Development and Plasticity of Thalamocortical Systems

Speakers: Alexandre Bonnin, Francisco Clasca, Reha Erzurumlu, Patricia Gaspar, Sonia Garel, Takao Hensch, Denis Jabaudon, Patrick Kanold, Guillermína López-Bendito, Patricia Maness, Miguel Maravall, Zoltán Molnár, Yasushi Nakagawa, David Price, Filippo Rijli, Tomomi Shimogori, Mriganka Sur, Nobuhiko Yamamoto

Development and Plasticity of Thalamocortical Systems
Grand Hotel Kurhaus, Arolla, Switzerland
Jan 31st-Feb 3rd 2011

FINAL PROGRAM

Monday, January 31st
18:00 Apero
19:00 Dinner
20:00 Welcome Note and Keynote speaker I: Zoltán Molnár (Oxford University, UK)
   Formation of the earliest cerebral cortical circuits

Tuesday, February 1st

Session 1. Molecular Mechanisms of Thalamocortical Circuit Formation (Chair: Sonia Garel)

09:00-9:40 Yasushi Nakagawa (Univ. of Minnesota, Minneapolis)
   Patterning and neurogenesis in the embryonic mouse thalamus

09:40-10:20 Filippo Rijli (FMI, Basel)
   Molecular mechanisms of whisker map formation in the mouse somatosensory brainstem

10:20 – 10:40 Coffee

10:40-11:20 Tomomi Shimogori (RIKEN, Tokyo)
   Molecular mechanism of somatosensory circuit formation in barrel cortex

11:20-11:40 Short Talk 1: Thomas Theil (University of Edinburgh, Edinburgh)
   Role for Gli3 in the development of the thalamocortical and corticothalamic tracts

11:40-12:00 Short Talk 2: Etienne Audinat (Paris Descartes University, Paris)
   Development of microglia in the mouse primary somatosensory cortex
Session 2. Thalamocortical pathfinding (Chair: Tomomi Shimogori)

15:30-16:10 Patricia Maness (University North Carolina)

*Developmental Regulation of Thalamocortical Topography By L1 Cell Adhesion Molecules*

16:10-16:50 David Price (University of Edinburgh, Edinburgh)

*In vivo evidence supporting the importance of guide-axons in thalamocortical development*

16:50 – 17:05 Coffee

17:05-17:45 Alexandre Bonnin (USC, Los Angeles)

*Maternal-fetal interactions and serotonergic modulation of fetal brain wiring*

17:45-18:05 Short Talk 3: Eduardo Leyva-Díaz (López-Bendito Lab)

*An Integrated Response to Combinatorial Gradients of Guidance Cues Set the Initial Topography of Thalamocortical Axons*

18:05-18:25 Short Talk 4: Marie Deck (Garel Lab)

*Building reciprocal connections between the dorsal thalamus and neocortex*

18:25-18:45 Short Talk 5: Julien Spatazza (Prochiantz Lab)

*Otx2 homeoprotein transfer and signaling in visual cortical plasticity*

19:30 Dinner

21:00 Karaoke night
Wednesday, February 2nd

Session 3. Interaction with Cortex & Evolutionary Perspectives (Chair: Reha Erzurumlu)

09:00-9:40 **Sonia Garel** (Inserm, Paris)  
*Building thalamocortical projections: roles of migrating guidepost cells*

09:40-10:20 **Denis Jabaudon** (University of Geneva)  
*Generating Diversity Within Motor and Sensory Forebrain Projection Neuron Populations*

10:20 – 10:40 Coffee

10:40-11:20 **Patrick Kanold** (University of Maryland)  
*Circuits that regulate cortical development and plasticity.*

11:20-12:00 **Francisco Clascá** (Universidad Autónoma de Madrid, Madrid)  
*Diversity in thalamic relay neurons: "bottom-up"-like wired and "top-down"-like wired thalamocortical pathways.*

12:00 Lunch

13:00 Excursion

16:30 Coffee

17:00-17:20 **Short Talk 6: Shen-Ju Chou** (O’Leary’s Lab)  
*Thalamocortical input regulates in postnatal neocortex patterned gene expression that distinguishes visual areas*

17:20-17:40 **Short Talk 7: Andreas B. Zembrzycki** (O’Leary’s Lab)  
*Intrinsic specification of somatosensory area field size by Pax6 limits representation of sensory periphery and drives top-down plasticity of body map in thalamus*
17:40-18:00 Short Talk 8: Catherine Theodoropoulos (Visualsonics)
  High-Frequency Ultrasound for Brain Imaging: New possibilities with Photoacoustics

18:15 Apero
19:00 Dinner

20:00-20:50 Keynote speaker II: Patricia Gaspar (Institut du Fer a Moulin, Paris)
  How thalamocortical axons talk cortical cells into making barrels

Thursday, February 3rd

Session 4. Activity & Plasticity I (Chair: Alexandre Bonnin)

09:00-09:40 Guillermina López-Bendito (Instituto de Neurociencias, Alicante)
  Activity-dependent mechanisms of thalamocortical wiring

09:40-10:20 Nobuhiko Yamamoto (Osaka University, Japan)
  Activity-dependent mechanisms of thalamocortical axon branching

10:20 – 10:40 Coffee

10:40-11:20 Reha Erzurumlu (University of Maryland School of Medicine)
  Role of NMDA receptor-mediated activity along the developing whisker-specific thalamocortical pathway

11:20-12:00 Mriganka Sur (Massachusetts Institute of Technology, Massachusetts)
  Mechanisms of patterning and plasticity that generate precise thalamocortical and intracortical circuits in the visual pathway

12:00 Lunch
Session 5. Activity & Plasticity II (Chair: Mriganka Sur)

15:45-16:00 Communication 1: Y Zennou-Azogui (Xerri Lab)
   Hypergravity experience during development alters forepaw somatosensory maps and influences cortical experience-dependent plasticity in adult rat

16:00-16:15 Communication 2: Cecilia Mezzera (López-Bendito Lab)
   Role of sensory driven activity in wiring thalamocortical connectivity

16:15-16:55 Carl Petersen (EPFL, Lausanne)
   Whisker sensorimotor integration in thalamocortical circuits of behaving mice

16:55 – 17:10 Coffee

17:10-17:50 Takao Hensch (Harvard University, Massachusetts)
   Experience-dependent cross-modal activation in mouse visual cortex

17:50-18:30 Miguel Maravall (Instituto de Neurociencias, Alicante)
   Modes of thalamocortical communication in the whisker system

18:30-18:50 Short Talk 9: Frederic Gambino (Holtmaat Lab)
   Rapid experience-dependent plasticity of intracortical microcircuit in mouse barrel cortex in vivo

18:50-19:10 Short Talk 10: Laura Fernández (Petersen Lab)
   Thalamic driven cortical brain state change in the awake mouse

19:15 Apero

20:00 Closure Dinner

21:30 Disco Night
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