**Program**

**EBRAINS Brain Simulation School 2023**

**Institute of Biophysics, Palermo, Italy**

**Friday, 19 May 2022**

**Day 1**

Time: CEST (Genoa, Berlin, Paris)

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| 15.00-15.30  (30 min) | Welcome & Introduction to the School  Michele Migliore (Institute of Biophysics, Italian National Research Council, Italy) |
|  | **Session 1. The EBRAINS Infrastructure for Brain Research**  Chair: Michele Migliore |
| 15.30-16.15  (45 min) | The EBRAINS Research Platform  Jan Bjaalie (University of Oslo, Norway) |
| 16.15-17.00  (45 min) | Lecture/tutorial: The technology behind EBRAINS: the Collaboratory  Annapaola Santarsiero (EBRAINS, Brussels) |
| 17.00-17.30  (30 min) | Break |
| 17:30-18:30  (60 min) | Hands-on: The KG database  Jan Bjaalie (Univ. of Oslo, Norway) |
| 18:30-19:30  (60 min) | Scientific drive: single cell modelling  Michele Migliore, Institute of Biophysics, National Research Council, Italy |

**Saturday, 20 May 2023**

**Day 2**

Time: CEST (Genoa, Berlin, Paris)

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|  | **Session 2. Single Neurons and Networks**  Chair: TBA |
| 08:30-10:00  (90 min) | Hands-on: Single cell modelling tools and workflows (trace analysis, optimization, resources)  Rosanna Migliore and Paola Vitale, Institute of Biophysics, National Research Council, Italy |
| 10:30-14:30  (240 min) | Free time (to work, relax, or sightseeing) |
| 14:30-16:00  (60 min) | Lecture/tutorial: Build your own cell model in NEURON + project assignment  Rosanna Migliore, Paola Vitale, Elisabetta Giacalone (Institute of Biophysics, National Research Council, Italy) |
| 16:00-17:00  (60 min) | Lecture/tutorial: how to talk about your research to funders/press/investors/partners  France Nivelle (EBRAINS, Brussels) |
| 17:00-17:15  (15 min) | Break |
| 17:15-18:00  (45 min) | Lecture/tutorial: Modelling networks with NEST  Markus Diesmann (Jülich, Germany) |
| 18:00-18:45  (45 min) | Lecture/tutorial: Modelling with NEURON/Core NEURON + project assignment  Michael Hines (Yale Univ, USA) and James King (BBP-EPFL, Switzerland) |
| 18:45-19:30  (45 min) | Lecture/tutorial: modelling synaptic plasticity+ project assignment  Ausra Saudargiene (Lithuanian University, Lithuania) |

**Sunday, 21 May 2023**

**Day 3**

Time: CEST (Genoa, Berlin, Paris)

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|  | **Session 3. Brain region models**  ***Chair:*** |
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| 08:30-09:30  (60 min) | Lecture/Tutorial: Mouse and Human Hippocampus CA1 models  Sergio Solinas (UNISS, Italy) |
| 09:30-10:30  (60 min) | Lecture/tutorial: Modelling Cortical regions  Markus Diesmann (Jülich, Germany) |
| 10:30-16:30  (360 min) | Free time (to work, relax, or excursion to city) |
| 16:30-18:30  (120 min) | Lecture/Tutorial: TVB + project assignment  (Viktor Jirsa, Univ. Marseille) |
| 18:30-18:45  (15 min) | Break |
| 18:45-20:00  (75 min) | Lecture/Tutorial: network modelling with NetPyNE + project assignment  Salvador Dura-Bernal (SUNY, USA) |

**Monday, 22 May 2023**

**Day 4**

Time: CEST (Genoa, Berlin, Paris)

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|  | **Session 4. Hands-on: Discussion on assigned projects**  ***Chair:*** |
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| 08:30-09:15  (45 min) | Hands-on: KG and data sharing  France Nivelle (EBRAINS, Brussels) |
| 09:15-10:30  (75 min) | Build your own cell model in NEURON  Rosanna Migliore, Paola Vitale, Elisabetta Giacalone  (Institute of Biophysics, National Research Council, Italy) |
| 10:30-16:30 | Free time (to work, relax, or excursion to city) |
| 16:30-18:30  (120 min) | Multiscale model of the Cerebellum  Egidio D’Angelo (University of Pavia, Italy) |
| 18:30-18:45 | Break |
| 18:45-20:00  (75 min) | Advanced modelling with NEURON/Core NEURON  Michael Hines (Yale Univ, USA) and James King (BBP-EPFL, Switzerland) |

**Tuesday, 23 May 2023**

**Day 5**

Time: CET (Genoa, Berlin, Paris)

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|  | **Session 5. Hands-on: assigned projects**  ***Chair:*** |
| 09:00-10:30  (90 min) | Hands-on: TVB  (Viktor Jirsa, Univ. Marseille) |
| 10:30-10:45 | Break |
| 10:45-11:30  (60 min) | Hands-on: Network modelling with NetPyNE  Salvador Dura-Bernal (SUNY, USA) |
| 11:30-12:30  (60 min) | Hands-on: modelling synaptic plasticity  Ausra Saudargiene (Lithuanian University, Lithuania) |
| 12:30-15:00 | Break |
| 15:00-15:45  (45 min) | Lecture: Modelling cognitive functions  Michele Migliore (CNR-IBF, Italy)) |
| 15:45-17:00  (75 min) | Hands-on: Advanced modelling with NEURON/Core NEURON  Michael Hines (Yale Univ, USA) and James King (BBP-EPFL, Switzerland) |
| 17:00-17:15  (15 min) | Break |
| 17:15-19:00  (105 min) | Final considerations and discussion on all assignments |