



EUGLOH Summer School in Neuroscience

**Title: From Neural stem cells to Artificial
intelligence**
21st-25th June 2021

Proposed topics :

DAY 1: Neurogenesis & Neurodevelopment:

MORNING (9h-12h50)

Welcome by NeuroPSI director (F. Rouyer)

1. Introduction I

-Patrick Pla (NeuroPSI)

2. Neurogenesis/Neurodevelopment

-Sophie Creuzet/Diego Amarante (NeuroPSI)

3. Glial cells & Neurodevelopment

-Magdalena Götz (*Ludwig-Maximilians-Universität*)

4. Neural stem cells & diseases

-Henrik Ahlenius (*Lund University*)

-speaker from NeuroPSI

5. Adult neurogenesis

-speaker from NeuroPSI

AFTERNOON (14h-18h)

1. Basis of Neuroanatomy

-Philippe Vernier (NeuroPSI)

2. Practical course: brain anatomy, visualisation of Brain atlas, image analysis (Patrick Pla)

3. brief evaluation

DAY 2: Neuronal circuits & Behaviour

MORNING (9h-12h50)

1. Introduction II

T. Jovanic (NeuroPSI)

2. Neuronal networks

-Gabor Tamas (*University of Szeged*)

- T. Bal (NeuroPSI)

3. Neuronal plasticity & Memory

-G. Dallérac (NeuroPSI)

4. Integrative neuroscience

-I. Ferezou (NeuroPSI)

-*Maria Robles, MPI, Ludwig-Maximilians-Universität*

AFTERNOON

- **(14h-16h)** Mini-symposia: participants will choose 'à la carte'. Seminars will run in parallel:
 - I. 'Evolution & Communication' S. Rétaux/I. Charrier
 - II. 'Neuroendocrinology' M. Taouis & Co
 - III. 'Neuropathologies' (*Eszter Farkas, University of Szeged,.... C. Vaillend*)
 - IV. 'New technical approaches to Neurosciences' Cyril Monier, J. Bouvier
- **16h30-18h00** Virtual cultural activity
- brief evaluation

DAY 3: Sensory Neuroscience

MORNING (9h-12h50)

1. Introduction III

-Y. Fregnac (NeuroPSI)

2. Sensorimotor information

-D. Shulz (NeuroPSI)

-*Henrick Jörntell (University of Lund)*

3. Auditory perception

-J-M Edeline (NeuroPSI)

4. Visual perception

-*Dan Nilsson (University of Lund)*

-*Alexander Borst (Ludwig-Maximilians-Universität)*

AFTERNOON (14h-18h)

1. **14h-15h:** Laboratory Animal Science
-*Anna Olsson (University of Porto)*
2. **15h30-17h30:** 1st session of short presentations from Eugloh PhD students (8 presentations 10'+5' questions)
3. brief evaluation

DAY 4: Computational Neuroscience and neuroengineering

MORNING (9h-12h50)

1. Introduction IV

- D. Guarino /A. Destexhe (NeuroPSI)
- 2. Biophysical neuron and population models
 - D. Guarino /A. Destexhe (NeuroPSI)
 - Anton Sirota (*Ludwig-Maximilians-Universität*)
- 3. Neuromorphic tools and devices
 - A. Davison (NeuroPSI)
 - Paulo Aguiar (*University of Porto*)
- 4. Brain machine interface
 - Jens Schouenborg (*University of Lund*)

AFTERNOON (14h-18h)

1. Brain machine interface
 - V. Ego-Stengel (NeuroPSI)
2. Practical works on computational Neuroscience : simulation and analysis of neuron models
3. brief evaluation

DAY 5: Machine learning & Artificial Intelligence

MORNING (9h-12h50)

Welcome by NeuroSPIN director (Stanislas Dehaene)

1. Introduction V
 - T.Deneux (NeuroPSI)
2. Artificial neural network and machine learning
 - Márk Jelasity (*University of Szeged*)
3. Metacognition
 - Hannes Leitgeb (*Ludwig-Maximilians-Universität*)
4. Neuroimaging and machine learning
 - B.Thirion (NeuroSPIN)
 - Tamas Kincses (*University of Szeged*)

AFTERNOON (14h-18h)

1. **14h-16h:** Practical works on Machine learning applied to NeuroImaging using Nilearn (Bertrand Thirion team members)
2. **16h30-17h30:** 2nd session of short presentations from Eugloh PhD students (4 presentations)
3. brief evaluation
4. **17h30: closure ceremony and prize for the best PhD talk**