

## Program

**Opening Remarks (9:50 ~ 10:00) Prof. Yasuyuki Sakai**

**Session I. Theories and analyses for exploring mesoscopic world**

10:00 ~ 11:30

**chair: Yoshiyuki Arai & Rinshi Kasai**

[1] Prof. Madan Rao (National Center for Biological Sciences, India)  
Title: Active clustering and patterning at the surface of living cells.

[2] Dr. Chun-Biu Li (Hokkaido University, Research Institute for Electronic Science, Japan)  
Title: "Modeling Single Molecule Kinetics Objectively from Dwell-time time series"

[3] Dr. Ziya Kalay (Kyoto University, iCeMS, Japan)  
Title: "Molecular encounters at the mesoscale: effects of low numbers and confinement"

**Coffee Break (11:30 ~ 11:50)**

**Session II. Power of Engineering in New Facets of Biology**  
11:50 ~ 12:50

**chair: Jason Shoemaker & Herve Guillou**

[1] Dr. Doug Murray (Keio University, Institute for Advanced Biosciences, Japan)  
Title: "Towards Grokking Yeast"

[2] Dr. Yannick Rondelez (University of Tokyo & LIMMS/CNRS-IIS, Japan & France)  
Title: "In vitro models of gene regulatory networks"

**Poster Session & Lunch Break (12:50 ~ 14:50)**

**Session III. Data-driven Estimation of Model Parameters ("data assimilation method" project)**  
14:50 ~ 16:10

**chair: Akatsuki Kimura**

[1] Dr. Hiromichi Nagao (Institute of Statistical Mathematics, Japan)  
Title: "Foundation of Data Assimilation and Its Application to Intracellular Fluid Dynamics"

[2] Dr. Antonio Celani (Institut Pasteur, France)  
Title: "Noninvasive inference of the molecular chemotactic response using bacterial trajectories"

[3] Dr. Timothy J. Stasevich (Osaka University, Japan)  
Title: "Mathematical modeling of the RNA polymerase II transcription cycle based on live-cell imaging of post-translational modifications"

**Coffee Break (16:10 ~ 16:30)**

**Session IV. Advances in probing cytoskeletal and chromosomal dynamics in dividing cells**  
16:30 ~ 18:30

**chair: Viji Mythily Draviam & Akira Funahashi**

[1] Prof. Tomoyuki Tanaka (University of Dundee, Cell and Molecular Biology, UK)  
Title: "Chromosome acrobatics on the mitotic spindle"

[2] Prof. Yoshinori Watanabe (University of Tokyo, Laboratory of Chromosome Dynamics Institute of Molecular and Cellular Biosciences, Japan)  
Title: "Tension across centromeres refines centromeric protection by shugoshin"

[3] Dr. Akatsuki Kimura (National Institute of Genetics, Cell Architecture Laboratory, Japan)  
Title: "Size regulation of mitotic spindle in the C. elegans embryo"

[4] Dr. Viji M Draviam (the University of Cambridge, Department of Genetics, UK)  
Title: "Role of microtubule ends in defining the plane of cell division and accuracy of chromosome segregation"

**Closing Remarks (18:30 ~ 18:40) Prof. Madan Rao**

**Free Discussion at the Poster Session Room (18:40 ~ 20:00)**

# INTERNATIONAL WORKSHOP ON QUANTITATIVE BIOLOGY 2012

NOV. 22ND, 2012  
UNIVERSITY OF TOKYO



SUPPORTED BY

Royal Society



Transdisciplinary Research Integration Center  
(TRIC) of Research Organization of  
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Research Group on Engineering in  
Medicine and Biology, Institute of Industrial  
Science, the University of Tokyo, Japan

### Access to Komaba Campus

Odakyu Line, Higashi Kitazawa Station (connect to Shinjuku), 7 min walk.

Chiyoda Line, Yoyogi Uehara Station (connect to Tokyo/Otemachi), 12 min walk.

Keio Inogashira Line, Komaba Todai Mae or Ikenoue Station (connect to Shibuya), 10 min walk

### Train / Flight connections

#### Train

Tokaido Shinkansen (from southern/western area in Japan)

connects to Shinagawa station.

Tohoku Shinkansen (from northern area in Japan)

connects to Tokyo/Otemachi station.

#### Flight

International Airport (Narita)

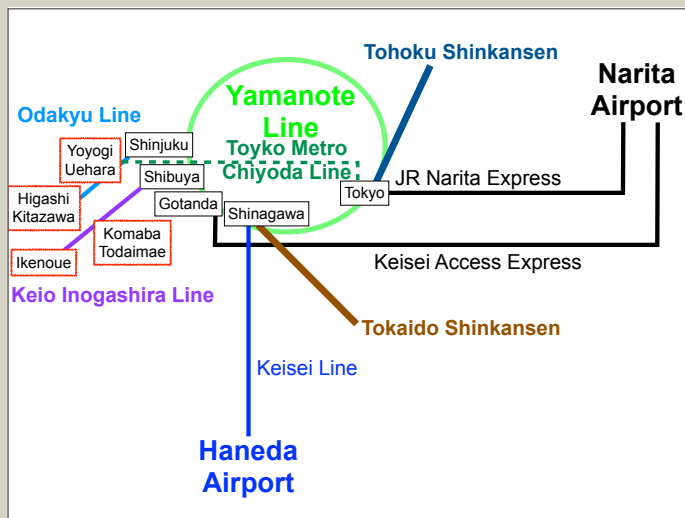
JR Narita Express connects to Tokyo/Otemachi station.

Domestic&International Airport (Haneda)

Keisei line connects to Shinagawa station.

Shinagawa - Shibuya: Yamanote line, 15 min

Otemachi - YoyogiUehara: Chiyoda line, 25 min



### POSTER PRESENTATIONS

No	NAME	TITLE
1	Kei Sumiyoshi	Acceleration of Stochastic Biochemical Simulation by GPU
2	Kazushige Nakamura	Design and Implementation of GPU accelerated biochemical ODE simulator
3	Tatsuhiro Matsui	Implementation of spatial model simulator and its SBML support
4	Takaaki Chishiki	Bio-Flow layout algorithm: an auto-layout algorithm of biochemical networks
5	Takahiro Okuhara	Understanding the characteristics of intracellular reaction space from the point of view of bio-molecular organization
6	Takumi Hiraiwa	Fabrication of a microfluidic device for long term cell culturing with spatiotemporal fluid-control system
7	Tadamasa Kimura	Development of microfluidics systems for Flexible and Automated Biological Experiments
8	Mitsunari Kobayashi	Establishment of Compression Algorithm aimed for efficient analysis on Biological sequences
9	Koichi Takahashi	Single particle simulations reveal effects of molecular crowding on biochemical signaling
10	Coliaux David	Effect of adaptation currents on columnar oscillations.
11	Rinshi Kasai	Dynamic monomer-dimer equilibrium of a prototypical GPCR, beta2 adrenergic receptor: a single molecule imaging study
12	Willi Gottstein	The temporal coordination of cellular metabolism
13	Shunsuke Teraguchi	Cell-to-cell variability-oriented modeling of cells
14	Marcel Hoerning	Cells can sense when they are home - Rigidity sensing of cardiac cells leads to cell-morphological and cell-physiological optimization
15	C. J Atupelage	Segmentation and Classification method for Liver Cell Nuclei in HCC histology images
16	Naoki Irie	Reconsidering the mechanistic view of embryogenesis.
17	Kalesh Sasidharan	Understanding the Self-Organisation of Amino Acid Regulation in Yeast
18	Yuki Tsukada	High-speed, high-magnification tracking system for fluorescence imaging of freely moving C. elegans
19	Lena Takayasu	A mathematical model for human gut microbial ecosystem
20	Rahul Chadda	Molecular dynamics and concentration in raft and boundary domains in actin-depleted plasma membrane vesicles as revealed by single-molecule imaging
21	B Bhattacharyya	Non-equilibrium thermodynamics of cytoskeleton-mediated signaling in cells
22	Maasa Yokomori	A multiplex and sensitive RNA quantification method for determining the absolute amounts of mRNAs without reverse transcription processes
23	Hiroaki Hata	Quantitative Analysis of DNA Microarray Hybridization Kinetics
24	Takeshi Kubojima	Thermo-dynamicity affects neuronal cellular function
25	Martin Robert	Metabolite Exchanges and Respiratory Synchronization in E. coli
26	Cornelia Amariei	Tuning the transcriptome: Global energy-driven chromatin dynamics
27	Noriko Hiroi	in vivo oriented modeling with consideration of the effect of intracellular crowding
28	Ken-ichi Hironaka	Morphogen-dependent growth control mechanism in the Drosophila wing disc

### Feedback Form

a) Will you attend another similar workshop next year or in a couple of years

yes no

Which conference/workshop?

( )

b) What would you like to hear more

( )

( )

( )

c) Would you prefer more talks

yes no

d) Would you like longer talks

yes no

How long?

( ) min

e) What other areas would you like to be covered

( )

( )

( )

Thank you ! We will appreciate your comments and opinions.

### Organizer Commitee

Tetsuya Kobayashi (University of Tokyo)

Viji Mythily Draviam (University of Cambridge)

Akatsuki Kimura (National Institute of Genetics)

Noriko Hiroi (Keio University)

Akira Funahashi (Keio University)

Yoshitaka Suetsugu (National Institute of Agrobiological Sciences)

Rinshi Kasai (Kyoto University)

Yoshiyuki Arai (Osaka University)

Yuki Tsukada (Nagoya University)

Naoki Irie (RIKEN CDB)

Hiroshi Kimura (Tokai University)

Ziya Kalay (Kyoto University)

Peter Carlton (Kyoto University)

Jason Shoemaker (JST)