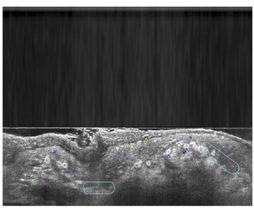
Wednesday, December 18, 2024

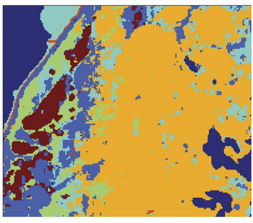
BioPhotonics
Bringing Light to the Life Sciences

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.



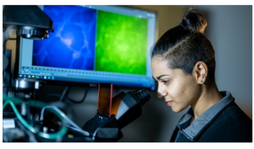
Optical Coherence Tomography Noninvasively Images Skin Structure

Tissue biopsy is the diagnostic standard of care for many types of dermatological conditions that involves excising a tissue sample and sending it to a pathology lab where it is sectioned, stained, and imaged under a microscope. This process is invasive to the patient, often resulting in scarring and a risk of infection. Furthermore, this process introduces a delay in treatment — a delay that technologies, such as optical coherence tomography (OCT), can potentially shorten significantly. **Read Article**



Raman Spectroscopy-Based Detection of Skin Cancer to Guide Surgery

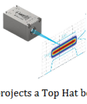
A research team at the University of Nottingham has developed an autofluorescence-Raman spectroscopy technique that aims to streamline surgery to remove skin cancer. The technique has been trialed at the Nottingham University Hospitals NHS Trust. The scanning takes <40 min and provides a clear answer to whether the surgical margins are clear of basal cell carcinoma, which is a cancer that begins in the basal cell layer of the skin. The performance of the autofluorescence-Raman instrument was assessed in a recent clinical study on freshly excised skin specimens from 130 patients. **Read Article**



Optical Redox Imaging Monitors Heart Cell Development

An optical imaging tool for monitoring the growth of human heart cells known as cardiomyocytes could lead to a reproducible means to generate human induced pluripotent stem cell-derived cardiomyocytes for biomanufacturing. The imaging technique, along with various synthetic hydrogel substrates, was developed by a team at the University of Wisconsin-Madison. **Read Article**

Featured Products & Services



BioShape Laser

Osela Inc.

The BioShape Laser is an integrated system that projects a Top Hat beam profile for uniform illumination, optimizing fluorescence and scatter in drug development, DNA research, and flow cytometry. Wavelengths range from 375 to 850 nm with customizable beam shaping for diverse applications.

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Multi-Immersion Objectives

Applied Scientific Instrumentation Inc.

ASI and Special Optics have developed two dipping objective lenses designed for light sheet microscopy of cleared tissue samples, including ASI's ct-dSPIM. These objectives work in any refractive index media without a correction collar because of a unique curved first surface.

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More News

Optical Phased Array-Based Optical Tweezers Manipulate Cells without Damaging Them

Compared to bulk optical tweezers, integrated optical tweezers are compact and low-cost, making them practical for most research organizations. But so far, integrated optical tweezers have been of limited use in biological research, due to the very small standoff distances they provide. **Read Article**

Imaging Technique Enables 20-nm Resolution on Standard Microscopes

A new expansion microscopy (ExM) technique from MIT makes it possible to use a conventional light microscope to generate high-resolution images at the nanoscale. The new ExM protocol, which achieves 20-fold expansion in just one step, provides a simple, inexpensive method that can be used by most biology labs to perform imaging at a resolution of about 20 nm. **Read Article**

Photoacoustic Technique Captures Real-Time Anomalies in Microvasculature

By using a laser to generate ultrasound waves that reveal structural changes, photoacoustic tomography has shown its value in identifying disease conditions in the microvasculature, the tiny vessels that extend from major veins and arteries. To this point, however, the process has been too slow to capture this information in real time, limiting its value in clinical settings. That is now changing, thanks to a device developed at University College London that doctors could potentially hold right in their hands. **Read Article**

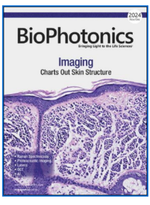
Next Issue

Features

Fluorescence Microscopy, NIR Spectroscopy, Terahertz Imaging, and LED Illumination

Photonics Media is currently seeking technical feature articles on a variety of topics for publication in our magazine *BioPhotonics*. Please submit an informal 100-word abstract to Senior Editor Doug Farmer at Doug.Farmer@Photonics.com, or use our online submission form www.photonics.com/submitfeature.aspx.

About *BioPhotonics*



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