Program

TUESDAY, JULY 15, 2014

15:00–17:30 Registration

17:40–17:50 Opening Remarks: Shizuo AKIRA

17:50–18:30 Plenary Lecture 1
Chair: Shizuo AKIRA

[PL-1]
Life at the single molecule level: from single molecule enzymology to single cell genomics ····· **24**
Xiaoliang Sunney XIE
(Department of Chemistry and Chemical Biology, Faculty of Arts and Sciences, Harvard University, USA)

18:30–19:10 Plenary Lecture 2
Chair: Shizuo AKIRA

[PL-2]
Single molecule nano-imaging: fluctuation and the function of life ····· **26**
Toshio YANAGIDA
(Graduate School of Frontier Biosciences, Osaka University, Japan)

19:20–21:00 Welcome Reception

WEDNESDAY, JULY 16, 2014

7:00–8:50 Breakfast

9:00–12:00 Session A
Brain
Chairs: Mark SCHNITZER
Toshio YANAGIDA

9:00–9:30 **[A-1]**
Decoding visual experience from the human brain ····· **28**
Yukiyasu KAMITANI
(ATR Computational Neuroscience Laboratories, Japan)

9:30–10:00 **[A-2]**
High spatial resolution brain imaging and targeted stimulation in nonhuman primates ····· **30**
Anna Wang ROE
(Vanderbilt Vision Research Center, Vanderbilt University, USA)

10:00–10:30 Coffee Break

10:30–11:00 [A-3]

Live-imaging analysis of the formation and maintenance of dendritic tree shape in developing CNS neurons ····· **32**

Mineko KENGAKU

(Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University, Japan)

11:00–11:30 [A-4]

Bioimaging at the nanoscale--Single-molecule and super-resolution fluorescence microscopy ····· **34**

Xiaowei ZHUANG

(Department of Chemistry and Chemical Biology, Department of Physics, Howard Hughes Medical Institute, Harvard University, USA)

11:30–12:00 [A-5]

Reading the neural code in behaving animals, ～1000 neurons at a time ····· **36**

Mark SCHNITZER

(Departments of Biology and Applied Physics, CNC Program Investigator, Howard Hughes Medical Institute, Stanford University, USA)

12:00–14:00 Lunch

14:00–17:30 Session B

Development

Chairs: Scott Earl FRASER
Takeshi IMAMURA

14:00–14:30 [B-1]

Next-gen systems biology: imaging the molecular dynamics of embodied cells ····· **38**

Scott Earl FRASER

(Translational Imaging Center, Department of Molecular and Computational Biology, and Department of Biomedical Engineering, University of Southern California, USA)

14:30–15:00 [B-2]

Behaviors of cells and gene expression in early mouse development ····· **40**

Toshihiko FUJIMORI

(Division of Embryology, National Institute for Basic Biology, Japan)

15:00–15:30 [B-3]

Retrieval of regulatory mode of G1/S transition in vertebrate axial development by quantitative live imaging and mathematical models ····· **42**

Tadahiro IIMURA

(Proteo-Science Center (PROS), Ehime University, Japan)

15:30–16:00 Coffee Break

16:00–16:30 [B-4]

Bayesian force inference and its application to tissue morphogenesis ····· **44**

Kaoru SUGIMURA

(Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University, Japan)

16:30–17:00 [B-5]

Cellular mechanisms underlying the formation of the primitive streak formation in the chick embryo ····· **46**

Cornelis Jan WEIJER
(Division of Cell and Developmental Biology, College of Life Sciences, University of Dundee, UK)

17:00–17:15 [B-6 (PS No. 53)]

Single-shot super-resolution fluorescence microscopy by confocal detection ····· **141**

Yasushi OKADA
(Quantitative Biology Center, RIKEN, Japan)

17:15–17:30 [B-7 (PS No. 47)]

Development of a new fluorescence imaging technique using diamond nanoparticles ····· **135**

Yoshie HARADA
(iCeMS, Kyoto University, Japan)

17:30–19:30 Dinner

19:30–21:30 Poster Session I

THURSDAY, JULY 17, 2014

7:00–8:50 Breakfast

9:00–12:00 Session C
Technology
Chairs: Wolfgang BAUMEISTER
Atsushi MIYAWAKI

9:00–9:30 [C-1]

From molecules to cells ····· **48**

Wolfgang BAUMEISTER
(Department of Molecular Structural Biology, Max-Planck-Institute of Biochemistry, Germany)

9:30–10:00 [C-2]

Visualizing zebrafish development with high-speed light sheet microscopy ····· **50**

Jan HUISKEN
(Max-Planck-Institute of Molecular Cell Biology and Genetics (MPI-CBG), Germany)

10:00–10:30 Coffee Break

10:30–11:00 [C-3]

Design, synthesis and *in vivo* application of molecular imaging probes with tunable chemical switches ····· **52**

Kazuya KIKUCHI
(Graduate School of Engineering, Osaka University, Japan)

11:00–11:30 [C-4]

Cruising inside cells ····· **54**

Atsushi MIYAWAKI

(RIKEN Brain Science Institute, Japan)

11:30–12:00 [C-5]

Manipulation of neural activity and behavior control ····· **56**

Akihiro YAMANAKA

(Department of Neuroscience II, Institute of Environmental Medicine, Nagoya University, Japan)

12:00–14:00 Lunch

14:00–17:30 Session D
Inflammation

Chairs: Shizuo AKIRA
Ronald N. GERMAIN

14:00–14:30 [D-1]

Relating tissue organization and cell dynamics to immune function using advanced optical imaging methods ····· **58**

Ronald N. GERMAIN

(Laboratory of Systems Biology, National Institute of Allergy and Infectious Diseases, National Institutes of Health, USA)

14:30–15:00 [D-2]

Imaging of adaptive immune responses in the lymph node ····· **60**

Takaharu OKADA

(Laboratory for Tissue Dynamics, RIKEN Center for Integrative Medical Sciences, Japan)

15:00–15:30 [D-3]

Imaging of lymphocyte activation ····· **62**

Takashi SAITO

(Laboratory for Cell Signaling, RIKEN Center for Integrative Medical Sciences, Japan)

15:30–16:00 Coffee Break

16:00–16:30 [D-4]

The sphingosine 1-phosphate receptor type 2 promotes niche confinement of germinal center B cells ····· **64**

Kazuhiro SUZUKI

(Immunology Frontier Research Center, Osaka University, Japan)

16:30–17:00 [D-5]

Patrolling cells in vasculature and their impact on immune responses ····· **66**

Paul KUBES

(Department of Physiology and Pharmacology, University of Calgary, Canada)

17:00–17:15 [D-6 (PS No. 10)]

Intravital imaging of CD8$^+$ T cells protecting against liver-stage infection with malaria parasites ····· **91**

Katsuyuki YUI

(Department of Molecular Microbiology and Immunology, Nagasaki University, Japan)

17:15–17:30 [D-7 (PS No. 38)]

***In vivo* dissociation constants measured by FCCS reveal a potential role in competitive bindings** ……**124**

Kazuhiro AOKI
(Imaging Platform for Spatio-Temporal Information, Graduate School of Medicine, Kyoto University, Japan)

17:30–19:30 Dinner

19:30–21:30 Poster Session II

FRIDAY, JULY 18, 2014

7:00–8:50 Breakfast

9:00–12:00 Session E
Cancer
Chairs: Peter FRIEDL
Michiyuki MATSUDA

9:00–9:30 [E-1]

Intravital imaging of cancer cell invasion and metastasis ……**68**

Peter FRIEDL
(Department of Cell Biololgy., Radboud University Nijmegen Medical Centre, The Netherlands)

9:30–10:00 [E-2]

Intravital cancer imaging by advanced multi-photon laser excitation microscopy ……**70**

Takeshi IMAMURA
(Department of Molecular Medicine for Pathogenesis, Ehime University Graduate School of Medicine, Japan)

10:00–10:30 Coffee Break

10:30–11:00 [E-3]

Imaging tumor-stromal interaction dynamics in breast cancer metastasis ……**72**

Yibin KANG
(Department of Molecular Biology, Princeton University, USA)

11:00–11:30 [E-4]

Rapid cancer imaging by rationally designed fluorescence probes ……**74**

Mako KAMIYA
(Graduate School of Medicine, The University of Tokyo, Japan)

11:30–12:00 [E-5]

***In vivo* FRET imaging of activities of kinases and small GTPases** ····· **76**

Michiyuki MATSUDA
(Department of Pathology and Biology of Diseases, Graduate School of Medicine, Kyoto University, Japan)

12:00–12:15 Announcement

12:15–12:20 Closing Remarks: Michiyuki MATSUDA

12:20–13:10 Lunch

13:20 Bus for New Chitose Airport Departure