

BIOPHOTONICS

BRINGING LIGHT TO THE LIFE SCIENCES®

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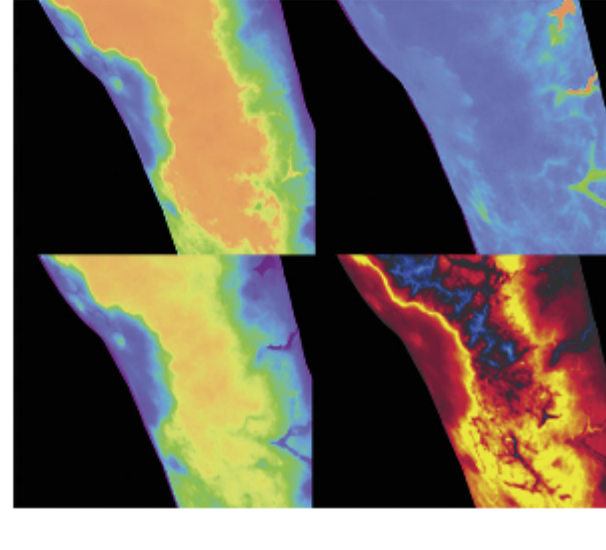
Monthly newsletter focusing on how light-based technologies are being used in the life sciences. Includes news, features and product developments in lasers, imaging, optics, spectroscopy, microscopy, lighting and more. Manage your Photonics Media membership at [Photonics.com/subscribe](https://www.photonics.com/subscribe).



Fluorescence Imaging Could Guide Tissue Infection Diagnosis and Treatment

Necrotizing soft-tissue infections (NSTIs) are aggressive and rapidly advancing infections with a mortality rate between 20% and 30%.^{1,2} In the mainstream media, this disease process is more commonly referred to as “necrotizing fasciitis” or “flesh-eating bacteria.” A recent clinical study has shown that a common fluorescence agent can pinpoint these NSTIs in their early stages — potentially improving chances for survival.

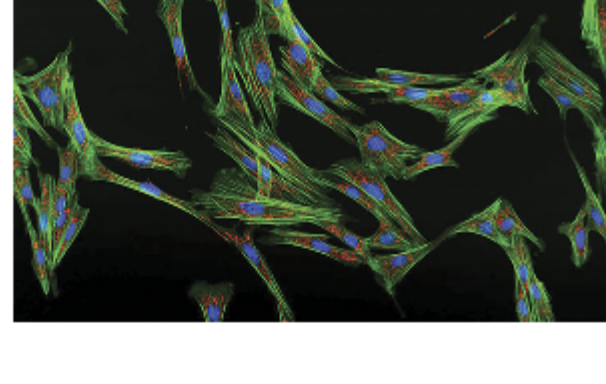
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Live-Cell Imaging Follows Early Signs of Mutation and Disease

Scientists are increasingly turning to live-cell imaging to track changes at the developmental stage of life, which is vital for the advancement of cellular biology, and to grow and monitor proliferating stem cells and cancer cells in a contained environment. This research can provide clues as to how organisms evolve structurally and how therapeutics take hold before a disease requires invasive and life-altering treatment.

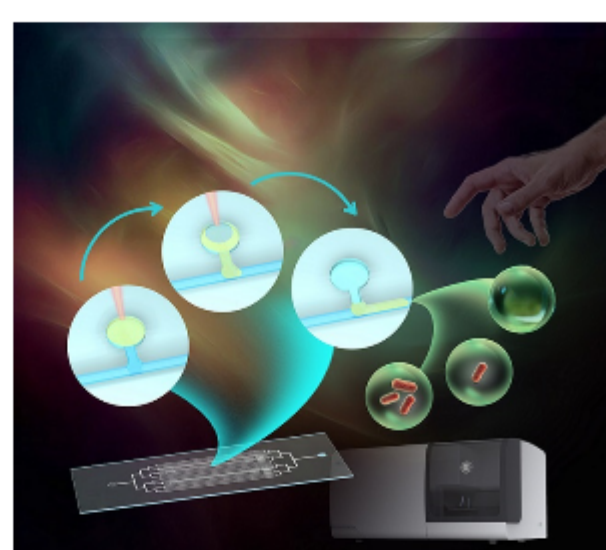
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Single-Cell Analysis Fluidics Tool Delivers on Demand

Researchers at the Qingdao Institute of Bioenergy and Bioprocess Technology of the Chinese Academy of Sciences developed a system called optical on-demand droplet release (OODR), which they believe could promote SDAs as a valuable tool for use with high-capacity screening assays with applications in diverse fields. They said that the technique in its current stage of development has the potential to be used in single-molecule/cell analysis, drug screening, and phenotype-based cell sorting.

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Featured Products & Services



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In Case You Missed It

SPIE Names 2024 Startup Challenge Finalists

Seven early-stage startup companies have been selected to compete for a top prize of \$10,000 at the 14th annual SPIE Startup Challenge at Photonics West on Jan. 30. The SPIE Startup Challenge is a competitive entrepreneurial platform for new businesses that use optics and photonics for innovative products or applications. Participating teams are competing for sponsored prizes, in addition to gaining increased visibility with potential investors.



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Laser Technology Battles Brain Damage by Assessing TBIs at Point of Care

The decisions made about patient care in the hour following a traumatic brain injury (TBI) are critical to patient outcome. To enable timely intervention, researchers at the University of Birmingham are developing a portable noninvasive diagnostic to quickly measure the extent of cerebral injury. The device uses Raman spectroscopy and fundus imaging of the neuroretina to rapidly acquire a molecular footprint of the TBI biochemistry.

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Lasers, Spectroscopy, and OCT Cut Bone Safely

Researchers at the University of Basel have developed a system that increases the safety and precision of lasers used to cut bone in surgical settings. The system is able to cut bone, control the cutting depth, and differentiate between tissues, using a cutting laser, imaging system, and spectroscopy.

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Upcoming Webinars

Laser Application for Display Manufacturing

Tue, Jan 16, 2024 10:00 AM - 11:00 AM EST

Displays are windows into the connected world as nearly every consumer device today has a display and a smartphone without one is impossible to imagine. To produce state-of-the-art displays lasers must be utilized, especially to create high-end and high-resolution designs. Dr. Oliver Haupt from Coherent focuses on OLED displays for smart phones as well as the adoption of OLED displays in the IT sector. He also addresses the incremental market opportunity for MicroLED displays from the very small range in AR to the very large 4K TV market. Finally, he explains how over the last few years more and more UV short wavelengths lasers have been required and implemented in production due to the display material combinations, increase of active display areas, and pixel sizes down to the micron level. Sponsored by LightMachinery Inc.

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Next Issue:

Features

Virtual Staining of Tissue, Raman Photothermal Microscopy, Medical Sensors in fNIRS, and Optical Filters in Raman Spectroscopy

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.

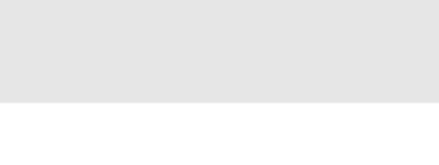
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