

Japan-U.S. Brain Research Cooperation Program
Information Exchange Seminar FY2010: Report

Field: (4) Others (Computational Neuroscience)

1. Seminar title: NeuroPhysiome
2. Dates: 10/03/2010-10/06/2010
3. Location: OIST Seaside House, Onna Village, Okinawa
4. Coordinators

Japanese Coordinator

Name Erik De Schutter
Title Principal Investigator
Affiliation Okinawa Institute of Science and Technology

U.S. Coordinator

Name Bruce Lindsey
Title Distinguished Professor and Chair
Affiliation College of Medicine, University of South Florida, USA

5. Participants:

Japan: Invited participants 10 people Others 20 people

(Please give names, titles and affiliations of invited participants)

Akiko Arata, Research Scientist, Riken BSI/Division of Physiome, Hyogo College of Medicine
Masao Ito, Laboratory Head, Laboratory for Memory and Learning, RIKEN.
Shinya Kuroda, Professor, Department of Biophysics and Biochemistry, University of Tokyo.
Akinori Noma, Professor, Cell / Biodynamics Simulation Project Kyoto University
Tomoyuki Kuwaki, Professor, Department of Physiology, Kagoshima University
Yoshitaka Oku, Professor, Department of Physiology, Hyogo College of Medicine.
Hiroki R. Ueda, Team Leader, Laboratory for System Biology, RIKEN
Shin Ishii, Professor, Kyoto University
Kenji Doya, Principal Investigator, Okinawa Institute of Science and Technology
Gabriela Antunes, Postdoc, Okinawa Institute of Science and Technology

U.S.: Invited participants 12 people Others 1 people

(Please give names, titles and affiliations of invited participants)

Thomas E. Dick, Associate Professor, Case Western Reserve University School of Medicine.
Ilya Rybak, Professor, Department of Neurobiology and Anatomy, Drexel University
James Schwaber, Director, Computational Biology, Thomas Jefferson University.
Robert S.Zucker, Professor, Department of Molecular and Cell Biology, U C Berkeley.
Teresa Pitts, Postdoc, University of Florida
Natalia Toporikova, Georgia Institute of Technology
Kate Freeman, Postdoc, Thomas Jefferson University
Kendall Morris, Professor, University of South Florida
Zeynep Gumus, Postdoc, Cornell University
Don Bolser, Professor, University of Florida
Kyonsoo Hong, Assistant Professor, New York University
Sharon Norman, Georgia Institute of Technology

6. Seminar Outline and Significance:

The seminars covered a wide range of topics relevant to the neurophysiome. Several talks covered signaling pathways involved in synaptic plasticity, especially the cerebellum. A significant aspect was the importance of stochasticity in understanding the behavior of such pathways. Another important topic was the respiratory system and the brainstem networks controlling respiratory rhythms. These talks emphasized the interaction between physiological experiments and modeling and how repetitive cycles of such interaction led to important improvements in the modeling. Other talks covered the cardiovascular system and circadian rhythms from a systems biology viewpoint.

7. Seminar Results and Future Implications:

The participants had extensive discussions, both during the seminars and in after dinner discussion sessions. An important concern was how to leverage existing US-Japan collaborations about neural control of the cardiorespiratory system to a more permanent level, possibly by forming a consortium. Discussions about the specific role of systems biology approaches in neuroscience and computational neuroscience were sometimes vivid as the different participants had different views and experiences. Future meetings will need to revisit this issue.

8. Other (implementation issues, feedback, etc.)

There was a complication in overall arrangement for the reason that the budgetary regulations were different between the Japan side and the US side.