

LIGHT-SHEET

Conference & Workshop | 2022

Pre-Conference Tutorial

Monday, May 9, 2022:

Cornelia Clapp Auditorium, Lillie Building, MBL

08:00 – 08:45	Registration
08:40 – 09:00	Welcoming Remarks Gary Laevsky, Princeton University Abhishek Kumar, Marine Biological Laboratory
09:00 – 09:30	“Optical Sectioning and basic fluorescence microscopy” Michelle Itano, University of North Carolina Chapel Hill
09:30 – 10:00	“Anatomy of a lightsheet microscope” Sara Cole, University of Notre Dame
10:00 – 10:30	Coffee Break
10:30 – 11:00	“Choosing cameras for purpose, Cost vs function vs speed” Simon Watkins, University of Pittsburgh
11:00 – 11:30	“Practical aspects of objective lens design” (Virtual) Steven Ross, Nikon USA
11:30 – 12:00	“Considerations for lightsheet image processing and analysis” Holly Gibbs, Texas A&M University
12:00 – 13:00	Lunch

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| 13:00 – 13:30 | Welcoming Remarks
Gary Laevsky, Princeton University
Anne Sylvester, Marine Biological Laboratory |
| 13:30 – 14:30 | “Optical Tools for Analyzing and Repairing Biological Systems”
Ed Boyden, MIT (Virtual) |
| 14:30 – 15:30 | “Hyperspectral light sheet microscopy for 5D imaging of living tissues”
David Piston, Washington University St. Louis |
| 15:30 – 16:00 | Coffee Break |
| 16:00 – 17:00 | “Multiplexed and scalable cellular phenotyping toward the standardized three-dimensional human neuropathology”
Tatsuya Murakami, The Rockefeller University |
| 17:00 – 18:00 | “Doing science with light sheet microscopy - in the lab and in the classroom”
Pavel Tomancak, Max Planck Institute of Molecular Cell Biology and Genetics (Virtual) |
| 18:30 – 21:00 | Conference Reception Dinner, Swope Lower Terrace |

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Tuesday, May 10, 2022:

Cornelia Clapp Auditorium, Lillie Building, MBL

- 09:00 – 10:00 **“Component dynamics and realistic force balance allow particle-based simulations to recapitulate in vivo actomyosin ring kinetics”**
Amy Shaub-Maddox, University of North Carolina Chapel Hill **(Virtual)**
- 10:00 – 11:00 **“3D Microscopy for Quantitative Analysis of Microcarrier-Based Stem Cell Cultures”**
Kristen Maitland, Texas A&M University
- 11:00 – 11:30 **Coffee Break**
- 11:30 – 12:30 **“Can it fit? Tips and tricks to bring you sample into the light...sheet.”**
Emmanuel Reynaud, University College Dublin
- 12:30 – 13:30 **Lunch**
- 13:30 – 14:30 **“High-Resolution Oblique Plane Microscopy”**
Kevin Dean, U T Southwestern
- 14:30 – 15:30 **“Adaptive optics for high-resolution microscopy”**
Na Ji, University of California Berkeley **(Virtual)**
- 15:30 – 16:00 **Coffee Break**

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16:00 – 16:40

Federal Grant Opportunities for Instrumentation

“National Institute of General Medical Sciences (NIGMS) Technology Development Program”

Alvin T. Yeh, National Institutes of Health **(Virtual)**

“Support for Light-sheet Researchers at the National Science Foundation”

Steven Ellis, National Science Foundation **(Virtual)**

16:40 – 18:20

Early Career Session

“Using light-sheet microscopy to study motor sequence generation in *Drosophila*”

Amicia Elliot, National Institutes of Health

“Multimodal Optical Scope with Adaptive Imaging Correction (MOSAIC)”

Tian-Ming Fu, Princeton University

“Non-canonical neuromodulation of the cerebellar cortex”

Stephanie Rudolph, Albert Einstein College of Medicine

“Cell division and developmental decisions in a changing world”

Zak Swartz, MIT

“Mollusc-inspired multi-immersion microscope objectives”

Fabian F. Voigt, Harvard University

18:30 – 19:30

Dinner, Swope Lower Terrace

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19:30 – 21:00 **Happy Hour and Vendor Talk, Swope Lower Terrace**

Mizar Imaging Inc.
Intelligent Imaging Innovations (3I)
Lifecanvas Technologies
TCI America
Scientific Volume Imaging (SVI)
Arivis
Imaris, Oxford Instruments

21:00 – 22:00 **Core Facility Managers Discussion (Optional)**

Moderator: Gary Laevsky and Louis Kerr

Wednesday, May 11, 2022:

Cornelia Clapp Auditorium, Lillie Building, MBL

09:00 – 10:00 **“Uncovering cell dynamics in developing embryos, embryoids and organoid models”**

Gopi Shah, EMBL Barcelona **(Virtual)**

10:00 – 11:00 **“Lattice light sheet microscopy – innovations, applications and future directions”**

Wes Legant, University of North Carolina Chapel Hill

11:00 – 11:30 **Coffee Break**

11:30 – 12:30 **“3D single-molecule tracking and super-resolution imaging throughout cells using a tilted light sheet”**

Anna-Karin Gustavsson, Rice University **(Virtual)**

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| 12:30 – 13:30 | Lunch |
| 13:30 – 15:30 | Poster Session |
| 15:30 – 16:00 | Camera Vendor Talks, Meigs Room
Hamamatsu
PCO
Photometrics |
| 16:00 – 17:00 | Vendor Talk, Meigs Room
MBF Bioscience
Applied Scientific Instrumentation
Bruker
Zeiss
Olympus
Miltenyi Biotech |
| 17:00 – 17:30 | Break |
| 17:30 – 18:30 | “How the embryo gets its shape: understanding early mouse development with light-sheet microscopy”
Kate McDole, MRC Laboratory |
| 18:30 – 21:00 | Dinner and Conference Closing Party
Swope Lower Terrace |