



# FRONTIERS MEETING

## 3 – 6 March 2010



Château de l'Île

4 quai Heydt – 67540 STRASBOURG - OSTWALD

**Rapporteurs:**

Paul Lasko (McGill University, Montreal, Canada)

Rae Silver (Columbia University, New York, USA)

K. VijayRaghavan (National Centre for Biological Sciences, Bangalore, India)

**Discussants:**

Akito Arima (President of HFSP, President of Japan Science Foundation, Tokyo, Japan)

Jesper Haeggström (Karolinska Institute, Stockholm, Sweden)

Young-Joon Kim (Yonsei Genome Institute, Seoul, Republic of Korea)

Glauco Tocchini-Valentini (Institute of Cell Biology, CNR, Monterotondo, Italy)

Torsten Wiesel (Former Secretary General of HFSP and President Emeritus of the Rockefeller University, New York, USA)

## Wednesday March 3rd

### Evening

- 18.00    Aperitif
- 18.45    Welcome  
Akito Arima, President of HFSPO, President of Japan Science Foundation
- 19.00    Introductory lecture  
*Computer simulation in the life sciences: where do we go ?*  
Wilfred van Gunsteren (ETH Hönggerberg, Zurich, Switzerland)
- 20.00    Dinner

## Thursday March 4<sup>th</sup>

### Morning 8.45 -13.00

- 8.45    Introduction  
Ernst-Ludwig Winnacker, Secretary General HFSPO

### *Genes and gene networks*

- 9.00    Chair and introductory talk  
Tom Henzinger (Institute of Science and Technology, Austria)  
*Computer Science versus Computational Science*
- 9.40    Jordi Garcia Ojalvo (Universitat Politecnica de Catalunya, Barcelona, Spain)  
*From gene circuit dynamics to the molecular mechanisms of cellular function*
- 10.20    Coffee
- 10.40    Roger Brent (Molecular Biosciences Institute, Berkeley and Fred Hutchinson  
Cancer Research Center, Seattle, USA)  
*New types of biological function via single cell physiology*
- 11.20    Sven Panke (Bioverfahrenstechnik, Basel, Switzerland)  
*Synthetic Biology: Engineering complex systems?*

12.00 Discussion

13.00 Lunch at hotel

### **Afternoon 14.30-18.30**

#### ***Proteins and protein complexes***

14.30 Chair and introductory talk

Kai Simons (Max-Planck Institute of Molecular Biology and Genetics, Dresden, Germany)

*Protein-lipid interactions and cell membrane organisation*

15.10 Patrick Cramer (Gene Centre, Ludwig-Maximilians-University, Munich, Germany)

*Structural biology of multicomponent complexes: state of the art and new frontiers*

15.50 Coffee

16.10 Andreas Ladurner (EMBL, Heidelberg, Germany)

*Charting the future epigenetic landscape - from small-molecules-in-action to gene-environment interactions*

16.50 Janet Thornton (EMBL outstation - Hinxton, Cambridge, UK)

*Structural Data and Computational Predictions for proteins and their complexes'*

17.30 Discussion

### **Evening**

19.30 Dinner

20.30 Evening lecture

Jonathan Howard (University of Cologne, Germany)

*Darwin and Mendel: two paradigms for biology*

## Friday March 5<sup>th</sup>

### Morning 8.45-13.00

#### *Cells*

- 8.45 Chair and introductory talk  
Suzanne Cory (Walter and Eliza Hall Institute, Parkville, Australia)  
*Targeted cancer therapy: Improving outcomes by inducing apoptosis more effectively*
- 9.25 Akihiro Kusumi (Institute for Frontier Medical Sciences, Graduate School of Medicine, University of Kyoto, Japan)  
*Single-molecule tracking approaches to membrane domains*
- 10.00 Coffee
- 10.15 Stefan Hell (Max-Planck Institute for Biophysical Chemistry, Göttingen, Germany)  
*Far-Field Optical Nanoscopy*
- 10.50 John Gurdon (University of Cambridge, UK)  
*Reversal of the differentiated state: concentration and time*
- 11.25 Jen Sheen (Massachusetts General Hospital, Boston, USA)  
*Connecting Plant Cell Signaling Networks*
- 12.00 Discussion
- 13.00 Lunch

### Afternoon 14.30-18.30

#### *Interactions of higher complexity - 1*

- 14.30 Chair and introductory remarks  
Gary Ruvkun (Massachusetts General Hospital, Boston, USA)  
*Based on the last 50 years of molecular biology discovery, HFSP should bet on the continued centrality of gene inactivation and phenotyping (ie, genetics).*

- 15.10 Ian Baldwin (Max-Planck Institute for Chemical Ecology, Jena, Germany)  
*Ecology's future mission: salvaging books from the burning library*
- 15.50 Coffee
- 16.10 Anja Geitmann (University of Montreal, Canada)  
*Mechanics of cellular morphogenesis – towards a holistic view of development?*
- 16.50 Detlef Weigel (Max-Planck Institute for Developmental Biology, Tübingen, Germany)  
*Complex Interactions in Natural Environments*
- 17.30 Discussion

## **Evening**

- 18.45 Depart from Chateau de l'Ile by bus
- 19.30 Recital and Dinner at Salle Mozart, 1 Rue du Miroir  
Tel: 03 88 75 90 82

## **Saturday March 6<sup>th</sup>** **Morning 9.00-13.00**

### *Interactions of higher complexity - 2*

- 9.00 Chair and introductory remarks  
Carla Shatz (Stanford University, USA)  
*How can Nature be unraveled from Nurture in Neuroscience?*
- 9.40 Henry Markram (Ecole Polytechnique Fédérale de Lausanne, Switzerland)  
*The Blue Brain Project: Understanding through Building*
- 10.20 Coffee
- 10.40 Henrick Ehrsson (Karolinska Institute, Stockholm, Sweden)  
*Cognitive neuroscience of body self-perception*

11.20 Atsushi Iriki (Riken Brain Science Institute, Wako-shi, Japan)  
*Neuroscience of human intellectual evolution*

12.00 Discussion

13.00 Lunch at hotel

**Afternoon 14.30-18.00**

14.30 Wind-up session  
*Where are the frontiers ?*

16.00 Strategy and rapporteurs meeting

19.30 Dinner at hotel

## Participants

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