BRAIN SIMULATION SCHOOL 2022

Training on Single Neuron Models, Brain Circuit Models, Cognition, Collaboratory, Synaptic Plasticity and Learning

Time	Monday, 30 May 2022	Time	Tuesday, 31 May 2022	Time	Wednesday, 1 June 2022	Time	Thursday, 2 June 2022	Time	Friday, 3 June 2022
09:00 - 09:30	Welcome & Introduction to the School		Session II: Student presentations Chair: Paola Vitale Institute of Biophysics, Italian National Research Council		Session IV: Single Neuron Models Chair: Aušra Saudargienė Lithuanian University of Health Sciences		Session V: Brain Circuit Models Chair: Michele Migliore Institute of Biophysics, Italian National Research Council		Session VI: Cognition Chair: Egidio D'Angelo University of Pavia
	Session I: EBRAINS Infrastructure for Brain Research Chair: Michele Migliore Institute of Biophysics, Italian National Research Council	09:00 – 10:30	Student presentations I	09:00 – 10:30	Scientific drive: single cell modelling Michele Migliore Institute of Biophysics, Italian National Research Council		Success story: Detailed model of hippocampus CA1, Part I (science) Chair: Michele Migliore Institute of Biophysics, Italian National Research Council	09:00 – 10:30	Scientific drive: Modelling cognitive functions Michele Migliore Institute of Biophysics, Italian National Research Council
09:30 - 10:30	The EBRAINS European Infrastructure in the European context Paweł Świeboda EBRAINS CEO and Director General of the Human Brain Project	10:30 – 11:00	Coffee break	10:30 – 11:00	Coffee break	09:00 - 09:30	General introduction to data-driven brain tissue modelling Felix Schürmann Blue Brain Project, EPFL, Switzerland	10:30 – 11:00	Coffee break
10:30 - 11:00	Coffee break	11:00 – 12:30	Student presentations II	11:00 – 12:30	Single cell model optimisation: algorithms, methods, resources Luca L. Bologna, Rosanna Migliore & Paola Vitale Institute of Biophysics, Italian National Research Council	09:30 - 10:00	Reconstruction and simulation of a full-scale model of rat hippocampus CA1 Armando Romani Blue Brain Project, EPFL, Switzerland	11:00 – 12:00	Using NEURON+python, from laptops to supercomputer systems Michael Hines Yale University, USA
11:00 – 11:45	The EBRAINS Research Platform Jan Bjaalie Institute of Basic Medical Sciences, University of Oslo	12:30 – 14:30	Lunch break	12:30 – 14:30	Lunch break	10:00 – 10:30	Hippocampus Hub and MOOC Jean-Denis Courcol Blue Brain Project, EPFL, Switzerland	12:00 – 12:30	Tech drive: NetPyNE, a tool for multiscale modeling of brain circuits Salvador Dura-Bernal SUNY, USA
11:45 – 12:30	The role of EBRAINS in engaging society and communities in neuroscience France Nivelle EBRAINS, Brussels		Session III: Synaptic Plasticity and Learning Chair: Rosanna Migliore Institute of Biophysics, Italian National Research Council		Tutorial III: Hands-on EBRAINS for single neuron modelling	10:30 – 11:00	Coffee break	12:30 – 14:30	Lunch break
12:30 – 14:30	Lunch break	14:30 – 15:15	Empiric models of synaptic plasticity Michele Migliore Institute of Biophysics, Italian National Research Council	14:30 – 17:30	Build your own cell model* Luca L. Bologna & Rosanna Migliore Institute of Biophysics, Italian National Research Council *Coffee available from 16:00 – 16:30		Success story: Detailed model of hippocampus CA1, Part II (hands-on) Chair: Jean-Denis Courcol Blue Brain Project, EPFL, Switzerland		Tutorial V: Hands-on EBRAINS for building networks
14:30 – 15:15	EBRAINS technology for developers Marc Morgan EBRAINS, Brussels	15:15 – 16:00	Detailed models of synaptic plasticity Aušra Saudargienė Lithuanian University of Health Sciences	17:30 – 18:00	Interactive session	11:00 – 12:30	Hands-on Exercises on analysing the circuit and simulations and Hippocampus Hub Armando Romani, Gianluca Ficarelli & Joni Herttuainen Blue Brain Project, EPFL, Switzerland	14:30 – 15:00	Tech drive: interacting with HPC systems Luca L. Bologna Institute of Biophysics, Italian National Research Council
15:15 – 16:00	Workshop: The EBRAINS Collaboratory for users Annapaola Santarsiero EBRAINS, Brussels		Tutorial II: Hands-on EBRAINS for modelling local field potentials			12:30 – 14:30	Lunch break	15:00 – 16:00	Hands-on session: using NetPyNE on EBRAINS to build networks Salvador Dura-Bernal SUNY, USA Adam Ponzi Institute of Biophysics, Italian National Research Council
	Tutorial I: Hands-on EBRAINS for electrophysiological feature extraction	16:00 – 17:30	Modelling local field potentials (theory and practice)* Gaute Einevoll Norwegian University of Life Sciences, Oslo *Coffee available from 16:00 – 16:30				Success story: Detailed model of cerebellum Chair: Daniela Gandolfi UNIMORE, Italy	16:00 – 17:30	Interactive session and conclusions* *Coffee available from 16:00 – 16:30
16:00 – 17:30	Basic tools for electrophysiological features extraction (theory and practice)* Luca L. Bologna & Rosanna Migliore Institute of Biophysics, Italian National Research Council *Coffee available from 16:00 – 16:30	17:30 – 18:00	Interactive session			14:30 – 15:15	Multiscale brain modeling Egidio D'Angelo University of Pavia, Italy		
17:30 – 18:00	Interactive session					15:15 – 16:00	Modeling pipeline for the Cerebellum Claudia Casellato University of Pavia, Italy		
						16:00 – 16:15	Coffee break (Coffee available from 16:15-16:30)		
							Tutorial IV: Hands-on, circuit modelling		
						16:15 – 17:15	Scientific drive: modelling the mouse, and human Hippocampus with spiking neurons* Daniela Gandolfi UNIMORE, Italy		
						17:15 – 18:00	The Brain Scaffold Builder Claudia Casellato & Robin De Schepper University of Pavia, Italy		