

International Symposium on Imaging Frontier 2017

ISIF 2017



July 8th (Sat.)-9th (Sun.), 2017
Katsushika Campus, Tokyo University of Science, Tokyo, Japan

Abstract Book

Organized by Imaging Frontier Center (IFC), RIST, Tokyo University of Science



**Co-Organized by Scientific Research on Innovative Areas of MEXT
“KAKENHI”**

Scientific Research on Innovative Areas, a MEXT Grant-in Aid Project FY2015-2019

- Resonance Bio

(Resonance Biology for Innovative Bioimaging),

- Plant Environmental Signaling

(Integrative system of autonomous environmental signal recognition and
memorization for plant plasticity)

- Lipoquality

(Quality of lipids in biological systems)

Chair Person

Akira SUDA (Director, IFC, TUS)

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Kazuyuki KUCHITSU (IFC, TUS)

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Naoko OHTANI (IFC, TUS)

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Scope

The ISIF 2017 aim to make the advanced developers and users of "bioimaging" for creating innovative sciences and technologies for innovative bioimaging to create new paradigms for biomedical sciences. The symposia are co-organized by the member of the Imaging Frontier Center (IFC), RIST, Tokyo University of Science together with the members for the three leading projects of MEXT KAKENHI which are relating to the bioimaging.

The projects are of Scientific Research on Innovative Areas, a MEXT Grant-in Aid Project FY2015-2019;

- Resonance Bio (Resonance Biology for Innovative Bioimaging)
represented by Dr. Atsushi MIYAWAKI,
- Plant Environmental Signaling (Integrative system of autonomous environmental signal recognition and memorization for plant plasticity)
represented by Dr. Toshinori KINOSHITA
and
- Lipoquality (Quality of lipids in biological systems)
represented by Dr. Makoto ARITA.

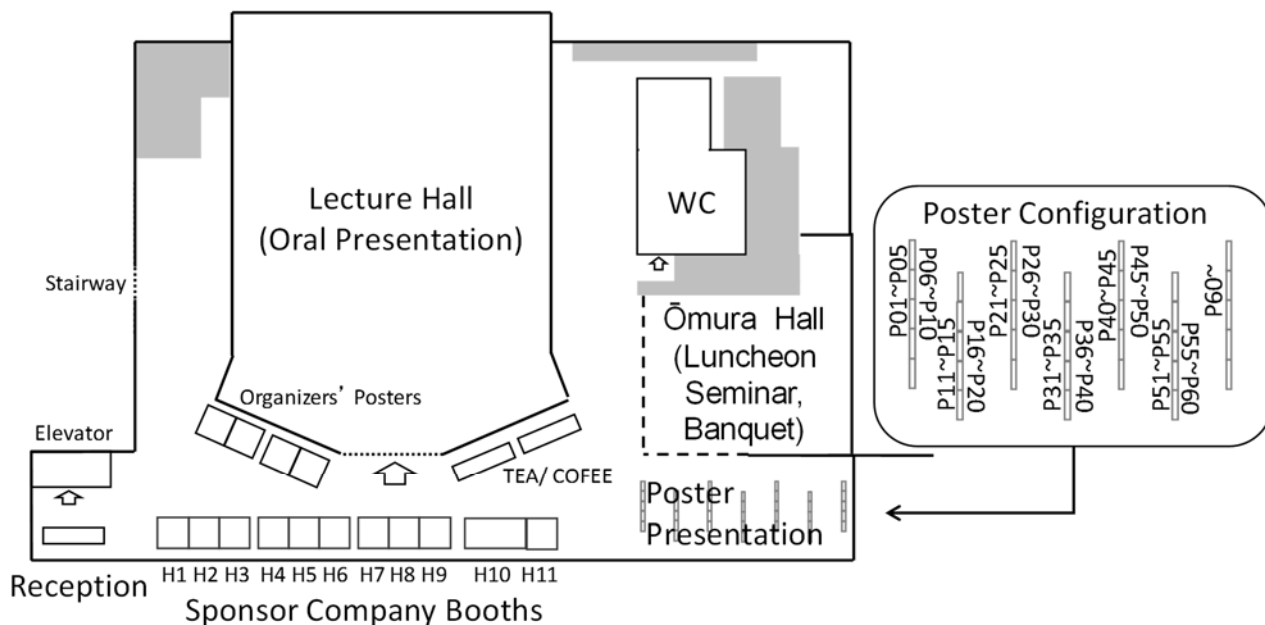
Venue

Library Hall, Katsushika Campus, Tokyo University of Science, Tokyo, Japan
 (6-3-1 Niijuku, Katsushika, Tokyo 125-8585, Japan)

Campus Map



Venue Map



- H1: Molecular Devices Japan KK, H2: Carl Zeiss Microscopy Co., Ltd., H3: OLYMPUS CORPORATION,
 H4: Thorlabs Japan Inc., H5: Chroma Technology Japan G.K., H6: Canon Marketing Japan Inc.,
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Program

Oral Presentations (Lecture Hall)

9:20-9:40 Opening Remarks

Symposium A 9:40-11:20, Day 1, Sat., July 8th chaired by S. Matsunaga

Imaging Obstacle Removal

01A	Contributed	9:40-10:00	Akira SUDA	Photobleaching properties of fluorescent proteins	1
02A	Contributed	10:00-10:20	Takuji Ube	Application of transmission infrared spectroscopy to living cells and biomaterials evaluation in aqueous solution	2
03A	Contributed	10:20-10:40	Sachihiro MATSUNAGA	Deep and live imaging in plants	3
04A-Inv	Invited	10:40-11:20	Dan Ohtan WANG	Synaptic Epitranscriptomics and Dynamic RNA Imaging	4

11:20-13:00 Poster Session

11:30-12:30 Luncheon Seminar (Ōmura Hall)

11:30-12:00 Nippon Genetics Co., Ltd.

12:00-12:30 CORENS TECHNOLOGIES LTD.

Symposium B 13:00-14:40, Day 1, Sat., July 8th chaired by T. Nakamura

Multimodal Visualization

05B-Inv	Invited	13:00-13:25	Kohei OTOMO	Improving two-photon microscopy for clear visualization of subcellular structures	5
06B-Inv	Invited	13:25-14:15	Periklis PANTAZIS	Advancing biosystems imaging: Imaging the hierarchical organization of biological systems	6
07B	Contributed	14:15-14:40	Takeshi NAKAMURA	Visually dissecting Rab switch in macropinocytosis	7

Short Break (10 min.)

Symposium C 14:50-16:10, Day 1, Sat., July 8th chaired by K. Kuchitsu

Imaging Frontier of Plants

08C-Inv	Invited	14:50-15:20	Shigeyuki BETSUYAKU	Deciphering the spatiotemporal regulation of the plant immune system using intravital imaging	8
09C	Contributed	15:20-15:40	Kazuyuki KUCHITSU	Visualizing the regulation of plant development and stress responses by the ROS-Ca ²⁺ signaling network and autophagy	9
10C-Inv	Invited	15:40-16:10	Luis CARDENAS	A new approach for visualizing hydrogen peroxide in living plant cells.	10

Short Break (10 min.)

Symposium D 16:20-17:40, Day 1, Sat., July 8th chaired by K. Soga

Imaging Frontier of Animals

11D-Inv	Invited	16:20- 16:55	Mei Chee TAN	Rare Earth Doped Nanoparticles as Dual-Modality Contrast Agents	11
12D	Contributed	16:55- 17:10	Kohei SOGA	Potential of OTN-NIR (NIR II chaired byIII) for various scenes of bioimaging	12
13D	Contributed	17:10- 17:25	Naoko OHTANI	Challenges Towards Imaging of Lipid in the Liver	13
14D	Contributed	17:25- 17:40	Ryo GOITSUKA	The Role of Transcription Factor Tlx1 in Converting Cell Fate of Dorsal Pancreatic to Spleen Mesenchymal Progenitors	14

18:00-22:00 BANQUET (Ōmura Hall)

Symposium E (100 min)9:20-11:00, Day 2, Sun., July 9th chaired by H. Yokota and K.Soga***Resonance Bio***

15E-Sp	Special Lecture	9:20- 10:00	Atsushi MIYAWAKI	Cruising inside cells	15
16E	Contributed	10:00- 10:10	Kohei SOGA	Second Biological Window: The Key for the Next Generation Bioimaging	16
17E	Contributed	10:10- 10:20	Hideo YOKOTA	Bioimage processing	17
18E-Inv	Invited	10:20- 10:35	Daiki HASHIMOTO	Detection and Tracking Method for Cells Using Adaptive Thresholding	18
19E-Inv	Invited	10:35- 11:00	Ming-Dar TSAI	Image Processing Methods for detecting Induced Pluripotent Stem Cell Reprogramming Using Microscopy Images	19

11:00-13:00 Poster Session**11:30-12:30 Luncheon Seminar (Ōmura Hall) Carl Zeiss Microscopy Co., Ltd.****Symposium F 13:00-14:40, Day 2, Sun., July 9th chaired by M. Ueda and S. Matsunaga*****Plant Environmental Signaling***

20F	Contributed	13:00- 13:20	Minako UEDA	Live-cell imaging of the plant axis formation responding to fertilization signals	20
21F	Contributed	13:20- 13:40	Takumi HIGAKI	A strange link between leaves and skulls? A theoretical model of jigsaw- puzzle pattern formation by plant leaf cells	21
22F	Contributed	13:40- 14:00	Noriyoshi YAGI	Insights into Cortical Microtubule Nucleation and Dynamics in Arabidopsis	22
23F-Inv	Invited	14:00- 14:40	David EHRHARDT	Tuning a molecular amplifier: mechanistic insights into the rapid re- organization of interphase microtubule arrays by blue light perception in higher plants	23

*Break (20 min.)***Symposium G 15:00-16:40, Day 2, Sun., July 9th chaired by M. Setou and N. Ohtani*****Quality of Lipids in Biological Systems***

24G-Inv	Invited	15:00- 15:40	Volker HAUCKE	Phosphoinositide conversion in endocytosis and in the endolysosomal system	24
25G	Contributed	15:40- 16:00	Naoko OHTANI	Gut microbiota promotes obesity- associated liver cancer through PGE2- mediated suppression of antitumor immunity	25
26G	Contributed	16:00- 16:20	Takehiko SASAKI	INPP4B is a tumor suppressor in the context of PTEN insufficiency by modulating the levels of PI3K lipid products	26
27G	Contributed	16:20- 16:40	Koji IKEGAMI	Lipoquality-mediated regulation of primary cilia dynamics	27

16:50-17:00 Closing Remarks

Program

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P02A	Shinnosuke Uno, Mako Kamiya, Toshitada Yoshihara, Ko Sugawara, Kohki Okabe, Takashi Funatsu, Yasushi Okada, Seiji Tobita and Yasuteru Urano	A spontaneously blinking fluorophore based on intramolecular spirocyclization for live-cell super-resolution imaging	29
P03A	Honda Shigeru, Maesako Satoshi, Kamiyama Naoto and Suda Akira	Adaptive control of two-photon excited fluorescence and photobleaching	30
P04A	Keisuke Isobe, Kana Namiki, Hiroyuki Kawano, Atsushi Miyawaki and Katsumi Midorikawa	Background-free deep imaging by multiphoton excited fluorescence microscopy using modulation techniques	31
P05B	Ryota Negishi, Shingo Koinuma, Naoyuki Wada and Takeshi Nakamura	Growth cones in 3D culture have different structural dynamics from those in 2D culture	32
P06B	Akane Kumayama, Taisuke Inage, Masayuki Higuchi, Kazuhito Tabata, Hiroyuki Noji and Tomoko Masaike	Real-time imaging of accumulating Pi dissociated from single-molecule enzymes	33
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P08B	Ryo Bando, Toshinori Morisaku and Hiroharu Yui	Development of the Time-domain Laser-induced Surface Deformation (TD-LISD) Microscope	35
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P13C	Satoshi Kadokura, Kaoru Sugimoto and Sachihito Matsunaga	Characterization of the initiation of somatic embryogenesis in <i>Arabidopsis</i> shoot apical tip	40

P14C	Miho Kihira, Kazushi Taniguchi, Chihiro Kaneko, Yohei Ishii, Hiromi Aoki, Atsushi Koyanagi, Hiroaki Kusano, Nobuo Suzui, Yong-Gen Yin, Naoki Kawachi, Shu Fujimaki and Hiroaki Shimada	Arabidopsis thaliana FLO2 is involved in efficiency of photoassimilate translocation, which associates with leaf growth and aging, yield of seed, and seed quality.	41
P15C	Kenji Hashimoto, Takuya Asai, Shigeru Hanamata, Junpei Sawada, Yasuyuki Ozeki and Kazuyuki Kuchitsu	Stain-Free Imaging of Plant Tissues with Stimulated Raman Scattering Microscopy	42
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