

Frontiers in Developing Climate-Resilient and Socially Accepted Plants

Date Fri., March 13, 9:30-12:30

Venue Room X

Jointly organized: Japan Science and Technology Agency (JST)

Organizers: Motoaki Seki (RIKEN CSRS) / Atsushi Takemiya (Grad. Sch. Sci. Tech. Innov., Yamaguchi Univ.)

This symposium is organized through the collaboration of two JST ASPIRE/NSF Global Centers projects dedicated to enhancing plant resilience and advancing the plant bioeconomy. By sharing recent progress from these international initiatives, the symposium aims to promote global collaboration, strengthen research networks, and support the training of early-career researchers. Through these efforts, it seeks to advance the development of climate-resilient, socially accepted crops.

9:30	<p>Opening Remarks Motoaki Seki (RIKEN CSRS)</p> <p>Chairperson: Atsushi Takemiya</p>
9:37	<p>S01-1 Accelerating Functional Discovery of Plant-Derived Small Molecules for Enhancing Agricultural Resilience <u>Seung Rhee</u>^{1,2,3,4}, Miriam Goodman⁵, Emily Fryer⁵ (¹Plant Resilience Institute, Michigan State University, USA, ²Department of Biochemistry and Molecular Biology, Michigan State University, USA, ³Department of Plant Biology, Michigan State University, USA, ⁴Department of Plant, Soil, and Microbial Sciences, Michigan State University, USA, ⁵Department of Molecular and Cellular Physiology, Stanford University, USA)</p>
10:03	<p>S01-2 Manipulating stomatal responses to improve water use efficiency <u>Tracy Lawson</u> (University of Illinois)</p>
10:29	<p>S01-3 Enhancing plant resilience by chemical, epigenetic and genome regulations <u>Motoaki Seki</u>^{1,2,3} (¹RIKEN CSRS, ²KIBR, Yokohama City Univ., ³Graduate Sch. Sci. Eng., Saitama Univ.)</p> <p>Chairperson: Motoaki Seki</p>
10:55	<p>S01-4 Molecular basis of stomatal opening for improved plant water use efficiency <u>Atsushi Takemiya</u> (Grad. Sch. Sci. Tech. Innov., Yamaguchi Univ.)</p>
11:21	<p>S01-5 Stomatal mechanisms: Molecular insights driving plant resilience and productivity <u>Toshinori Kinoshita</u> (ITbM, Nagoya University)</p>
11:47	<p>S01-6 Molecular insights into ABA signaling: implications for plant stress resilience <u>Taishi Umezawa</u> (AIS, Tokyo Univ. Agric. Tech.)</p>
12:13	<p>Closing Remarks Atsushi Takemiya (Grad. Sch. Sci. Tech. Innov., Yamaguchi Univ.)</p>

Unlocking New Frontiers in Plant Physiology with Mass Spectrometry

Date Fri., March 13, 9:30-12:30

Venue Room Y

Organizer: Kanako Bessho-Uehara (Tohoku University)

Recent mass spectrometry (MS) innovations are opening new frontiers in plant physiology. MS allows multifaceted analyses, from proteomics and metabolomics to PTM dynamics, imaging, and single-cell studies. This symposium features leading researchers using cutting-edge MS to discover novel plant systems. We aim to share the view of MS not just as a tool, but as a powerful “engine of discovery” shaping plant science.

9:30	<p>Opening Remarks Kanako Bessho-Uehara (Tohoku University)</p> <p>Chairperson: Kanako Bessho-Uehara</p>
9:35	<p>S02-1 High-throughput, in-depth plant phosphoproteomics and N-glycoproteomics Chin-Wen Chen, Ting-An Chen, Pei-Yi Lin, <u>Chuan-Chih Hsu</u> (Institute of Plant and Microbial Biology, Academia Sinica)</p>
10:00	<p>S02-2 Exploration of Phospho-Switches regulating growth and environmental responses in <i>Arabidopsis</i> using ¹⁵N metabolic labeling-based phosphoproteomics <u>Yuri Ohkubo</u>, Natsuki Tada, Yuki Kato, Saki Noda, Yoshikatsu Matsubayashi (Grad. Sch. Sci., Nagoya University)</p> <p>Chairperson: Yuri Ohkubo</p>
10:25	<p>S02-3 Phosphoproteomic insights into brassinosteroid-regulated sugar metabolism <u>Kanako Bessho-Uehara</u>¹, Hongliang Zhang², Yalikusnjiang Aizezi², Ajeet Chaudhary², Cao Son Trinh², Shou-Ling Xu², Zhi-Yong Wang² (¹Tohoku University, ²Carnegie Institution)</p> <p>Chairperson: Kanako Bessho-Uehara</p>
10:50	<p>S02-4 Activity-based high-throughput screening and MS-based proteomics for identifying site-specific proteases in plants <u>Sayaka Matsui</u>¹, Yoshikatsu Matsubayashi², Yuki Hirakawa¹ (¹Grad. Sch. Integr. Sci. Life, Hiroshima Univ., ²Grad. Sch. Sci., Nagoya Univ.)</p>
11:15	<p>S02-5 Search for signaling factors in the self-incompatibility of Brassicaceae plants using BioID <u>Maki Hayashi</u> (Grad. Sch. Life Sci., Tohoku Univ.)</p>
11:40	<p>S02-6 MS imaging and live single-cell MS analyses revealed spatially organized transcellular alkaloid metabolism <u>Kotaro Yamamoto</u> (Sch. Sci. Yokohama City Univ.)</p>
12:05	<p>Closing Remarks Kanako Bessho-Uehara (Tohoku University)</p>

Advances in Engineering and Regulation of Plastids and Photosynthesis

Date Fri., March 13, 9:30-12:30

Venue Room Z

Co-sponsored by Grants-in-Aid for Transformative Research Areas (A), [Cytoplasmic Genome Regulation] & [Photosynthetic Ubiquity], and, JSPS Core-to-Core program [Plant Organelle Research]

Organizers: Wataru Yamori (The University of Tokyo) / Mizuki Takenaka (Kyoto University) / Hsou-min Li (Academia Sinica) / Wataru Sakamoto (Okayama University) / Shin-ichi Arimura (The University of Tokyo)

From chloroplast genome editing to Rubisco engineering and photosynthetic regulation, this symposium presents cutting-edge advances in plastid and photosynthesis research. By integrating molecular, structural, imaging, and synthetic biology approaches, it explores new strategies to engineer photosynthesis for future crop improvement.

Chairperson: Mizuki Takenaka

- | | |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30 | S03-1 Targeted Base Editing for the Chloroplast Genome
<u>Shin-ichi Arimura</u> , Issei Nakazato (Graduate School of Agricultural and Life Sciences, The University of Tokyo, Japan) |
| 9:50 | S03-2 Taming Plastids for Biotechnology and Synthetic Biology
<u>Ralph Bock</u> (Max Planck Institute of Molecular Plant Physiology, Germany) |
| 10:20 | S03-3 Real-Time Monitoring of Plant Physiological Dynamics with Hyperspectral Imaging
<u>Kaori Kohzuma</u> (Graduate School of Agriculture, Kyoto University, Japan) |
| 10:40 | Break |

Chairperson: Wataru Sakamoto

- | | |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:45 | S03-4 Rewriting Rubisco's evolutionary script for the next generation in crop CO ₂ fixation
<u>Spencer Whitney</u> (Research School of Biology, The Australian National University, Australia) |
| 11:15 | S03-5 Next-Generation Strategies for Boosting Photosynthesis through Rubisco Engineering and Chemical Screening
<u>Wataru Yamori</u> (Graduate School of Agricultural and Life Sciences, The University of Tokyo, Japan) |
| 11:35 | S03-6 Protein import into chloroplasts
<u>Hsou-min Li</u> (Institute of Molecular Biology, Academia Sinica, Taiwan) |
| 12:05 | S03-7 Structural Insights into the pH-Dependent Functional Regulation of the Cytochrome <i>b₆f</i> Complex
<u>Genji Kurisu</u> (Institute for Protein Research, Osaka University, Japan) |

Priming and Memory of Plants in Facing Environmental Changes

Date Fri., March 13, 14:00-17:00

Venue Room X

Organizers: Nobutoshi Yamaguchi (NAIST) / Yee-yung Charng (Academia Sinica)

This symposium focuses on plant stress memory and priming, a key research area highlighted in recent and upcoming special issues of Plant and Cell Physiology (PCP) on environmental responses and stress adaptation. Editors of PCP associated with these topics and special issues will come together to present their research, exploring how chromatin-based regulation, transcriptional reprogramming, and persistent physiological and metabolic changes underlie memory of heat, cold, and other abiotic and biotic stresses. Attendees will gain cutting-edge insights into how prior stress experiences shape subsequent responses, learn about the related PCP special issues, and have an opportunity to connect with editors working at the forefront of plant stress memory research.

Chairperson: Nobutoshi Yamaguchi

- | | |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00 | Opening Remarks by OUP
Miki Matoba (Oxford Univ. Press) |
| 14:03 | PCP's Upcoming special issue
Liliana Costa (Oxford Univ. Press) |
| 14:10 | S04-1 Regulatory Circuits for Maintaining Plant Stress Memories
<u>Yee-yung Charng</u> (Agricultural Biotechnology Research Center, Academia Sinica, Taiwan) |
| 14:40 | S04-2 Epigenetic Regulation of Cold Stress Response and Memory in <i>Arabidopsis</i>
Munissa Sadykova, <u>Hidetoshi Saze</u> (Plant Epigenetics Unit, OIST) |
| 15:00 | S04-3 How do plants remember a stressful day? – Interplay of transcription factors and chromatin to regulate heat stress memory
<u>Isabel Baurle</u> (Institute of Biochemistry and Biology, University of Potsdam, Potsdam, Germany) |
| 15:30 | Break |

Chairperson: Yee-yung Charng

- | | |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:40 | S04-4 Decoding Ethanol-Activated Stress Tolerance Pathways and Their Persistence
<u>Kaori Sako</u> ^{1,2} , <u>Daisuke Todaka</u> ² , <u>Motoaki Seki</u> ² (¹ Dep. Adv. Bio., Kindai Univ., ² CSRS, RIKEN) |
| 15:55 | S04-5 Proteins for Chromatin Organization Contribute to Heat Stress Memory
<u>Yilang Li</u> ¹ , <u>Hikaru Sato</u> ¹ , <u>Yuki Hayashi</u> ² , <u>Toshinori Kinoshita</u> ² , <u>Nobutoshi Yamaguchi</u> ³ , <u>Takuya Sakamoto</u> ⁴ , <u>Sachihiro Matsunaga</u> ¹ (¹ Grad. Sch. Frontier Sci., Univ. Tokyo, ² Grad. Sch. Sci., Nagoya Univ., ³ Grad. Sch. Biological Sci., NAIST, ⁴ Grad. Sch. Sci., Kanagawa Univ.) |
| 16:10 | S04-6 When plants remember the heat: The sweet mechanics of thermomemory
<u>Ashverya Laxmi</u> , <u>Halidev Krishna Botta</u> , <u>Harsha Samtani</u> (National Institute of Plant Genome Research, New Delhi) |
| 16:40 | S04-7 Transcription Factor and Epigenetic Regulator-Mediated Heat Stress Memory in Plants
<u>Nobutoshi Yamaguchi</u> (NAIST) |
| 16:55 | Closing Remarks
Yee-yung Charng (Academia Sinica) |

Advances in Cellular and Molecular Signaling in Response to Internal and External Stimuli from Algae to Plants

Date Fri., March 13, 14:00-17:00

Venue Room Y

Organizers: Yasuyo Yamaoka (The Catholic University of Korea) / Kuan-Ju Lu (National Chung Hsing University)

This symposium aims to promote international collaboration among leading researchers from Taiwan, Korea, and Japan by exploring the frontiers of regulatory mechanisms in plant and algal biology. It will highlight recent advances in understanding how plants and algae modulate their cellular and molecular signaling in response to environmental stimuli, developmental programs, and how they adopt to evolutionary pressures. By discussing diverse types of molecular regulatory mechanisms in a broad spectrum of algae and plant species, the symposium will provide an intellectually stimulating and interdisciplinary platform.

14:00	<p>Opening Remarks Kuan-Ju Lu (National Chung Hsing University), Yasuyo Yamaoka (The Catholic University of Korea)</p> <p>Chairperson: Kuan-Ju Lu</p>
14:05	<p>S05-1 Cosmopolitan microalgae: genomic biology and regulation of key players in global carbon cycling <u>Chuan Ku</u> (Institute of Plant and Microbial Biology, Academia Sinica, Taipei, Taiwan)</p>
14:25	<p>S05-2 How cells die matters in microalgae through IRE1-dependent lipid remodeling <u>Yasuyo Yamaoka</u> (Dept. of Biotechnology, The Catholic University of Korea)</p>
14:45	<p>S05-3 Heat Shock Transcription Factor B1 Orchestrates Transcriptional Network for Land Plant Adaptation <u>Ting-Ying Wu</u> (Institute of Plant and Microbial Biology, Academia Sinica)</p>
15:05	<p>S05-4 An acidophilic fungus promotes prey digestion in a carnivorous plant <u>Isheng Jason Tsai</u> (Biodiversity Research Center, Academia Sinica Taiwan)</p> <p>Chairperson: Yasuyo Yamaoka</p>
15:25	<p>S05-5 Plasticity and Evolution of Xylem Cell Identity Revealed by Single-Cell and Spatial Multi-Omics <u>Jo-Wei Allison Hsieh</u>^{1,2}, Te-Lun Mai², Ying-Lan Chen^{3,4}, Ying-Chung Jimmy Lin⁵ (¹Genome Center, University of California, Davis, Davis, CA, USA, ²Department of Life Science, National Taiwan University, Taipei, Taiwan, ³Department of Biotechnology and Bioindustry Sciences, National Cheng Kung University, Tainan, Taiwan, ⁴Graduate Program in Translational Agricultural Sciences, National Cheng Kung University and Academia Sinica, Tainan, Taiwan, ⁵Department of Life Science and Institute of Plant Biology, National Taiwan University, Taipei, Taiwan)</p>
15:45	<p>S05-6 Ribosome as a Signalling Hub: rRNA Modification Modulates Signal Perception Sensitivity in Xylem Differentiation <u>Donghwi Ko</u> (Sainsbury Laboratory, University of Cambridge, UK)</p>
16:05	<p>S05-7 Molecular Mechanisms of Epidermal Reprogramming Triggered by Wounding in Arabidopsis Jung-Min Lee¹, Woo-Taek Jeon¹, Minsoo Han¹, Min-Soo Choi¹, Myung Kwon¹, Kyungyoon Kim², Sujeong Je³, Hoon Jung², Geon Heo¹, Youngsung Joo¹, Yasuyo Yamaoka³, <u>Yuree Lee</u>¹ (¹School of Biological Sciences, Seoul National University, Republic of Korea, ²Research Institute of Basic Sciences, Seoul National University, Republic of Korea, ³Department of Biotechnology, The Catholic University of Korea, Republic of Korea)</p>
16:25	<p>S05-8 A role of phospholipid-binding in regulating the function of Arabidopsis Phosphatidylethanolamine-Binding Proteins (PEBP) <u>Yuki Nakamura</u>^{1,2,5,6}, Ying-Chen Lin^{2,3,4}, Yu-chi Liu², Artik Elisa Angkawijaya¹ (¹RIKEN Center for Sustainable Resource Sciences (CSRS), ²Institute of Plant and Microbial Biology, Academia Sinica, ³Molecular and Biological Agricultural Sciences Program, Taiwan International Graduate Program, Academia Sinica and National Chung Hsing University, ⁴Graduate Institute of Biotechnology, National Chung Hsing University, ⁵Department of Biological Sciences, Graduate School of Science, The University of Tokyo, ⁶Biotechnology Center, National Chung Hsing University)</p>
16:45	<p>Closing Remarks Yasuyo Yamaoka (The Catholic University of Korea), Kuan-Ju Lu (National Chung Hsing University)</p>

Underlying molecular antagonisms as drivers of plant diversification and ecological adaption

Date Fri., March 13, 14:00-17:00

Venue Room Z

Organizers: Sota Fujii (Univ Tokyo, Grad Sch Agric Life Sci) / Reina Komiya (RIKEN)

Plants have internalized molecular antagonisms that maintain and expand diversity, such as factors controlling hybridization during reproduction, host genome and transposable elements, and mechanisms governing intercellular developmental regulation. This symposium will highlight cross-scale research that extends molecular-level processes to an integrated understanding of plant adaptation to ecosystems.

14:00	opening remarks Sota Fujii (Univ Tokyo, Grad Sch Agric Life Sci)
Chairperson: Reina Komiya	
14:05	S06-1 The molecular basis of floral adaptations to promote outbreeding <u>Michael Lenhard</u> (University of Potsdam, Germany)
14:35	S06-2 Molecular evolution of mechanisms involved in antagonistic pollen-pistil interactions in plants <u>Sota Fujii</u> ^{1,2} (¹ Univ Tokyo, Gra Sch Agric Life Sci, ² Suntory SunRISE)
15:00	S06-3 Epigenetic basis of parental genomic antagonism underlying endosperm-based hybridization barriers <u>Kaoru Tonosaki</u> (Kihara Inst. Biol. Res., Yokohama City Univ.)
15:25	break
Chairperson: Sota Fujii	
15:35	S06-4 Environmental Response–Dependent RNA Regulatory System in Rice Reproduction <u>Reina Komiya</u> (RIKEN • CSRS)
16:00	S06-5 Molecular antagonisms promoting diversity of the epigenome in natural <i>Arabidopsis thaliana</i> populations <u>Eriko Sasaki</u> (Dept. Biol., Kyushu Univ.)
16:25	S06-6 Transposon-Mediated Environmental Regulation: Catalyst for Adaptive Responses? <u>Leandro Quadrona</u> (Institute of Plant Science Paris-Saclay (IPS2), Gif-sur-Yvette, France)
16:55	closing remarks Reina Komiya (RIKEN)

Frontiers in Plant Science Revealed by Space Environments: From Molecular Mechanisms to Future Horizons

Date Sat., March 14, 9:00-12:00

Venue Room X

Co-organized by Research Center for Space Agriculture and Horticulture, Chiba University

Organizers: Tomomichi Fujita (Hokkaido University) / Jun Hidema (Chiba University)

This symposium highlights recent plant experiments on the International Space Station and other microgravity platforms by Japanese PIs in our society, revealing hidden plant functions in gravity sensing, combined stress responses, and cell division. Four Japanese PIs and two international collaborators from Australia, who are planning new missions, will present and discuss future directions for space-based plant research.

Chairperson: Jun Hidema

- | | |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 | Introduction
Jun Hidema (Chiba University) |
| 9:05 | S07-1 Plant space biology and its application to space farming
<u>Hideyuki Takahashi</u> (Research Center for Space Agriculture and Horticulture, Graduate School of Horticulture, Chiba University) |
| 9:30 | S07-2 Moss in space: How do they respond, grow, and how much can they tolerate?
<u>Tomomichi Fujita</u> ¹ , Yuko T. Hanba ² , Hiroyuki Kamachi ³ , Yusuke Onoda ⁴ , Ichirou Karahara ³ , Yuji Hiwatashi ⁵ , Atsushi Kume ⁶ (¹ Grad. Sch. Sci., Hokkaido Univ., ² Dept. Applied Biol., Kyoto Inst. Tech., ³ Fac. Sci., Univ. Toyama, ⁴ Grad. Sch. Agr., Kyoto Univ., ⁵ Sch. Food ind. Sci., Miyagi Univ., ⁶ Fac. Agri., Kyushu Univ.) |
| 9:55 | S07-3 Space Experiment Plant UV-B: Combined Stress Response to Microgravity and Ultraviolet-B Radiation
Xi Chen ² , Kaoru Yoshiyama ² , Genji Kamada ³ , Haruo Kasahara ⁴ , Toru Shimazu ⁵ , Kana Kuriyama ⁶ , Kazumi Koga ⁷ , Tomokazu Yamazaki ⁷ , Noriko Matsuzaki ⁷ , Akira Higashibata ⁷ , <u>Jun Hidema</u> ¹ (¹ RC for Space Agri. and Horti., Chiba Univ., ² Grad. Sch. Life Sci., Tohoku Univ., ³ AES, ⁴ JAMSS, ⁵ Space Life Sci. International LLC, ⁶ Japan Space Forum, ⁷ JAXA) |
| 10:20 | Break |

Chairperson: Tomomichi Fujita

- | | |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:30 | S07-4 Plant Cell Division space experiment - Elucidation of the effects of the microgravity environment on plant cell division -
<u>Daisuke Tamaoki</u> ¹ , Mayuka Naruse ² , Mizuki Yamada ² , Naoya Taguchi ² , Micahl Rivkintsuji ³ , Hiroki Yasuhara ⁴ , Shizuka Koshimizu ⁵ , Takumi Nishiuchi ⁶ , Ichirou Karahara ¹ , Kouichi Soga ⁷ (¹ Fac. Sci., Univ. Toyama, ² Grad. Sch. Sci. Eng., Univ. Toyama, ³ Dept. Biol., Fac. Sci., Univ. Toyama, ⁴ Fac. Chem. Mater. Bioeng., Kansai Univ., ⁵ NIG, ⁶ ReCEMHD, Kanazawa Univ., ⁷ Grad. Sch. Sci., OMU) |
| 10:55 | S07-5 Zero waste plants for controlled environments in Space and on Earth
<u>Kim Johnson</u> ¹ , Mathew Lewsey ¹ , Michelle Watt ² (¹ La Trobe University, School of Agriculture Biomedicine and Environment, ² University of Melbourne) |
| 11:25 | S07-6 From Suborbital Spaceflight to the Moon: Plant Cell Wall Remodelling in Response to Altered Gravity
<u>Mortimer Jenny</u> ^{1,2,6} , Jens Hauslage ^{2,3} , Sebastian Feles ³ , Tommy Zheng Gong ^{1,2} , Mathew Lewsey ^{1,4,6} , Matthew Gilliam ^{1,2} , Alison Gill ^{1,2,6} , Bryony Hodge ^{1,2,6} , Christine Chamberlain ^{1,5,6} (¹ ARC Centre of Excellence in Plants for Space (P4S), ² Adelaide University, SA 5064, Australia, ³ Aeromedical FabLab, Institute of Aerospace Medicine, German Aerospace Center (DLR), ⁴ La Trobe University, Victoria, Australia, ⁵ Space Lab Technology, Colorado, USA, ⁶ Luna Effects on Agricultural Flora (LEAF) consortium) |
| 11:55 | Discussion
Tomomichi Fujita (Hokkaido University) |

Nuclear Architecture as a Scaffold: Structural Views on Gene Regulation and Cellular Function in Plants and Beyond

Date Sat., March 14, 9:00-12:00

Venue Room Y

Organizers: Takuya Sakamoto (Kanagawa University) / Noriko Inada (Osaka Metropolitan University)

Gene expression is regulated not only by DNA, transcription factors, and chromatin modifications but also by nuclear structures acting as scaffolds that support and spatially coordinate nuclear events. Nuclear temperature has emerged as another key regulator. This symposium presents new insights into how these factors are integrated to shape gene expression and cellular functions in plants and animals.

Chairperson: Takuya Sakamoto

- | | |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 | Opening remarks
Takuya Sakamoto (Kanagawa University) |
| 9:05 | S08-1 Regulation of Plant Chromatin Organization by Actin and Actin-binding Proteins
<u>Noriko Inada</u> ¹ , Tomoko Matsumoto ¹ , Fumiya Nakano ¹ , Yayoi Inui ² , Kota Higashi ³ , Shizue Yoshihara ³ ,
Sachihiro Matsunaga ² (¹ Grad. Sch. Agri., Osaka Metropol. Univ., ² Grad. Sch. Front. Sci., Univ. of Tokyo,
³ Grad. Sch. Sci., Osaka Metropol. Univ.) |
| 9:30 | S08-2 From Plants to Cancer: Rapid Cell Division Is Regulated at the Nuclear Pore
<u>Yangnan Gu</u> (Univ. California, Berkeley, USA) |
| 10:00 | S08-3 Rapid changes in transcriptional activity and chromatin structure during pollen tube growth
<u>Mio K. Shibuta</u> (Fac. of Sci., Yamagata Univ.) |

Chairperson: Noriko Inada

- | | |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:30 | S08-4 Thermal signaling in the nucleus: A mechanism of cellular function driven by spontaneous heat production
<u>Kohki Okabe</u> (Grad. Sch. Pharm. Sci., Univ. Tokyo) |
| 11:00 | S08-5 Exploring the functional implications of centromere arrangements in Arabidopsis
<u>Takuya Sakamoto</u> (Fac. Sci., Kanagawa Univ.) |
| 11:20 | S08-6 Chromosomal Organisation of Plant Biosynthetic Gene Clusters
<u>Hans-Wilhelm Nuetzmann</u> (Dep. Biosci., Univ. Exeter, UK) |
| 11:50 | Closing remarks
Noriko Inada (Osaka Metropolitan University) |

Asymmetries in plant structure and signaling

Date Sat., March 14, 9:00-12:00

Venue Room Z

Co-sponsored by JST PRESTO “Function and regulation of plant molecules”

Organizers: Makoto Shirakawa (IPMB, Academia Sinica) / Mika Nomoto (Centr. Gene Res., Nagoya Univ.)

In the JST PRESTO program “Plant Molecules,” plant-derived compounds and their related genes are collectively defined as “plant molecules.” The program promotes interdisciplinary research to elucidate their functions in organisms and ecosystems and to develop technologies for their control. This symposium will highlight the dynamics of plant molecules in living systems, with a focus on asymmetry in plant structure and signaling.

Chairperson: Mika Nomoto

-
- | | |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 | Opening remarks |
| 9:10 | S09-1 How Minor Shifts in Transcription Factor Networks Generate Cell Fate Asymmetry
<u>Makoto Shirakawa</u> ^{1,2} (1Institute of Plant and Microbial Biology, Academia Sinica, 2JST PRESTO) |
| 9:40 | S09-2 Molecular Basis of the Regulatory System Governing Cell Polarity in Plants
<u>Akira Yoshinari</u> ^{1,2} (1WPI-ITbM, Nagoya Univ., 2JST PRESTO) |
| 10:10 | S09-3 Evolutionary origins and diversification of polar auxin transport in plants
<u>Satoshi Naramoto</u> ^{1,2} (1Fac. Sci., Hokkaido Univ., 2JST PRESTO) |
| 10:40 | Break time |

Chairperson: Makoto Shirakawa

-
- | | |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:50 | S09-4 Mechanistic Analysis of Symmetric Calcium Wave Triggered by Asymmetric Trichome Bending
<u>Mika Nomoto</u> ^{1,2,3} , Yu Saito ² , Mafuyu Kawashima ² , Tomoko Suzuki ^{1,4} , Masamitsu Ishibashi ⁵ , Hiroshi Mori ² , Kiminori Toyooka ⁶ , Sumire Sugiyama ¹ , Noriko Nagata ⁴ , Mayuko Sato ⁶ , Yasuko Kaneko ⁷ , Makoto Tokunaga ⁸ , Eiji Goto ⁵ , Takeo Matsumoto ⁹ , Masato Hoshino ¹⁰ , Yasuomi Tada ^{1,2} (1Centr. Gene Res., Nagoya Univ., 2Grad. Sch. Sci., Nagoya Univ., 3JST PRESTO, 4Div. Sci., Japan Wmn’s Univ., 5Grad. of Agr., Kyushu Univ., 6RIKEN Centr. Sust. Res. Sci., 7Div. Edu., Saitama Univ., 8Comp. Anal. Centr. Sci., Saitama Univ., 9Grad. Sch. Eng., Nagoya Univ., 10JASRI) |
| 11:20 | S09-5 C/N/S circulatory system underlying catabolic recycling of specialized metabolites
<u>Ryosuke Sugiyama</u> ^{1,2,3,4} (1Grad. Sch. Pharm. Sci., Chiba Univ., 2PMSC, Chiba Univ., 3RIKEN CSRS, 4JST PRESTO) |
| 11:50 | General discussion & Closing remarks |

ASPB-JSPB Joint Symposium—Plant resilience and plasticity powered by dynamic cellular responses

Date Sun., March 15, 9:00-11:00

Venue Room X

Co-organized by the JSPB International Committee and the ASPB International Committee

Organizers: Ryohei Thomas Nakano (Hokkaido Univ.) / Momoko Ikeuchi (NAIST) / Keiko Torii (Univ. Texas Austin/ HHMI/ITbM)

Remarkable plasticity of plant cells enables drastic morphological and physiological changes that lay the groundwork for plant resilience, while its underlying mechanisms remain poorly characterized. In this symposium, outstanding international speakers will present their cutting-edge research on dynamic cellular behaviors observed during reproduction, embryonic and post-embryonic development, and regeneration.

Chairperson: Ryohei Thomas Nakano

- | | |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 | <p>Opening Remark
Ryohei Thomas Nakano (Hokkaido Univ.)</p> |
| 9:02 | <p>S10-1 Cell fate determination and tissue organization in leaf development
<u>Kimmy Ho</u> (Institute of Plant and Microbial Biology, Academia Sinica)</p> |
| 9:25 | <p>S10-2 Multicellular Dynamics of WUS-Expressing Cells During <i>De Novo</i> Shoot Regeneration in <i>Arabidopsis</i>
<u>Yuki Doll</u>, Momoko Ikeuchi (Div. Bio. Sci., Grad. Sch. Sci. Tech., NAIST)</p> |
| 9:42 | <p>S10-3 Barrier Integrity Is Monitored By Gas Diffusion In <i>Arabidopsis</i> Mature Roots
<u>Hiroyuki Iida</u>¹, Isidro Abreu², Jennifer López Ortiz¹, Lucas León Peralta Ogorek^{1,3}, Vinay Shukla², Meeri Mäkelä¹, Munan Lyu¹, Alexey Shapiguzov^{1,4}, Francesco Licausi², Ari Pekka Mähönen¹ (¹FBES., University of Helsinki, ²Dept of Bio., University of Oxford, ³Sch of Biosci., University of Nottingham, ⁴Luke)</p> |

Chairperson: Momoko Ikeuchi

- | | |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:59 | <p>S10-4 A novel actin isoform regulates seed size by controlling nuclear movement in <i>Arabidopsis</i> coenocytic endosperm
<u>Tomokazu Kawashima</u> (Department of Plant and Soil Sciences, University of Kentucky, Kentucky USA)</p> |
| 10:16 | <p>S10-5 Emergence of Robust Axis Formation from Stochastic Cell Behaviors in Rice Embryogenesis
<u>Atsuko Kinoshita</u> (Tokyo Metropolitan Univ.)</p> |
| 10:33 | <p>S10-6 The Distributive Germline: A developmental strategy to restrict the spread of new mutations
<u>Brad Nelms</u> (University of Georgia, USA)</p> |
| 10:58 | <p>Closing Remarks
Kent D. Chapman (University of North Texas, ASPB President)</p> |

Next-Trend of Plant Biology in Japan and Taiwan

Date Sun., March 15, 13:30-16:30

Venue Room X

Organizers: Katsutoshi Tsuda (Nagoya University) / Misato Ohtani (The University of Tokyo) / Ying-Chung Jimmy Lin (National Taiwan University) / Su-Chiung Fang (Academia Sinica)

This Japan–Taiwan joint symposium showcases emerging, innovative plant biology research led by young scientists in both countries. By focusing on challenging and unique approaches across diverse fields, it provides a platform to exchange novel ideas and build new collaborations. We expect it will strengthen the network of next-generation plant biologists and open new opportunities for long-term collaboration.

- 13:30 Opening remarks
Katsutoshi Tsuda (Nagoya University)
- Chairperson: Ying-Chung Jimmy Lin
-
- 13:35 S11-1 Semi-*in vivo* analysis of motile sperm–archegonial cell interactions and fertilization-related factors in *Cycas revoluta*
Yukiho Toyama¹, Satoshi Okuda¹, Takamasa Suzuki², Keiko Kano³, Emi Mishiro-Sato³, Shinya Sato³, Yasuko Ito-Inaba⁴, Tetsuya Higashiyama¹ (¹Dept. of Biol. Sci., Grad. Sch. Sci., Univ. Tokyo, ²Coll. Biosci. Biotechnol., Chubu Univ., ³Mol. Struct. Cent., WPI-ITbM, Nagoya Univ., ⁴Fac. Agric., Univ. of Miyazaki)
- 13:55 S11-2 The phytoytokine CAPE9 and its receptor CAPER1 function on plant systemic stomatal immunity
Chi-Hsin Chang, Kai-Tan Cheng, Fan-Wei Lin, Yet-Ran Chen (Agricultural Biotechnology Research Center, Academia Sinica)
- 14:15 S11-3 Diverse mechanisms of stomatal manipulation by phyllosphere bacteria
Rikako Hirata (Grad. Sch. Agr., Kyoto Univ.)
- 14:35 S11-4 Evolutionarily Conserved Eukaryotic Initiation Factor-Gated Translation Initiation Drives Plant Stress Response
Jhen-Cheng Fang¹, Li An Ly¹, Wei Xiong Henry Eo², Chung-Yuan Lin¹, Chun-Jui Li¹, Zhuan Yi Neoh¹, Yu-Sen Wang³, Chin-Mei Lee³, Ting-Ying Wu², Ming-Jung Liu^{1,4} (¹Biotechnology Center in Southern Taiwan, Academia Sinica, Tainan, Taiwan, ²Institute of Plant and Microbial Biology, Academia Sinica, Taipei, Taiwan, ³Department of Life Science, National Taiwan University, Taipei, Taiwan, ⁴Agricultural Biotechnology Research Center, Academia Sinica, Taipei, Taiwan)
- 14:55 Break
- Chairperson: Katsutoshi Tsuda
-
- 15:05 S11-5 Translation mechanism regulated by SPA kinases in photomorphogenesis and heat stress response
Hui-Hsien Chang, Mei-Chun Cheng (Department of Biochemical Science & Technology, National Taiwan University)
- 15:25 S11-6 Live-imaging and modeling of the leaf primordium of rice
Yoshiki Tokuyama (Res. Fac. Agr. Hokkaido U.)
- 15:45 S11-7 Genetic architecture and molecular biology of heterostyly in common buckwheat
Ryoma Takeshima (Department of Biochemistry and Molecular Biology, Saitama University)
- 16:05 S11-8 Multiplex Genetic Engineering Improves *Agrobacterium*-mediated Plant Transformation and CRISPR-based Genome Editing
Teng-Kuei Huang, Tsen-Hsi Liao, Mao-Sen Liu, Yi-Chieh Wang, Si-Chong Wang, Chih-Hang Wu, Chih-Horng Kuo, Erh-Min Lai (Institute of Plant and Microbial Biology, Academia Sinica)
- 16:25 Closing remarks
Ying-Chung Jimmy Lin (National Taiwan University)

Recent Advances in the Regulation of Photosynthetic Electron Transport and the Roles of Alternative Electron Flows

Date Sun., March 15, 13:30-16:30

Venue Room Y

Organizers: Chikahiro Miyake (Kobe University) / Ginga Shimakawa (Kobe University) / Kaori Kozuma (Kyoto University)

Efficient CO₂ assimilation in plants requires coordinated light and dark reactions. Under fluctuating environments, stomatal closure limits CO₂, causing over-reduction of the electron transport chain, excess electrons on ferredoxin, and ROS formation. To avoid oxidative stress, plants activate alternative electron pathways such as PSI-cyclic flow via FQR and NDH, PTOX, and mitochondrial O₂ reduction. This symposium presents recent advances on their molecular mechanisms and physiological roles.

- | | |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13:30 | <p>Opening Remarks
Chikahiro Miyake (Kobe University)</p> <p>Chairperson: Kaori Kozuma</p> |
| 13:40 | <p>S12-1 New insights into the role of cyclic electron transfer in photosynthesis
<u>Matt Johnson</u> (Plants, Photosynthesis & Soil, School of Biosciences, University of Sheffield, Sheffield, S10 2TN, United Kingdom.)</p> |
| 14:10 | <p>S12-2 Redox regulation of photosynthetic electron transport
<u>Anja Krieger-Liszkay</u> (Institute for Integrative Biology of the Cell (I2BC), CEA, CNRS, Université Paris-Saclay, 91198 Gif-sur-Yvette cedex, France)</p> <p>Chairperson: Ginga Shimakawa</p> |
| 14:40 | <p>S12-3 When PSI-Cyclic Electron Transport Peaks: Growth Light Intensity Defines Its Kinetic Mode
<u>Hayato Satoh</u>¹, Arisa Ueda¹, Guy Hanke², Ko Takeuchi³, Kentaro Ifuku³, Ginga Shimakawa¹, Kenichi Morigaki¹, Yuji Suzuki⁴, Amane Makino^{5,6}, Chikahiro Miyake¹ (¹Grad. Agri. Sci., Kobe Univ., ²Sch. Biochem. Chem., QMUL, ³Grad. Agri., Kyoto Univ., ⁴Iwate Univ., Fac. Agri., ⁵Grad. Agri. Sci., Tohoku Univ., ⁶Inst. Excel. Higher Edu., Tohoku Univ.)</p> |
| 15:05 | <p>S12-4 NDH-PSI Supercomplex Ensures Proper Redox State of Plastquinone Pool in Thylakoid Membranes
Kaori Kohzuma, <u>Kentaro Ifuku</u> (Grad. Sch. Agri., Kyoto Univ.)</p> <p>Chairperson: Chikahiro Miyake</p> |
| 15:30 | <p>S12-5 Is photosynthesis just about fixing CO₂?
<u>Ginga Shimakawa</u> (Kobe University)</p> |
| 15:55 | <p>S12-6 Roles of the mitochondrial respiratory chain in photosynthetic induction
<u>Ko Noguchi</u>¹, Tatsuhisa Konishi¹, Yusuke Mizokami¹, Kintake Sonoike² (¹Sch Life Sci, Tokyo Univ Pharm Life Sci, ²Fac Edu Integr Art Sci, Waseda Univ)</p> |
| 16:20 | <p>Closing Remarks
Kentaro Ifuku (Kyoto Univ.)</p> |