

# Programme of the “Modeling the Brain’s Labyrinth” Meeting

## Saturday, 23 September 2006

15.00 - 20.00 : *Registration*

20.15 - : *Dinner*

## Sunday, 24 September 2006

08.30 - 12.25: Session I: **Anatomy and Connectivity** [Chair: Alain Destexhe]

09.00 - 09.15 Organizing Committee: Opening Remarks

09.15 - 09.45 Cortical Microcircuitry. How Have Things Changed Since the First Year of the Course?

**A. Thomson**

09.45 - 10.15 The Blue Brain Project – Where Could It Lead To?

**I. Segev**

10.15 - 10.45 Operating Regimes for an Emergent Cortical Computation

**K. Obermayer**

10.45 - 11.15 *Coffee Break*

11.15 - 11.45 Modeling the Development of Neurons and Neuronal Networks

**J. van Pelt**, R. Koene, A. van Ooyen, I. Vajda, H. Uylings, G. Ramakers

11.45 - 12.05 Emerging Network Activity in Dissociated Cultures of Neocortex: Novel Electrophysiological Protocols and Mathematical Modelling

**M. Giugliano**, M. Arsiero, P. Darbon, J. Streit, H.-R. Lüscher

12.05 - 12.25 Homeostatic and Homosynaptic Mechanisms in the Organization of Cortical Connectivity

**J.M. Young**, W.J. Waleszczyk, C. Wang, M.B. Calford, B. Dreher, K. Obermayer

12.30 *Lunch*

15.00 - 16.40: Session II: **Information Coding and Decoding**  
[Chair: Erik De Schutter]

15.00 - 15.30 Variational Free Energy and the Brain  
**K. Friston**

15.30 - 15.50 Neural Bursting Codes  
**P. Varona**

15.50 - 16.20 Optimal Neural Adaptation and Representation of Predictive Information  
**N. Tishby**

- 16.20- 16.40    A Simple Feedforward Model for Selection and Competition between Two Stimuli  
**M. Zeitler**, P. Fries, S. Gielen
- 16.40- 17.10    *Coffee Break*
- 17.10- 18.20:   Session III: **Vision** [Chair: Idan Segev]
- 17.10- 17.40    Modeling Binocular Rivalry: Some Analytical Insights  
**R. Curtu**
- 17.40- 18.00    On the Development and Functional Roles of the Layer 4 Horizontal Connections in the Primary Visual Cortex  
**B. Cürüklü**, A. Lansner
- 18.00- 18.20    Unsupervised Perceptual Learning through Top-Down Suppression of Intrinsic V1 Circuitry  
**R. Schäfer**, E. Vasilaki, W. Senn
- 20.00            *Gala Dinner – Cretan Night*

### Monday, 25 September 2006 - DAY TRIP [optional]

### Tuesday, 26 September 2006

- 09.00- 12.10:   Session IV: **From Neurons to Networks to Function**  
[Chair: Panayiota Poirazi]
- 09.00- 09.30    **M. Nicolelis**
- 09.30- 10.00    Investigating Neuronal Integrative Properties by Interfacing Models with Living Neurons  
**A. Destexhe**
- 10.00- 10.30    Complex Parameter Space for a Complex Neuron Model  
**E. De Schutter**
- 10.30- 10.50    The Impact of Input-Fluctuations on the Frequency-Current Relationships of Layer V Pyramidal Neurons in the Rat Medial Prefrontal Cortex  
**M. Arsiero**, H.-R. Lüscher, B. N. Lundstrom, M. Giugliano
- 10.50- 11.20    *Coffee Break*
- 11.20- 11.50    Not What You 'de Expect: Paradoxical Roles of Na<sup>+</sup> and K<sup>+</sup> Currents on Excitability  
**L. Graham**
- 11.50- 12.10    Paradoxical Lesion Effects in Cat, Human and Modeled Brains  
**C. C. Hilgetag**
- 12.10            *Lunch*

- 15.00- 17.10: **Session V: Neuronal Integration** [Chair: Klaus Obermayer]
- 15.00- 15.30 Integrative Properties of CA1 Pyramidal Neurons  
**P. Poirazi**
- 15.30- 15.50 Morphological Determinants of Dendritic Spike Initiation  
**A. Roth, M. Häusser**
- 15.50- 16.10 Sign and Size of Spike-Timing Dependent Plasticity depends on Dendritic Location  
**B. Kampa, J.J. Letzkus, G.J. Stuart**
- 16.10- 16.40 Optimal Models of Non-Linear Spike-Timing Dependent Plasticity  
**W. Gerstner**
- 16.40- 17.10 *Coffee Break*
- 17.10- 18.10: **Session VI: Computational and Theoretical Tools**  
[Chair: A. Destexhe]
- 17.10- 17.30 Simulator-Independent Network Modelling with Python and XML  
**A.P. Davison**
- 17.30- 17.50 Python – A Better Interpreter for Computational Neuroscience  
**E. Müller, J. Schemmel, K. Meier**
- 17.50- 18.10 Wave interference networks – state of research  
**G. Heinz**
- 18.10- 20.00: **Poster Session – Cocktail Reception**
- 20.30 *Dinner*

## **Wednesday, 27 September 2006**

- 09.00- 12.00: Visit to the Foundation for Research and Technology – Hellas  
Closing Remarks
- 13.00 *Lunch at the hotel*

***END OF MEETING***