

The 17th CDB Meeting
“Towards Synthesis of Cells -Reconstruction and Design of Cellular Functions-“
October 14 – 15, 2008

Tuesday, October 14

10:00 am Opening Remarks by Hiroki R. Ueda

Session 1 / Construction of Basic Cellular Systems

Chair: Vincent Noireaux

10:10 am **Mechanisms of ATP-DnaA Assembly and Duplex DNA Unwinding for the Initiation of DNA Replication in Reconstituted Systems**
Tsutomu Katayama (Kyushu University, Japan)

10:40 am **Single-molecule Imaging of the Transport-vesicle Formation Mediated by COPII system Reconstituted on a Planar Bilayer System** (Tentative)
Hiroyuki Noji (Osaka University, Japan)

11:10 am Coffee Break

Session 2 / New Technologies for Design of Molecules

Chair: David Weitz

11:30 am **De Novo Computational Design of Protein Structure**
Nobuyasu Koga (University of Washington, USA)

12:00 pm **Design of Biological Molecules using Molecular Dynamics Simulations**
Makoto Taiji (RIKEN, Japan)

12:30 pm Lunch and Poster Session 1

Session 3 / New Technologies for Nano-biosystems

Chair: Tetsuya Yomo

2:30 pm **Investigating Cellular Signaling at the Nanometer and Attoliter Scale**
Horst Vogel (Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland)

3:00 pm **A stochastic single-molecule event triggers phenotype switching in a bacterial cell**
Paul J. Choi (Harvard University, USA)

3:30 pm Coffee Break

Session 4: Synthesis of Higher-order Cellular Systems

Chair: Hideo Iwasaki

- 3:50 pm **KaiC as Timebase for Circadian Clock of Cyanobacteria**
Takao Kondo (Nagoya University, Japan)
- 4:20 pm **Towards Reconstruction of Mammalian Circadian Clocks**
Hiroki R. Ueda (RIKEN CDB, Japan)
- 4:50 pm **Reconstituting *C. elegans* Germ Granules in Mammalian Cells**
Asako Sugimoto (RIKEN CDB, Japan)
- 5:20 pm Coffee Break

Session 5 / Programming Cells

Chair: Yoshiki Sasai

- 5:40 pm **A Spatial Gradient of Cell Adhesion Peptide in a Three-dimensional Scaffold Directs Osteoblastic Differentiation of Mesenchymal Stem Cells***
Masaya Yamamoto (Kyoto University, Japan)
- 6:00 pm **Induction of Pluripotency by Defined Factors**
Keisuke Okita (Kyoto University, Japan)
- 6:30 pm Reception

Wednesday, October 15

Session 6 / Towards Synthesis of Organs

Chair: Asako Sugimoto

- 10:00 am **How to determine the size of the embryonic brain: robustness factors for quantitative dorsal-ventral patterning**
Yoshiki Sasai (RIKEN CDB, Japan)
- 10:30 am **From the Bioimaging to the Numerical Analysis**
Hideo Yokota (RIKEN, Japan)
- 11:00 am Coffee Break

Session 7 / Design of Functional Molecular Systems

Chair: Hiroyuki Noji

- 11:20 am **Rheology of Reconstituted Networks of Biopolymers**
David Weitz (Harvard University, USA)
- 11:50 am **Population Study of Sizes and Components of Self-Reproducing Giant Multilamellar Vesicles***
Taro Toyota (The University of Tokyo, Japan)
- 12:10 pm Lunch and Poster Session 2

Session 8 / Design of Proto-type Cells

Chair: Horst Vogel

- 2:00 pm **Cell-free Expression: Application to Gene Network and Synthetic Vesicles**
Vincent Noireaux (University of Minnesota, USA)
- 2:30 pm **Construction of Self-Reproducible Synthetic Cell***
Yutetsu Kuruma (The University of Tokyo, Japan)
- 2:50 pm ***In liposome* RNA-Protein Self-Replication System**
Tetsuya Yomo (Osaka University, Japan)
- 3:20 pm Coffee Break

Session 9 / Towards Design of Minimal Cells

Chair: Hiroki R. Ueda

- 3:40 pm **The Open Cell Project: Complexity Reduction of *Mesoplasma florum***
Thomas F. Knight (MIT, USA)
- 4:10 pm **The quest for a minimal cell: a synthetic genomics approach**
Clyde A. Hutchison III (J. Craig Venter Institute, USA)
- 4:40 pm Closing Remarks by Hiroyuki Noji