

Virtual Light Sheet Fluorescence Microscopy Meeting 2020
Programme

Wednesday 23rd September		
Single Objective LSFM Sponsored by ASI		Session Chair: Chris Dunsby
14:00	Introduction	
14:05	High-speed in-vivo 3D microscopy across scales	Invited Speaker: Elizabeth Hillman Columbia University
14:20	eSPIM: Light-sheet microscopy for cell biology	Invited Speaker: Bo Huang UCSF San Francisco
14:35	Single-objective selective-volume illumination microscopy enables high-contrast light-field imaging	Kevin Keomanee-Dizon University of Southern California
14:45	Spatial '-omics' in large samples using high numerical aperture oblique plane microscopy	Douglas Shepherd Arizona State University
14:55	Session Quiz – Prize: <i>A Foldscope</i>	
Superresolution LSFM Sponsored by the Royal Microscopical Society		Session Chair: Deidre Kavanagh
15:00	Fishing for leukocytes: Cellular and subcellular dynamics of migrating immune cells revealed by in vivo lattice light-sheet microscopy	Invited Speaker: Harriet Manley Australian Regenerative Medicine Institute / Monash University
15:15	How biofilms form and single cells flow: insights revealed by light sheet microscopy	Invited Speaker: Boyang Qin Princeton University
15:30	Light Sheet Microscopy Coupled to an Atomic Force Microscope to Study the Engulfment Forces During Phagocytosis	Invited Speaker: Megan Kern University of North Carolina
15:45	Lattice Light-Sheet at Warwick University	Helena Coker Warwick University
15:55	Session Quiz – Prize: <i>€50 Voucher</i>	
16:00	BREAK	
Company Teasers		Session Chair: Emmanuel Reynaud
16:30	ASI - Can you design an objective lens that works in air, water, and oil? (and implications for light sheet)	<i>Platinum Sponsor</i> Speaker: Jon Daniels
16:45	3i - Improving Cleared Tissue Microscope Imaging with a Spatial Light Modulator	<i>Platinum Sponsor</i> Speaker: Dr. Edward Lachica
17:00	ZEISS – The Lightsheet 7	<i>Gold Sponsor</i> Speaker: Jacques Paysan
17:05	Luxendo - Bruker Luxendo Light-Sheet Fluorescence Microscopy: Imaging Life Across Scales	<i>Gold Sponsor</i> Speaker: Malte Wachsmuth
17:10	Teledyne Photometrics - Introduction to the Kinetix sCMOS	<i>Gold Sponsor</i> Speaker: Rachit Mohindra and Phil Allen
17:15	DRVISION - Aivia live demonstration	<i>Gold Sponsor</i> Speaker: Patrice Mascaldi
17:20	SVI - Huygens Fuser: fusion and deconvolution of all types of Light Sheet images made easy	<i>Gold Sponsor</i> Speaker: TBC
17:25	Inscoper - The new microscopy acquisition software	<i>Gold Sponsor</i> Speaker: Otmene Bouchareb
LSFM Facility Perspectives Sponsored by Teledyne Photometrics		Session Chair: Gopi Shah
17:30	Custom light sheet microscopy developments and applications in an imaging facility environment	Invited Speaker: Martin Lenz CAIC Cambridge
17:45	LSFM underscores the variability and complexity of yolk microtubule organization during early zebrafish development	Invited Speaker: María Marsal SLN ICFO Barcelona
18:00	TALK TITLE TBC	Invited Speaker: Teng-Leong Chew
18:15	The User's Guide to the Light-sheet Galaxy	Alessandro Ciccarelli The Francis Crick Institute
18:25	Session Quiz – Prize: <i>T-shirt and Cap</i>	
18:30	END OF DAY	

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Thursday 24 th September				
Image Processing Sponsored by AIVIA DR Vision			Session Chair: Robert Haase	
14:00	Introduction			
14:02	Tips for adapting to LISH image visualization and analysis		Invited Speaker: Holly C Gibbs Texas A&M University	
14:14	Spatially varying deconvolution for light-sheet microscopy		Bogdan Toader University of Cambridge	
14:26	On Flow and Form: Building tools to visualise morphogenesis		Invited Speaker: Nico Scherf TU Dresden	
14:38	TALK TITLE TO BE CONFIRMED		Invited Speaker: Loic Royer	
14:50	Session Quiz and Q&A Round – Prize: A Graphic Tablet			
Demo Sessions Session Chairs: Emmanuel Reynaud and Deidre Kavanagh			Community Session	
15:00	3i - The Benefits of Lattice LightSheet	Platinum Sponsor Speaker: Dr. Glen Redford	THE SAMPLE PREP CLINIC Montserrat Coll – Clearing Kate McDole – Life Samples Emmanuel Reynaud – 3D printed holders	
15:30	ZEISS - The Lightsheet 7	Gold Sponsor Speaker: Jacques Paysan		
15:45	Luxendo - LSFM Beyond Imaging – Manipulation Of Your Sample With Light	Gold Sponsor Speakers: Björn Eismann and Malte Wachsmuth		
16:00	Teledyne Photometrics - Kinetix sCMOS for Light Sheet Microscopy	Gold Sponsor Speaker: Rachit Mohindra and Dr. Phil Allen		
16:15	BREAK			
Posters Prize for best poster: €100, Runner up: €50				
16:30	Poster session 1: Single Objective LSFM and Image Processing		16:30	Poster session 2: Sample preparation, optical clearing, on-chip LSFM and LSFM cytometry
Combined selective plane illumination microscopy and FRAP maps intranuclear diffusion of NLS-GFP – Chad Hobson, The University of North Carolina		Light sheet-based flow cytometer with ability to obtain images and retrieve objects from the whole blood – Daniil Bratashov, Saratov State University		Let's talk LISH, Meet and Greet, Make new acronyms, and SO much more.....
Light Sheet Fluorescence Microscopy – Abdullahi Aborode, University of Ilorin		Light-sheet flow cytometry – Sonia Laguna, Universidad Carlos III de Madrid		
Wide field-of-view volumetric imaging by a mesoscopic oblique plane microscopy with low numerical aperture objectives – Wenjun Shao, Boston University		Optimized dual-view light sheet microscopy for large area cleared specimens – Vladislav Gavryusev, University of Florence / European Laboratory for Non-linear Spectroscopy		
Oblique plane microscopy-based 3D plate-reader investigation of control of cell shape by Rho-regulatory proteins in distinct microenvironments – Nathan Curry, Imperial College London		Augmenting the Range of Compatible Clearing Protocols for the Zeiss Lightsheet Z.1 – Joseph Sall, NYU Grossman School of Medicine		
Dual-view oblique plane microscopy – Hugh Sparks, Imperial College London		Design of light-sheet fluorescence imaging platform for axon tracing over entire brains – Kevin Takasaki, Allen Institute for Brain Science		
3D Quantification of Zebrafish Brain Vascular Architecture of Light Sheet Fluorescence Microscopy Datasets – Elisabeth Kugler, The University of Sheffield		Yes, we can clear this: a tissue clearing toolbox for every organ – Monika Pawlowska, University of Warsaw		
FRC-QE: A robust and comparable 3D microscopy image quality metric for cleared organoids – Friedrich Preußner, Max Delbrück Center for Molecular Medicine in the Helmholtz Association				

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The heart in 4D: novel tools to quantify ECM dynamics and tissue morphology in cardiac development – <i>Juliana Sanchez Posada, University of Sheffield</i>		
Sample Preparation, Optical Clearing and Expansion Microscopy Sponsored by Cairn Research		Session Chair: Montserrat Coll
17:30	Physical expansion of cells and tissues: Development and application to light-sheet fluorescence microscopy	Invited Speaker: Ruixuan Gao MIT / HHMI Janelia
17:50	Holistic Three-dimensional Cellular Mapping of Mammalian Organs by Tissue Clearing and Light-sheet Fluorescence Microscopy	Invited Speaker: Shan Zhao Helmholtz Zentrum München
18:10	FLASH: removing chemical barriers for volume immunofluorescence of whole intact organs	Jorge Almagro The Francis Crick Institute
18:17	Characterization of neocortical angioarchitecture across layers and areas in the human brain	Sven Hildebrand Maastricht University
18:24	Session Quiz – Prize: <i>An Aeropress</i>	
18:30	END OF DAY	

Virtual Light Sheet Fluorescence Microscopy Meeting 2020

Programme

Friday 25th September

Light sheet engineering and LSFM hardware			Session Chair: Reto Fiolka	
Sponsored by the LSFM Community				
14:00	Introduction			
14:05	How to define and optimize axial resolution in light-sheet microscopy: a simulation-based approach		Invited Speaker: Elena Remacha IGBMC/Leica Microsystems	
14:20	Hybrid open-top light-sheet microscopy for multi-scale imaging of cleared tissues		Invited Speaker: Adam Glaser University of Washington	
14:35	Light Sheet Microscopy with LED illumination		Gianmaria Calisesi Politecnico di Milano	
14:45	The benchtop mesoSPIM – a compact and versatile open-source light-sheet microscope for imaging large cleared tissue samples		Fabian Voigt Brain Research Institute, University of Zurich	
14:55	Session Quiz – Prize: A signed copy of the “Light Sheet Fluorescence Microscopy” Wiley VCH			
Demo Sessions			Community Session	
Session Chairs: Emmanuel Reynaud and Chris Dunsby				
15:00	ASI – A Framework for Designing Light Sheet Microscopes	Platinum Sponsor Speaker: Melissa Glidewell		
15:30	DRVISION – Aivia Live Demonstration	Gold Sponsor Speaker: Patrice Mascalchi	Johanna Bischof: Euro-Biolmaging: Open access to microscopes, highlighting new technologies - and more	
15:45	SVI - Huygens Fuser: fusion and deconvolution of all types of Light Sheet images made easy	Gold Sponsor Speaker: TBC	Andrey Andreev: Raw data issues: we need better data plumbing	
16:00	Inscoper - The new microscopy acquisition software	Gold Sponsor Speaker: Otmane Bouchareb	Jan Huisken: The Flamingo project: modular and shareable light sheet microscopes	
16:15	BREAK			
Posters				
Prize for best poster: €100, Runner up: €50				
16:30	Poster session 3: Light sheet engineering and LSFM hardware	16:30	Poster session 4: Developmental biology, organoids/embryos	CHAT ROOM
The importance of the excitation light polarization state for the optimization of the signal levels in two-photon light-sheet microscopy – Giuseppe de Vito, University of Florence / European Laboratory for Non-Linear Spectroscopy		Multinucleated HIV-1-infected T cells exhibit unique migration patterns and frequent virus-dependent cell-cell interactions – Menelaos Symeonides, University of Vermont		
UC2 Light sheet microscope: From an education tool to a biological application – Barbora Maršiková, Leibniz Institute of Photonic Technology / Friedrich Schiller University		Primed Track: Reliable Volumetric Single-cell Tracking and Lineage Tracing of Living Specimen with Dual-labeling Approaches – Periklis Pantazis, Imperial College London		
“Organ-on-chip” specific light sheet fluorescence microscope for vascularization investigation – Caroline Bissardon, University Grenoble Alpes		Exploring left-right symmetry of somites through multiview light sheet microscopy – Sundar Naganathan, École Polytechnique Fédérale de Lausanne		
Miniaturized Light-Sheet Microscope with active control of optical paths – Spyridon Bakas, University of Strathclyde		Contact area-dependent cell communications and the morphological invariance of ascidian embryogenesis – Léo Guignard, Max Delbrück Center, Germany		
Video-rate remote refocusing through continuous oscillation of a deformable mirror – Terry Wright, Imperial College London		Loss of Sox4 Impacts Early Ocular Development – Rebecca Petersen, University of Kentucky		

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On-Chip high-throughput LSM analysis of single cancer cells – <i>Federico Sala, Politecnico di Milano</i>		A possible mechanism for mechano-chemical pattern formation in spherical cell sheets – <i>Stephanie Höhn, University of Cambridge</i>	
Development and application of a flexible light sheet fluorescence microscope for high speed 2D and 3D imaging of calcium dynamics in cardiomyocytes – <i>Liuba Dvinskikh, Imperial College London</i>		Using light-sheet fluorescence microscopy to identify anatomical structures and infection by infectious laryngotracheitis virus in chicken tissues – <i>Matthew Smallridge, The University of Melbourne</i>	
Optimal Laser Pulse Repetition Rate for Fast In Vivo Imaging using Multiphoton Light-sheet Microscopy – <i>Vincent Maioli, Institut Polytechnique de Paris</i>		Imaging actin dynamics throughout ingression membrane system development – <i>Tom O'Sullivan – University of Birmingham / University of Leicester</i>	
		Quantification and analysis of three-dimensional shape changes during epithelial morphogenesis – <i>Jana Fuhrmann, Max Planck Institute of Molecular Cell Biology and Genetics</i>	
Developmental biology, organoids/embryos			Session Chair: Kate McDole
17:30	Visualizing and quantifying cell behaviors and states across scales in mammalian embryos	Invited Speaker: Kat Hadjantonakis Sloan Kettering Institute	
17:47	Illuminating arthropod development with light-sheet microscopy	Invited Speaker: Tassos Pavlopoulos IMBB-FORTH	
18:04	Designing an inverted light-sheet microscope for long term imaging of organoids	Esmée Adegeest Leiden University	
18:14	How embryonic hearts pump: insights from multi-scale microscopy in zebrafish	Anjalie Schlaeppi Morgridge Institute for Research	
18:24	Session Quiz and Q&A – Prize : A VR Set		
18:30	END OF DAY		