

BioTech 35: Immunofluorescence & Confocal Microscopy

NIH Bldg. 162

Tuesday

8:40am – 8:45am Room 134/60	Welcome	Jithesh Veetil (FAES)
8:45am – 10:00am Room 134/60	Fundamentals of Fluorescence Microscopy	Scott Olenych (Zeiss)
10:00am – 10:10am	BREAK	
10:10am – 11:30am Room 134/60	Intro to Immunofluorescence, and Its Practical Application	Lynne Holtzclaw (NICHD)
11:30am – 12:30pm	LUNCH	
12:30pm – 2:00pm Room 134/60	Wet Lab: Preparing a 3-color immunofluorescence slide for confocal microscopy, Part I	Lynne Holtzclaw (NICHD)
2:00pm – 3:30pm Room 134/60	Basic Confocal Imaging	Alma Arnold (Zeiss)
3:30pm – 6:00pm Lab	Wet Lab: Preparing a 3-color immunofluorescence slide for confocal microscopy, Part II	Lynne Holtzclaw (NICHD)

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Wednesday

9:00am – 11:20am Lab	Microscopy Lab: Confocal Basics I: Acquiring/Optimizing images: Effect of Pinhole, Gain, Laser Power/Attenuation, Objective Mag, NA, Scan Area, Pixel Size; Z-stacks	See Mic Lab Schedule
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11:20am – 12:20pm	LUNCH	
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12:20pm – 1:20pm Lab	Microscopy Lab: Confocal Basics II: Acquiring/Optimizing images: Effect of Pinhole, Gain, Laser Power/Attenuation, Objective Mag, NA, Scan Area, Pixel Size; Z-stacks	See Mic Lab Schedule
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1:20pm – 2:30pm Lab	Spinning Disk Confocal Demo	See Mic Lab Schedule
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2:30pm – 6:00pm Room 134/60	Computer Lab: Image Presentation/Analysis Primer – Intro to Fiji; Viewing & Manipulating today's images	Vincent Schram (NICHD)
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Thursday

9:00am – 9:45am Room 134/60	Spinning Disk Confocal, Light Sheet Microscopy	Valarie Barr (NCI)
9:45am – 9:50am	BREAK	
9:50am – 11:00am Room 134/60	Super-Resolution down to 100nm – Deconvolution; SIM (Structured Illumination); iSIM/AiryScan	Xufeng Wu (NHLBI)
11:00am – 11:10am	BREAK	
11:10am – 12:30pm Room 134/60	CoLocalization	Susan Garfield (NCI)
12:30pm – 1:30pm	LUNCH	
1:30pm – 4:15pm Lab	Microscopy Lab: Colocalization; Deconvolution; Spectral Unmixing	See Mic Lab Schedule
4:15pm – 4:30pm	BREAK	
4:30pm – 6:00pm Room 134/60	Computer Lab: Colocalization; Deconvolution; Spectral Unmixing	Jeff Reece (NIDDK)

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9:00am – 10:00am Room 134/60	FRET and BioSensors	Tatiana Karpova (NCI)
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10:00am – 10:10am	BREAK	
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10:10am – 11:10am Room 134/60	Live Cell Imaging: Fluorescent Proteins, FRAP, FLIP, Photo Activation	Dani Cai (NICHD)
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11:10am – 11:20am Room 134/60	Loose Ends; Feedback	Jeff Reece / J. Veetil
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11:20am – 12:20pm	LUNCH	
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12:20pm – 3:30pm Room 134/60	Microscopy Lab: FRET; FRAP	See Mic Lab Schedule
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3:30pm – 5:00pm Room 134/60	Computer Lab: FRET; FRAP	Joe Brzostowski (NIAID) Valentin Jaumouillé (NHLBI)

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MICROSCOPY LAB SCHEDULE

For Wednesday-Friday microscopy labs, students will be divided into groups of no more than 4/group. Some effort will be made when assigning the grouping and the microscopes to accommodate the desires and interests of the students, *as indicated on the Initial Questionnaires filled out and returned by Tuesday afternoon*. The grouping assignments A-E will be indicated on a separate list passed out on Wednesday morning. The name of each student will have a letter beside it, e.g. "Roger Tsien / **A**".

Wednesday 4/19/2017			
What	Group	Where	Instructor
9-11:20am and 12:20-1:20pm: Microscopy Lab: Confocal Basics: <ul style="list-style-type: none"> Acquiring/Optimizing images: Effect of Pinhole, Gain, Laser Power/Attenuation, Objective Mag, NA, Scan Area, Pixel Size Multi-color; Z-stacks 	A	35/2C403: Zeiss LSM 880	Alma Arnold
	B	50/2315: Nikon A1R+	Jason Hill
	C	5/329: Zeiss LSM 780	Edgar Vogt
	D	37/B114: Zeiss LSM 880	Christine Krieger
	E	49/3W16: Zeiss LSM 880	Nathanie Trisnadi
1:30-2:30pm: Spinning Disk Confocal Demo	A	8/B123: MetaMorph	Jeff Reece
	B	35A/GD922: Nikon Elements	Jason Hill
	C	8/2A24: MetaMorph	Simona Rosu
	D	37/2033B: MetaMorph	Jim Paladino / Chris Anderson
	E	49/3B35: Zeiss ZEN	Stephen Wincovitch

Thursday 4/20/2017			
What	Group	Where	Instructor
1:30-4:15pm: Microscopy Lab: Colocalization; Deconvolution; Spectral Unmixing	A	35/2C403: Zeiss LSM 880	Alma Arnold
	B	37/2033B: Leica SP8	Owen Schwartz
	C	5/329: Zeiss LSM 780	Jeff Reece
	D	37/1035: Zeiss LSM 780	Javier Manzella-Lapeira
	E	35A/GD922: Zeiss LSM 780	Nathanie Trisnadi

Friday 4/21/2017			
What	Group	Where	Instructor
12:20-3:30pm Microscopy Lab: FRET; FRAP	A	5/329: Zeiss LSM 780	Yehong Ye
	B	37/B114: Zeiss LSM710 NLO	Joe Brzostowski
	C	4/B2-31c: Leica SP8	Val Jaumouillé
	D	49/3W16: Zeiss LSM 880	Dani Cai
	E	10/6C-208: Zeiss LSM 880	Javier Manzella-Lapeira

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Special Thanks to the following Donors of Equipment

NCI

- CCR Confocal Microscopy Core, Susan Garfield
- Laboratory of Genitourinary Cancer Pathogenesis Microscopy Core, Ross Lake
- Laboratory of Cellular and Molecular Biology Microscopy Core, Valarie Barr

NHGRI

- Cytogenetic and Microscopy Core Facility, Stephen Wincovitch

NHLBI

- Light Microscopy Core Building 10, Chris Combs
- Light Microscopy Core Building 50, Xufeng Wu

NIAID

- Biological Imaging Facility, Owen Schwartz

NICHD

- Microscopy and Imaging Core (MIC), Vincent Schram

NIDDK

- Advanced Light Microscopy & Image Analysis Core (ALMIAC), Jeff Reece
- Laboratory of Cellular and Molecular Biology, John Hanover
- Laboratory of Biochemistry and Genetics, Kevin O'Connell

NINDS

- Neurosciences Light Imaging Facility, Carolyn Smith