FBI-AT 2024

Light-Sheet Fluorescence Microscopy: Principles and application to Neurosciences and 3D cell culture models

Preliminary program

	Day 01 - Monday 04/11	Day 02 - Tuesday 05/11
9:00	Course 01 - LSFM Principles P. Girard (IJM, *Paris France)* & M. Ducros *(BIC, BordeauxFrance)*	P1 - Adam Glasser *(Allen Institute for Neural Dynamics, Seatle USA)*
9:40	Course 02 - Samples Mounting and clarification Carole Siret (CIML, Bordeaux France)	P1 - Farida Hellal *(Institute for Tissue Engineering and Regenerative Medicine, Munich Germany)*
10:20	Course 03 - Data management G. Maucort *(BIC, Bordeaux France)*	P2 - Alfred Millet-Sikking *(Calico Life Sciences LLC, San-Francisco USA)*
11:00	*Break*	*Break*
11:20	P1 - Laura Batty *(Wyss Center for Bio and Neuro Engineering, Geneva Switzerland)*	P2 - Gaelle Recher *(Institut d'optique Graduate School, Bordeaux France)*
12:00	P1 - Julien Colombelli *(Institute for Research in Biomedicine, Barcelona Spain)*	P2 - Ihssane Idrissi / Rémi Galland *(Interdisciplinary Institute for Neurosciences, Bordeaux France)*
12:40	*Round Table*	*Indus Flash Talk*
13:00	*Lunch*	*Lunch*
14:30	Workshop P1-1 / Workshop P1-2 / Workshop P2-2 / Workshop P2-3 / Workshop P4-2	Worshop P1-1 / Worshop P1-3 / Worshop P2-3 / Worshop P3-1 / Worshop P4-2
18:00		
22:00		*Gala Diner*

	Day 03 - Wednesday 06/11					Day04 - Thursday 07/11				
9:00	P2 - Vincent Studer *(Interdisciplinary Institute for Neurosciences, Bordeaux France)*					P3 - Alexandra Fragola *(Institut des Sciences Moléculaires d'Orsay, Orsay France)*				
9:40	P2 - Gustavo de Medeiros *(Friedrich Miescher Institute for Biomedical Research, Basel, Switzerland)*					P4 - E. Faure *(Laboratory of Computer Science, Robotics and Microelectronics, Montpellier France)*				
10:20	P3 - Georges Debrégeas *(Jean Perrin Laboratory, Paris France)*					P4 - Johannes Roos *(Johannes Kepler University, Linz Austria)*				
11:00	*Break*					*Break*				
11:20	P3 - Thai Truong *(University of Southern California, Los Angeles USA)*					P4 – Akanksha Jain *(ETH – Zurich, Switzerland)*				
12:00	P3 - Angela Getz / Mathieu Ducros *(Bordeaux Imaging Center, Bordeaux France)*					Discussions and Concluding remarks				
12:40	*Indus Flash Talk*									
13:00	*Lunch*					*Lunch*				
14:30	Worshop P1-2	Worshop P2-1	Worshop P3-1	Worshop P3-3	Worshop P4-3	Worshop P2-1	Worshop P3-1	Worshop P3-3	Worshop P4-1	Worshop P4-3
18 :00										

Thematic courses

P1	Large sample imaging – Clearing & Expansion
P2	3D cellular model Culture & Imaging
P3	Neuronal network imaging
P4	Image Analysis

Workshops:

Thematic	Instruments	Instructors	Short Descriptions
P1-1	Ultramicroscope II (Miltenyi)	J. Teillon	**Whole brains imaging by Ultramicroscopy** • Practical considerations for large mouse brain clearing • Whole brain imaging by ultramicroscopy • 3D analysis pipeline using the *clearmap* tool dev. By N. Renier
P1-2	AxL (3i)	M. Fernandez Monreal	**3D imaging of neuronal expanded samples** • Practical considerations of sample expansion • Expanded neurospheres imaging • 3D data-set handling and management discussion
P1-3	Blaze (Miltenyi)	C. Siret & E. Castellani	**3D entire small animal imaging** • Practical consideration for the clearing of entire embryonic mouse • Whole mouse embryo fast imaging • 3D data-set handling and analysis using the Imaris software
P2-1	soSPIM (Home-made)	R. Galland & I. Idrissi	**3D Cellular models culture and imaging using the soSPIM technology** • Parallelized culture of 3D cellular models in the JeWells device • Automatic screening of hepato-organoids • Automated analysis pipeline descprition
P2-2	HS-ISM (Home-made)	V. Studer	**Micro-niche creation for 3D cell culture and 3D imaging using the HS-ISM technique** • Creation of customizable micro-niches for the culture of 3D cellular models • 3D & multi-color imaging using a Hyper-spectral Instant Scanning Microscope
P2-3	TrueLive 3D (Bruker)	B. Chauvineau & S. Derossi	**Neurospheres culture and imaging using the MuViSPIM** • Method to culture neurospheres from primary rat neurons • Neurospheres labeling strategies • Neurospheres 3D imaging (Live and fixed)
P3-1	Lattice Light Sheet (Home-made)	M. Ducros	**Brain slices imaging using a Lattice Light Sheet Microscope** • Brain slice labelling and mounting consideration • Brain slide imaging at high spatial and temporal resolution
P3-3	TrueLive 3D (Bruker)	A. Hubert	**Functional neuronal network imaging in ZebraFish** • Presentation of the animal model (Zebrafish) and handling consideration • Functional imaging of the zebrafish neuronal activity
P4-1	Arkitekt	J. Roos	**Orchestrating complex bioimage workflows using the Arkitekt solution**

			• challenges of modern bioimage workflows, especially real-time data analysis and management • Our solution: Arkitekt - a powerful middleman between users and bioimage apps for building and orchestrating real-time analysis and microscopy workflows • Arkitekt's capability demonstration
P4-2	Napari	K. Yamauchi	**Napari for 3D data handling** • Presentation of the Napari solution, how to install it and use it to visualize and perform image analysis steps in this environment through the many plugins developed
P4-3	Mophonet	E. Faure	**How to segment a 3D dataset in just a few clicks?** • Concepts of the MorphoNet platform: classical usage of 3D (or 4D) interactions • Plugins for 3D segmentation integrated in MorphoNet

Sponsor: