

MU5BIN18 – Novel Technologies applied to Human Neuropathologies

The course will take place at the Paris Brain Institute (ICM, previously called Brain and Spine Institute) in the campus of the hospital Pitié La Salpêtrière.

Talks will be given in room 1-2 in the ground floor. This room allows for physical distancing. In addition, masks and hydroalcoholic gel will be provided. If required by the health situation, talks will be given through videoconferences.

Monday 2nd of November 2020 – Room 1-2

9h - 11h – Philippe Ravassard: “Introduction to transcriptomics”

11h15 - 12h45 – Lucrèce Matheron: “Introduction to proteomics and metabolomics”

13h45 - 15h45 – Delphine Bohl: “Human induced pluripotent stem cells: a new research tool”

Tuesday 3rd of November 2020 – Room 1-2

9h - 11h – Christiane Schreiwiss: “Assessing the function of brain circuits by means of in vivo electrophysiological recordings and neuromodulation”

11h15 - 12h30 – Charlotte Deleuze and Carine Dalle: “Multi-electrode array technology for neuroscience: Unraveling functional network activity”

13h45 - 15h45 – Nicolas Renier: “New imaging tools to study the mesoscale connectomics of the brain”

16h - 18h – Nelson Rebola: “The space and time problem in neurophysiology research”

Wednesday 4th of November 2020 – at the Paris Brain Institute

Workshops on techniques (From 10 am to 6pm):

- MultiElectrode arrays (Charlotte Deleuze et Carine Dalle)
- Calcium imaging in zebrafish (Adeline Orts)
- Tissue clearing/Light sheet microscopy (Nicolas Renier)

You will be distributed within groups at the beginning of the week and your schedule will be given at that time. Each group will attend the 3 workshops.

Thursday 5th of November 2020 – Room 1-2 afternoon only

10h - 12h – Laurence Cathala: “Neuronal information processing in circuit function”

Zoom videoconference (the link will be provided at the beginning of the week)

13h45 - 15h45 – Alberto Bacci: “Inhibitory control of cortical circuits”

16h - 18h – Alexandre Mourot: “Molecular and cellular mechanisms of nicotine addiction”

Friday 6th of November 2020 – Room 1-2

10h - 11h – Serge Marty: “Insights on synaptic alterations in Alzheimer’s disease using electron microscopy”

14h30 - 18h – Neuroethics round tables:

- Ségolène Aymé (Moderator)
- Thomas Courtin (Predictive medicine using omics approaches)
- Eric Burguière (Open Science)
- Delphine Bohl (Stem cells)

Monday 9th of November 2020 – Room 1-2 afternoon only

10h - 12h – Deniz Dalkara: “Retinal gene therapy” **Zoom videoconference (the link will be provided at the beginning of the week)**

13h45 - 15h45 – Frédéric Darios: “Lipidomics to identify new pathological pathways in neurodegenerative diseases”

16h - 18h – Jean-Michel Peyrin: “Reconstructing rodent and human Oriented Neuronal Networks to model Neurodegenerative syndromes”

Tuesday 10th of November 2020 – Room 1-2

10h - 12h – Violetta Zujovic: “Humanizing preclinical studies for a better understanding of multiple sclerosis”

13h45 - 15h45 – Isabelle Leroux: “Cellular senescence acts as a pro-tumoral mechanism during gliomagenesis”

16h - 18h – Sandrine Betuing: “Deciphering cell specific transcriptomic and lipidomic regulations by modulating cholesterol metabolism in Huntington's disease”

Thursday 12th of November 2020 – Room 1-2

10h - 12h – Hélène Cheval: “Long non-coding RNAs as novel molecular actors to understand Parkinson's Disease”

14h – 18h – Junior talks:

- Benjamin Galet: “Using "minibrains" to explore the molecular bases of Alzheimer's Disease”
- Théo Ribierre: “Modeling epileptogenic brain cortical malformations through in utero somatic gene editing of neural stem cells”
- Thomas Topilko: “The neuronal basis of parental nest-building behaviour”
- Elise Liu: “Deciphering the role of inflammation in ALS disease using human induced pluripotent stem cells”
- Yasmine Cantaut-Belarif: “Linking cerebrospinal fluid flow and content to body axis morphogenesis”

In addition to their talk, speakers (PhD students and post-docs) will answer questions and discuss about different topics such as their career and research in France.

Friday 13th of November 2020 – Room 1-2 or videoconference, to be determined.

9h - 12h – Article analysis

14h – 17h – Article analysis