

BioTech 53: Super Resolution Microscopy

Tuesday

9:00am – 9:15am Room 162	Workshop Opening	Jithesh Veetil (FAES@NIH)
9:15am – 9:25am Room 162	Program Review	Xufeng Wu
9:25am – 10:10am Room 162	Perils and Pitfalls in Super-Resolution Microscopy	Hari Shroff
10:10am – 10:55am Room 162	Study of Focal Adhesions Using Super Resolution Imaging	Clare Waterman
10:55am – 11:05am	BREAK	
11:05am – 11:30am Room 162	High Speed Structured Illumination and Single Molecule Localization Reveal dynamic, Complex Structures in the Endoplasmic Reticulum	Chris Obara
11:30am – 11:55pm Room 162	Super-resolution STED Imaging of Membrane Structural Remodeling during Vesicle Fusion and Fission	Ling-Gang Wu
11:55am – 1:00pm	LUNCH	
1:00pm – 3:00pm Lab	Hands-on rotation	
3:00pm – 3:15pm	Break	
3:15pm – 5:15pm Lab	Hands-on rotation	

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Wednesday

9:00am – 9:40am Room 162	STED Microscopy: Theoretical basis and practical guide <ul style="list-style-type: none">• Stimulated emission depletion (STED) microscopy: basics and theory• Dyes suitable for STED imaging• Problems associated with STED imaging• How STED fits into the toolbox of super-resolution techniques	Chris Combs
9:40am – 10:20am Room 162	PALM/dSTORM Imaging: Theoretical basis and practical guide I <ul style="list-style-type: none">• Optimizing precision and accuracy in your experiment by understanding sample preparation options.• Brief overview of how PALM/dSTORM works• Typical laser intensities during imaging• How to pick a good probe• Optimizing dSTORM reducing buffer• How to interpret your final image	Kem Sochacki
10:20am – 10:30am	BREAK	
10:30am – 11:00am Room 162	PALM/dSTORM Imaging: Theoretical basis and practical guide II <ul style="list-style-type: none">• Is your data worth fitting and reconstructing?• Precision and resolution	Jason Yi
11:00am – 12:00pm Room 162	SIM and iSIM Microscopy: Theoretical basis and practical <ul style="list-style-type: none">• Gustafsson Structured illumination: theory and implementation• Instant Structured illumination: theory and implementation• Keys to a high-quality structured-illumination microscope	Hari Shroff
12:00pm – 1:15pm	LUNCH	
1:15pm – 3:15pm Lab	Hands-On Rotation	
3:15pm – 3:30pm	BREAK	

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3:30pm – 5:30pm
Lab

Hands-On Rotation

Thursday

9:00am – 9:40am
Room 162

**Advances in fluorescent protein development
and application in super resolution
microscopy**

George Patterson

9:40am – 10:20am
Room 162

TIRF-SIM Imaging for cytoskeleton elements

Jordan Beach

10:20am – 10:30am

BREAK

10:30am – 11:00am

**3D live imaging of cellular and multicellular
specimens with Lattice light sheet microscopy
and Tiling light sheet microscopy**

Liang Gao

11:00am – 11:30am
Room 162

**Airyscan: Bringing Super Resolution to
Confocal Microscopy**

Xufeng Wu

11:30am – 12:00pm
Room 162

Question and Answer

12:00pm – 1:00pm

LUNCH

1:00pm – 3:00pm
Lab

Hands-on rotation

3:00pm – 3:15pm
Room 162

BREAK

3:15pm – 5:15pm
Lab

Hands-on rotation

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Friday

8:15am NIH	Shuttle Bus to Advanced Imaging Center (AIC) at Janelia HHMI Research Campus	<ul style="list-style-type: none">• Pick Up: 08:15 AM :In the Family Lodge Parking Lot.• Pick Up: 08:30 AM : NIH Gateway, Pick up at the Kiss and Ride Parking Lot
10:30am – 11:00am Janelia Campus	Lattice Light Sheet	Wes Legant
11:00am – 12:00pm Janelia Campus	Accessing the Emerging Imaging Technologies at HHMI Janelia Research Campus	John Heddleston
12:00pm – 1:00pm	Lunch	
1:00pm – 4:30pm Janelia Campus	Demo of the SR Microscopes (iPALM, TIRF-SIM, Lattice Light Sheet Microscopes)	
4:30pm Janelia Campus	Shuttle Bus to NIH campus; Appx 6 PM drop-off at NIH Bethesda Campus	

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Workstations for Hands-on sessions:

Station I (Building 50, Room 2250)

GE – SIM microscope, Model # OMX SR

Patrina Pellett

patrina.pellett@ge.com

Peter Franklin

Peter.Franklin@ge.com

Station II (Building 50, 2435)

Zeiss – PALM microscope, Model # ELYRA

Elise Shumsky

elise.shumsky@zeiss.com

Arnold, Alma

alma.arnold@zeiss.com

Station III (Building 50 Room 3334)

Nikon – STORM microscope, Model # N-STORM 4.0

Eric Balzer

ebalzer@nikon.net

Station IV (Building 50, Room 2315)

Zeiss LSM880-Airyscan

Elise Shumsky

elise.shumsky@zeiss.com

Arnold, Alma

alma.arnold@zeiss.com

Station V (Building 10, Room 6N309)

Leica – gSTED microscope, Model # TCS SP8

Geoff Daniels

Geoff.Daniels@leica-microsystems.com

Station VI (Building 10, Room 6N309)

Visitech – iSIM Microscope;

Jim Paladino

jim@biovis.com

Station VII (Building 13, Room G800)

Hari Shroff LAB – Instant SIM Microscope;

Hari Shroff LAB – Dual-View Plane Illumination Microscope

Hari Shroff

shroffh1@mail.nih.gov

Station VII-VIII (Janelia HHMI Research Campus)

AIC at Janelia HHMI Research Campus – iPALM, TIRM-SIM, Lattice Light Sheet

John Heddleston

heddlestonj@janelia.hhmi.org