect sepsis in less than 10 minutes. To read more about the development of the IntelliSep device, download our case study. Learn more about our Phantom VEO camera series on our website.

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NAN™ Open-Design Microscope

Sutter Instrument Company

The Sutter Instrument NAN™ is a focusing-nosepiece microscope designed for electrophysiology and material science. The microscope frame has been reimagined around Sutter manipulator gantry stands, which allows for many possible configurations to match bespoke application needs. The microscope can be configured with a single filter cube or a complete Olympus epi-illuminator, binocular or trinocular head, various transmitted light LEDs, and with OCC or IR-DIC.

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RM-1250 GEN II STAGE

Applied Scientific Instrumentation Inc.

The RM-1250 XY stage is the culmination of designing and manufacturing automated XY stages for demanding customers. A flat top, flat bottom, and multiple mounting configurations make it easy for laboratories and manufacturers to integrate it into existing systems. No detail went unexamined in the design of the RM-1250 Gen II.

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L5850 Fully Automated Microscope

Etaluma Inc.

The L5850 Microscope is the latest generation of our fully-automated three-channel flagship model and offers the latest advances in optics, cameras, throughput, and user flexibility delivering image quality, motion speed, illumination, and software flexibility.

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New Orange Laser for mCherry, mKate2 and AF594

HÜBNER Photonics GmbH

HÜBNER Photonics announces the addition of 594 nm to the Cobolt 06-01 Series of modulated lasers. The 06-DPL 594 nm, with 100 mW, can be directly modulated in either digital or analogue modulation up to 50 kHz, making it ideal for exciting the red fluorophores often used in optogenetics and other bioimaging applications.

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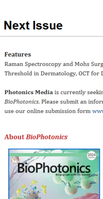
Featured Video



Quantum Breakthrough on Alzheimer's, Optica Making Changes

In the first episode of Photonics Spectra Now we speak with the president of Optica to see how they're reacting to the sudden departure of their CEO, IPG cuts all ties with Russia, and a new study from Howard University could change the way scientists search for a cure for Alzheimer's disease.

Watch Now

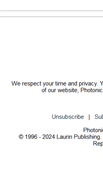
More News

Lens-Free Fluorometer Can Monitor Water Quality in Low-Resource Settings
Researchers from the Phutung Research Institute, the University of São Paulo, and the University of York showed that a lensless fluorometer is generally better than a lensed system for monitoring unsafe bacteria levels in water. Read Article

Squishy Lasers Could Reveal Secrets of Cell Growth
Researchers at the University of St. Andrews and the University of Cologne have developed lasers that they have described as "squishy." These devices could help solve the biological mysteries behind the development of embryos and cancerous tumors. Read Article

Optical Magnetometers Measure Indicators of Potential Disease
A wearable optical device that records activity in the autonomic nervous system could provide medical professionals with a tool for detecting early signs of physical stress. The device is based on ventral cervical magnetoneurography, a method that uses magnetic field sensors to trace and visualize neural activity along peripheral nerves and identify cervical nerve firing noninvasively in real time. Read Article

Latest Webinars



Retinal Imaging with Adaptive Optics Optical Coherence Tomography

Wed, Sep 25, 2024 10:00 AM - 11:00 AM EDT

When imaging the living human eye, even if a person has perfect vision, blur caused by ocular aberrations of the eye limits resolution. This blur rapidly fluctuates due to a number of factors, such as the impact of the heartbeat. Consequently, it is not possible using conventional methods, such as customized contact lenses, to correct for this blur. This blur can be corrected by using adaptive optics, which is a technique used in astronomy to remove the blurring effect of the atmosphere when acquiring images with ground-based telescopes. When combining adaptive optics with OCT, it is possible to image the structure and function of the retina at the single-cell level. This technology is revolutionizing the early detection of retinal disease. Given that the retina is a window to the brain, this ability opens the possibility of using retinal imaging for presymptomatic detection of neurodegenerative and psychiatric diseases.

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Next Issue

Features
Raman Spectroscopy and Mohs Surgery for Basal Cell Carcinoma, Raman Spectroscopy and Atopic Dermatitis, Laser Damage Threshold in Dermatology, OCT for Dermatology Applications, and AI and Imaging in Dermatology

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