Professional filming tips-from timelapse to cryo-optical SEM imaging.

Date Fri., March 14, 12:45–13:45 **Venue** Room A

Speaker: Science videographer Eiji FUJIWARA Documentary Channel Co., Ltd.

In scientific research, the most important first step is to observe the object carefully and precisely. Plants may appear motionless, but through timelapse imaging, we can visualize their movements, which can give us true inspiration.

With professional expertise in both natural science and film direction, I have been involved in the production of TV programs and scientific documentaries. I am also enthusiastically dedicated to science education and making scientific discoveries with researchers. In this seminar, I will be sharing the tools and techniques that have developed over the course of 25 years working with my collaborators, and consequently I will be presenting some of my movies of plants and cells, which will take you on a tour into the fascinating micro- and slow-worlds of these living organisms.

I will also introduce our new table-top tribrid (Cryo-Optic-SEM built-in) microscope (#Tri*) that has been manufactured by our company, Documentary Channel Co., Ltd. The #Tri* can provide unique imaging opportunities by enabling us to observe unfixed, vapor undeposited, and quickly frozen specimens with optical and scanning electron microscopies, which are seamlessly switchable without breaking the vacuum. I will show new triplet images obtained using this microscope.

#Tri*
Tribrid Microscope
by the user for the future

Language: English (with supplementary use of Japanese)

PCP Luncheon Seminar
"What makes a good article?"

Date Fri., March 14, 12:45–13:45 **Venue** Room B

Speakers: Liliana Costa (Managing Editor), Haruhiko Jimbo (Budding Editor), Eugenia (Jenny) Russinova (Editor), Florian Frugier (Editor), Ken Tsuda (Editor), Tetsuya Higashiyama (EIC)

What makes a good article? Have you ever thought about it? The key points differ depending on your perspective—as a reader, an author, or an editor. Nonetheless, from all standpoints, a well-organized article can improve your visibility and academic progression.

At *Plant and Cell Physiology* (PCP), we aim to provide an excellent platform to stimulate the plant science research field and support its community. In this luncheon seminar led by our team of PCP editors, we will explore what constitutes a great article – considering all article types from research to review papers. We will also discuss how well-received articles are beneficial to all those involved in the process - authors, reviewers and editors. Through these tips and collective advice, we aim to encourage the submission of high-quality open-access articles that benefit the plant science community while enhancing the visibility of both the authors and PCP.

We look forward to seeing you there!

Seminar Overview:

1. Short presentations from speakers
2. Panel Discussion

Leica Microsystems K.K.

Date Fri., March 14, 12:45–13:45 **Venue** Room X

Speaker: Masaki Ito (Institute of Science and Engineering, Kanazawa University)

Proposing a novel molecular model for determining plant cell size

The size of a cell must be properly regulated to enable the expression of specific cell functions and to define the growth of multicellular organisms as structural units of tissues and organs. In proliferating cells, such as those in the meristem, cell size is determined by the balance between the frequency of cell division and the rate of cell expansion. Therefore, it is considered crucial to regulate the cell cycle dependently on cell size to maintain appropriate cell size. However, the mechanisms underlying such size-dependent cell cycle regulation remain poorly understood.

Our research has shown that the GRAS-type transcription factor SCL28 in Arabidopsis thaliana potentially plays a key role in determining cell size by suppressing the cell cycle in a size-dependent manner. Furthermore, SCL28 exhibits a unique intracellular localization, being present not only in the nucleus but also in plastids, which has led us to propose a novel model for cell size determination based on this unique subcellular localization of SCL28.

In this presentation, we will discuss the effectiveness of fluorescence lifetime imaging in observing the intracellular protein localization and outline a hypothesis on cell size regulation derived from our findings.

Speaker: Suguru Osari (Leica Microsystems K.K.)

Fluorescence lifetime applications: FRET, Biosensor and STED super-resolution microscope

The plant chloroplast etc. has autofluorescence signals. These can overlap with the desired fluorescence signals. The fluorescence lifetime, which has the completely different physical properties from the excitation and emission spectra, can separate the autofluorescence signals and the desired signals. With the fluorescence lifetime measure FRET efficiency, biosensor calcium ion concentration measurement and improve the resolution of STED super-resolution microscopy and so on. This seminar introduces fluorescence lifetime imaging applications using our confocal microscope, STELLARIS.

Luncheon Seminar
"Why Study/Work Abroad?—Voices of Experience"

Date Sat., March 15, 12:15–13:15 **Venue** Room A

Co-organized by the JSPP International Committee and the United Japanese Researchers Around the World (UJA)

Panelists: Koki Hayashi (Max Planck Institute of Molecular Plant Physiology; PhD candidate)
Hiromu Kameoka (CAS Center for Excellence in Molecular Plant Sciences; Group Leader)
Takuya Nagae (Riken CSRS; Post-doc)
Hokuto Nakayama (The University of Tokyo; Asiss. Prof.)
Kanane Sato (Tohoku University; Post-doc)

The Japanese Society of Plant Physiologists (JSPP) is committed to enhancing the international research competitiveness and visibility of the JSPP community. Recognizing the value of overseas experience for researchers, we acknowledge that, despite the growing interest in studying and working abroad, many hesitate to do so due to a lack of practical information, uncertainties from the COVID-19 pandemic, and global economic instability. We aim to address these concerns by highlighting the importance of firsthand insights from researchers with international experience, promoting studying/working abroad as a viable and valuable career opportunity.

In collaboration with the United Japanese Researchers Around the World (UJA), this luncheon seminar features speakers with diverse experiences in graduate and postdoctoral studies abroad in the short and long term. Speakers will join either on-site or online to share their insights through flash talks, followed by a panel discussion, where we will address questions from the audience.

We extend a warm welcome to all individuals, regardless of their specific interests/experience/willingness to take a career path outside of Japan.

Evident Corporation Luncheon Seminar

Date Sat., March 15, 12:15–13:15 **Venue** Room X

Sponsor: Evident Corporation

Long-term time-lapse imaging of physiological response dynamics using luminescent reporters

Yuki Kondo, Ph.D. (Osaka University Graduate School of Science, Department of Biological Sciences)

In cell imaging, it is common to observe fluorescent proteins such as GFP using a confocal laser microscope or a multiphoton microscope. However, the effects of phototoxicity and photoresponses caused by the excitation light on the observation of living cells cannot be ignored. In this seminar, I will focus on time-lapse imaging using luciferase-based luminescent reporters. Here I will introduce examples of time-lapse imaging of the dynamics of plant physiological responses, such as plant hormone responses, cell fate dynamics, and circadian clock oscillation.

1) Shimadzu et al., *Quant Plant Biol.* 3, e18, 2022
2) Toyokura et al., *Dev Cell.* 48, 64-75., 2020
3) Furuya et al., *Nat Plants.* 10, 785-797., 2024
4) Nurani et al., *Plant Cell Physiol.* 61, 255-264., 2020

"Evident advanced imaging" to the next stage

Naoki Kozai, Evident Corporation

IXplore IX85

Automated Inverted Microscope

FLUOVIEW FV4000

Confocal Laser Scanning Microscope

LUPLAPO25XS

Multi-immersion objective

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GRA&GREEN Inc. Luncheon Seminar
Applying Plant Science Knowledge to Human Society—GRA&GREEN's Approach

Date Sun., March 16, 12:15–13:15 **Venue** Room A

Speakers: Takayuki Kondo (Lecturer, Future Crops Lab, Nagoya University)
Masaki Niwa (President, GRA&GREEN Inc.)

GRA&GREEN Inc. is an agri-bio startup creating the future of agriculture and food for the next generation, founded in April 2017 as a Nagoya University-originated startup and selected as a J-Startup CENTRAL in January 2021.

In order to swiftly respond to the ongoing global climate change and the diversifying needs of society, we are also utilizing advanced technologies such as gene editing technology to create innovative crop varieties. In addition to proprietary development, we are conducting joint development with a number of partner companies to create value through open innovation and to give back to society at large.

In addition, in October 2024, we established an industry-academia cooperative research laboratory (named "Future Crops Lab") at Nagoya University, and we are actively conducting joint research with researchers in academia, and will continue to promote the development of new crops and technologies through industry-academia collaboration.

In this luncheon seminar, we will introduce our past efforts and future prospects. We look forward to your participation if you are interested in co-creating value with us. Also, we hope that this seminar will serve as a case study for those who are interested in the social implementation of R&D results and university startups.

Website: https://www.gragreen.com/en

Seminar on Gender Equality
"Let's learn systems to support our life—toward ideal work-life balance—"

Date Sun., March 16, 12:15–13:15 **Venue** Room B

Organizer: JSPP Gender Equality Committee

Moderator: Keiko Sakakibara (Col. of Sci., Rikkyou Univ., Professor / JSPP Gender Equality Committee)

Speaker: Makiko Kakimoto (Grad. Sch. of Nat. Sci. and Tech., Kanazawa Univ., Associate professor/ Inst. for Promotion of Diversity and Inclusion, Kanazawa Univ.)

Panelists: Rie Inatsugi-Shimizu (Dept. of Evolutionary Biol. and Environmental Studies, Zurich Univ., Lecturer)
Michiko Sasabe (Fac. of Agr. and Life Sci., Hirosaki Univ., Associate professor /JSPP Gender Equality Committee)
Takahiro Hamada (Fac. of Life Sci., Okayama Univ. of Sci., Associate professor /JSPP Gender Equality Committee)

In the luncheon seminar this year, we invite Dr. Kakimoto in Institute for Promotion of Diversity and Inclusion, Kanazawa University, to introduce the laws Child Care and Family Care Leave Act and Act on Advancement of Measures to Support Raising Next-Generation Children, which were revised in May 2024, as well as the actual efforts for work-life balance at Kanazawa University. In addition, we will share the information about support systems available to us, such as the buyout system and the set-up of child-care rooms by KAKENHI, and examples of shorter working hours overseas. For those who are struggling to achieve work-life balance, seeking the information for the future, or involved in designing support systems, please join us to learn about the support system, to find out new ideas for your better life.