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1. Preface

I really miss it! By European standards, everyone should take at least three weeks long summer holidays and go for a trip! Right now, I want to go to the North pole or dive into some deep cave to cool down my overheated body. Actually, there is a nice cave complex in Okayama, known as Makido Cave in Niimi area - if you'd be interested. However, my favorite caves would be the ones located in New Zealand, named as Waitomo Glowworm Caves (1). During visit, one has to use a boat that glides in dark underground space illuminated with thousands of tiny lights. These lights are produced by glowworms (*Arachnocampa luminosa*) (2), small living creatures hanging on the silk threads from the cave's inner walls. Glowworms, as few other living species are capable of producing bioluminescence, which in this case, however, is blue-green in color. It is truly amazing experience and highly recommended attraction to see in New Zealand. But if you do not travel abroad this summer, maybe catching a glimpse of hotaru (firefly) in Japanese meadows at holiday night would be a startling experience as well!

See more about:

- (1) <https://www.glowworm.co.nz/>
- (2) https://en.wikipedia.org/wiki/Arachnocampa_luminosa

BIO-QUIZ: Would you happen to know which systems are used in the production of blue-green and yellow-green luminescence in glowworms and fireflies, respectively? (Find answer after the Postscript)

2. Recently released publications

Wang, P.T., Yamaji, N., Ma, J.F.
A Golgi-localized glycosyltransferase, OsGT14;1, is required for growth of both roots and shoots in rice
Plant Journal (Early view) (2022)
Doi.org/10.1111/tpj.15897

Kondo, H., Maejima, H., Maruyama, K., Fujita, M., Ohki, T.
First report of Chinese wheat mosaic virus that infects barley in Japan
Plant Disease 106, No.8 (Disease note) (2022)

Doi.org/10.1094/PDIS-12-21-2803-PDN

Fujitani, Y., Shibata, T., Tani, A.

A periplasmic lanthanide mediator, lanmodulin, in *Methylobacterium aquaticum* strain 22A.

Frontiers in Microbiology 13, 921636 (2022)

Doi.org/10.3389/fmicb.2022.921636

Khan, H.A., Telengech, P., Kondo, H., Bhatti, M.F., Suzuki, N.

Mycovirus hunting revealed the presence of diverse viruses in a single isolate of the phytopathogenic fungus *Diplodia seriata* from Pakistan.

Frontiers in Cellular and Infection Microbiology 12, 913619 (2022)

Doi.org/10.3389/fcimb.2022.913619

Nakayama, R., Safi, M.T., Ahmadzai, W., Sato, K., Kawaura, K.

Comparative transcriptome analysis of synthetic and common wheat in response to salt stress.

Scientific Reports 12, 11534 (2022)

Doi.org/10.1038/s41598-022-15733-2

Koyama, H., Huang, C.F., Pineros, M.A., Yamamoto, Y.

Editorial: Al-induced and -activated signals in aluminium resistance.

Frontiers in Plant Science 13, 925541 (2022)

Doi.org/10.3389/fpls.2022.925541

Kurata, S., Sakaguchi, S., Ikeda, H., Hirota, S.K., Kurashima, O., Suyama, Y., Ito, M.

From East Asia to Beringia: reconstructed range dynamics of *Geranium erianthum* (Geraniaceae) during the last glacial period in the northern Pacific region.

Plant Systematics and Evolution 308, 28 (2022)

Doi.org/10.1007/s00606-022-01820-4

Gustafsson, A.L.S., Gussarova, G., Borgen, L., Ikeda, H., Antonelli, A., Marie-Orleach, L., Rieseberg, L.H., Brochmann, C.

Rapid evolution of post-zygotic reproductive isolation is widespread in Arctic plant lineages.

Annals of Botany 129, 171-184 (2022)

Doi.org/10.1093/aob/mcab128

Ida, T., Crofts, N., Miura, S., Matsushima, R., Fujita, N.

Starch biosynthetic protein complex formation in rice *ss2a be2b (+)* double mutant differs from their parental single mutants.

Journal of Applied Glycoscience 69, 23-33 (2022)

Doi.org/10.5458/jag.jag.JAG-2021_0015

3. International Joint Research introductions * 89-th series *

At the institute, everyone probably knows Sun san, an IPSR PhD graduate and frequent visitor. She will share with us her Japanese experience in this issue:

My name is Liying Sun. I have been a tenured professor at the College of Plant Protection, Northwest Agricultural and Forestry University, Shaanxi, China, since 2014. I have also been serving as a cross-appointed professor at Okayama University since 2020. My research field is virology, with a focus on plant and fungal viruses. I am collaborating with Prof. Nobuhiro Suzuki and

Dr. Hideki Kondo from the Plant-Microbe Interactions (PMI) laboratory, Institute of Plant Science and Resources (IPSR), Okayama University, as I completed my doctoral studies at this laboratory under the supervision of Prof. Suzuki.

I have been interested in plants and agriculture since I was a child as I grew up in a small village in the grasslands of Inner Mongolia, China. My time at the IPSR, Okayama University, paved the way for my exciting scientific career. Eighteen years ago, in the autumn of 2003, I moved to Japan as a research student. This was my first time traveling abroad, and I was captivated by the beauty of Kurashiki City, where the IPSR is located. Subsequently, I pursued my doctoral studies under the supervision of Prof. Suzuki, focusing on fungal virology. Owing to his guidance, support, and kind advice, my interest in and passion for virology grew further. Although viruses are generally considered major threats to public health and agricultural production, at the PMI laboratory, we studied viruses with potential as biological control agents for plant fungal diseases and as biotechnological tools. Virology has greatly contributed to deciphering many fundamental aspects of biological processes. Since the completion of my doctoral work, my passion for virology has continued to shape the trajectory of my scientific research.

The IPSR has a wide range of academic activities and hosts many international symposia. I clearly remember the First Mycovirus Symposium, which was organized by the PMI group in 2006. Since then, I have attended every Mycovirus Symposium. The IPSR and PMI provide international communication to enhance research skills and prepare students to achieve their professional goals. Years later, when I was promoted to the position of a principal investigator (PI), I realized the importance of training students to think like researchers, not technicians. The most important lesson I learned in the PMI laboratory was "to think," a catchphrase of Prof. Suzuki.

After I obtained my Ph.D., I extended my stay in Japan as a postdoctoral researcher until the autumn of 2008, when I returned to China. Since then, I have visited the IPSR almost every 2 years due to my research collaboration with Prof. Suzuki and Dr. Kondo. The excellent mentorship and warm friendship of the PMI members often bring me back to Kurashiki. I have made many lifetime friends among the lab members and I am very proud to work with such dedicated researchers. Their kindness helped me to thrive in my day-to-day life and sustained my studies at the IPSR. While I was writing this article, memories of the encouraging smile on Prof. Tamada's face, the delicious salad and other unforgettable and delectable dishes from Ms. Chieko, a handmade mask prepared by Ms. Sakae, technical assistance from Mr. Maruyama, and many valuable suggestions and insightful discussions from Prof. Suzuki and Dr. Kondo passed through my mind. I deeply appreciate all the IPSR members for their kindness and hospitality.

The last time I visited Japan was at the beginning of the COVID-19 pandemic in 2020. I was deeply touched by the offer of support from the people of Japan to the residents of Wuhan City, the epicenter of the coronavirus outbreak in China. There is an old poem in Chinese "山川异域, 风月同天," which means "We are separated by different lands and regions but we share the same planet." As humans, we should care for each other. I sincerely hope that the friendship between the Chinese and the Japanese continues to flourish.

4. Student recruitment - Online Graduate School Briefings

The Institute of Plant Science and Resources (IPSR) is one of the outstanding places for graduate students to engage in various aspects of plant research, in particular stress-related topics. The Institute will have two online briefing sessions via Zoom on the following dates:

29-September 2022 (Thursday) 13:00~16:00

3-October 2022 (Monday) 13:00~16:00

Registration page (Japanese):

<https://www.rib.okayama-u.ac.jp/nucleus/Daigakuin/setsumeikai.html>

Information page (English):

<https://www.rib.okayama-u.ac.jp/nucleus/Daigakuin E/Top.html>

[Q&A] (English - Japanese)

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5. Posting request

In the PSSNet E-mail magazine and website, we aim to share various information resources related to research in plant (stress) science. We cordially invite all PSSNet subscribers to contribute various information, such as their latest publications, meetings and seminars, staff, postdoc, and student recruitments, etc. Please send your information directly to [pssnet-admin@okayama-u.ac.jp] E-mail address. You can also distribute your information via mailing list of the PSSNet.

6. Postscript from the issue Editor

From Preface to this ending part, I feel that current PSSNet magazine issue is really hot! Not by its content but the outside temperatures kept me convincing so... These days, it is commonly 35 degrees Celsius outside in Okayama, and I hear about places in Japan reaching 38 and more. Heavy rain, thunderstorms, sudden hailstorms, and unstable weather come with surprises and increasingly distract our normal lives. Moreover, severe wildfires caused by dry heat waves just recently devastated large areas in several European countries: along the Adriatic coast in Croatia damage occurred on 2000 hectares of land that chased many tourists out of the area in mid-July; similar in Portugal, Spain, France, and most recently also in my home country, Czech Republic. A wildfire has already burnt more than 1000 hectares of forest in the Bohemia Switzerland National park near Elbe river, and almost 1000 firefighters are still trying to control the raging fire that spreads by the aid of strong winds, by day and night, for over a week now (as Aug-1). In the UK, country generally known for its cold and rainy weather, a new UK national temperature record of maximum 40.3 degrees Celsius was recorded on July 20, 2022. I think it really well emphasizes the scale of the unprecedented nature of European heat wave this year, which not only happens on the old continent, but also worldwide. But how "high" can be the high? According to website of the World Meteorological Organization's World Weather & Climate Extremes Archive, the world's highest temperature recorded is 56.7 degrees Celsius, which occurred at Furnace Creek Ranch, CA, USA on 10 July 1913. By the way, the lowest measured official record is -89.2 degrees Celsius from Vostok Station, Antarctica on 21 July 1983. So, how much can human race survive if the global warming continues and people do not start using the planet Earth with respect and care? As a good test of this question might be the incoming FIFA World Cup in Qatar, actually postponed by

organizers due to hot summer conditions to cooler time in November. While Japan football fans may be looking forward to support of their own team, I must say that Czech soccer team did not qualify, which is "as usual". So let's all cheer up for the Samurai Blue team! Go Japan, go!

BIO-QUIZ answer:

Actually, both glowworms and fireflies are using similar luciferase enzymes, however, luciferin substrates differ in each case. As shown in the Scientific Reports article in 2018 (1), the differences in substrates can result in yellow-green vs. blue-green luminescence produced by firefly and glowworm, respectively. It is said that glowworm larvae use light emissions to attract (and catch) prey in their sticky threads, hanging in the dark caves or damp areas of the forest in New Zealand (2). I think, in addition to its natural function, new type of bioluminescence can also offer promising possibilities for development of new methods and applications in molecular biology.

- (1) <https://doi.org/10.1038/s41598-018-21298-w>
- (2) <https://doi.org/10.1111/j.1744-7410.2001.tb00121.x>

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