

# BIOPHOTONICS

BRINGING LIGHT TO THE LIFE SCIENCES®

## WEBINARS

Join us for a **FREE Webinar**

### Multiphoton Autofluorescence Imaging of T-Cell Function

Tuesday, November 10, 2020 1:00 PM - 2:00 PM EST

[Register Now](#)

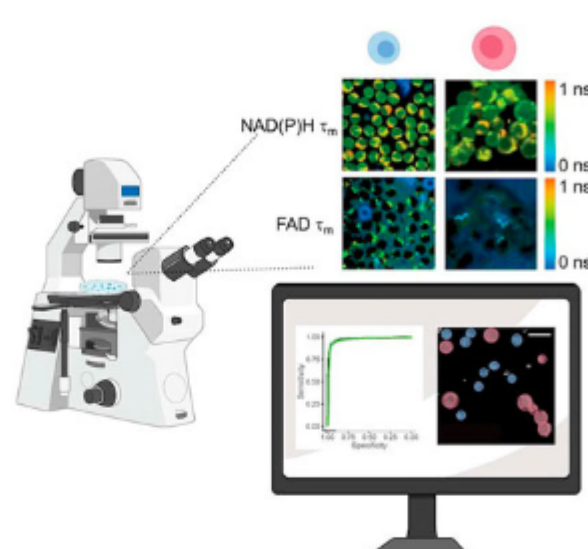
Sponsored by



#### .: About This Webinar

Immune cells, including T cells, have a range of functions depending on activation state and subtype. However, current methods to assess immune cell function use exogenous labels that are limiting for T-cell manufacturing and for time-course studies of immune cell behavior in tumors. Label-free optical imaging is an attractive solution.

In this webinar, Melissa Skala, Ph.D., will explain the use of multiphoton autofluorescence imaging of NAD(P)H and FAD, co-enzymes of metabolism, to monitor T-cell activation and function. Skala will demonstrate how this is a powerful method for label-free, nondestructive monitoring of T-cell metabolism within single cells. This method could inform new immunotherapy approaches for cancer, enable nondestructive assessment of T-cell manufacturing, and monitor in vivo T-cell behavior in mouse models of cancer.



Skala will reference her associated study in which T cells were isolated from the peripheral blood of human donors, activated or polarized to functional subsets, and subjected to tumor-like media (low pH, low glucose, high lactic acid). NAD(P)H and FAD fluorescence intensity and lifetime were monitored on a single-cell level over time. Logistic regression models and random forest models classified T cells according to activation state with 97% to 99% accuracy, and according to activation state (quiescent or activated) and subtype (CD3+CD8+ or CD3+CD4+) with 97% accuracy. From this study, significant differences in autofluorescence were observed between functional T-cell subsets in tumor-like media conditions compared to standard media conditions, reflecting metabolic adaptations to the tumor microenvironment.

The hardware, optics, and analytical algorithms of multiphoton autofluorescence imaging are readily integrated into a variety of quantitative imaging technologies, such as flow and image cytometry or intravital microscopy.

The webinar will conclude with a Q&A.

#### Who should attend:

All those investigating solutions for label-free, nondestructive imaging, especially for monitoring T cells in biomedical applications. Specialists and students in the life sciences seeking a better understanding of cellular imaging, specifically multiphoton fluorescence lifetime imaging.

#### About the presenter:

Skala received her B.S. in physics at Washington State University in 2002, her M.S. in biomedical engineering at the University of Wisconsin-Madison in 2004, and her Ph.D. in biomedical engineering at Duke University in 2007. Her postdoctoral training was also in Biomedical Engineering at Duke University, from 2007-2010. From 2010-2016, she was an assistant professor of biomedical engineering at Vanderbilt University. Since 2016 she has been an investigator at the Morgridge Institute for Research. She is also a professor of biomedical engineering at the University of Wisconsin-Madison. Her lab develops new methods to understand and combat cancer using photonics-based technologies.

Illustration credit: Alex Walsh.

This webinar is sponsored by [Omega Optical, LLC](#). Omega Optical can provide standard or custom filters from UV to IR from prototype to production quantities in vision systems, life science, industrial, astronomy and defense applications. Omega Optical has designed over 100,000 custom optical filters and mirrors and shipped over 30 million since 1969.

#### .: Mark Your Calendar

**Date: Tuesday, November 10, 2020**

**Time: 1:00 PM - 2:00 PM EST**

Space is limited. Reserve your Webinar seat now at: <https://attendee.gotowebinar.com/register/2861878542908039949>

After registering you will receive a confirmation email containing information about joining the Webinar.

#### SYSTEM REQUIREMENTS

##### Operating System

Windows® 7 or later, Mac OS® X 10.9 or later, Linux®, Google Chrome™ OS  
Android™ OS 5 or later, iOS® 10 or later

##### Web Browser

Google Chrome™ (most recent 2 versions)  
Mozilla Firefox® (most recent 2 versions)

##### Mobile Devices

Android™ 5 or later  
iPhone® 4S or later  
iPad® 2 or later  
Windows Phone® 8+, Windows® 8RT+

#### .: More from Photonics Media

##### Upcoming Webinars

- [Launching a Machine Vision Project](#), 11/4/2020 1:00:00 PM EST
- [Optical and Electrical Microsystems for Advanced Biomedical Imaging and Diagnosis](#), 11/12/2020 10:00:00 AM EST

##### Archived Webinars

- [Focus on Recovering Signals in Optical Experiments](#)
- [Lightguides for Mixed Reality Glasses: Design Techniques and Challenges](#)
- [Paving the Way Toward Ultrahigh-Speed and High-Resolution 3D Optical Measurements](#)

##### Don't miss out!

Sign up for our Webinar Alerts email today and never miss an upcoming event.

We respect your time and privacy. You are receiving this email because you are a Photonics Spectra magazine subscriber. You may use the links below to manage your subscriptions or contact us.

Questions: [info@photonics.com](mailto:info@photonics.com)

[Unsubscribe](#) | [Subscribe](#) | [Subscriptions](#) | [Privacy Policy](#) | [Terms and Conditions of Use](#)

Photonics Media, 100 West St., PO Box 4949, Pittsfield, MA 01202-4949  
© 1996 - 2020 Laurin Publishing. All rights reserved. Photonics.com is Registered with the U.S. Patent & Trademark Office. Reproduction in whole or in part without permission is prohibited.