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1. Preface

Ready for winter? For some people, like those working with barley, the peak field season has just started, but for many others like me, depending on rice in their experiments, it is now time to process all those samples in deep freezers that overflowed the space during busy field season. And maybe relax a bit during the approaching New Year holidays. Nevertheless, it is also time to think about the application for the next collaboration project application at IPSR. As team work is an inseparable part of modern science, the MEXT Joint Research program implemented at IPSR offers many opportunities to push your work forward with the help of the instrumentation and expertise accumulated in the institute over the last few decades. For those residing abroad, a chance for application will come later, in the separate round of international collaboration recruitments around May next year. You can also see how the international exchanges at IPSR work in the following article.

2. Joint Research introductions * 93-rd series *

Brief impressions of a visiting researcher from Turkey.

As a researcher from Turkey, which is far from Japan, it was in 2010 that I first came to Japan and had the opportunity to work at the IPSR. If we count my longer term visits as in this year (July 2022), I had the opportunity to conduct research at IPSR for a period of 2-3 months, five times in total. First of all, I would like to thank to Dr. A. Tani, Associate Professor and leader of the Applied Environmental Microbiology group, and the Ohara Foundation for these research opportunities. When I first came to IPSR in 2010, my research topic was the taxonomy of Ca-oxalate and methanol-using bacteria (namely oxalotrophic and methylotrophic bacteria). As a result of these research visits, we identified a total of seven new bacteria at the species level, four of them belonging to the Methylobacterium genus and three of them belonging to the Pandoraea genus. IPSR was not an institute specialized in systematic microbiology research but it had the necessary apparatus and equipment for such kind of experiments. For this reason, especially during my research visits in 2010 and 2013, like the kid in the candy store, I was experimenting in the laboratories from very early in the morning until late at night, including

weekends. For this reason, I did not have the opportunity to visit many natural and historical assets of Japan, except the Bikan historical area of the Kurashiki city. Indeed, it was an honor to be under the same roof with professors, students at master's, doctoral levels, and postdoctoral researchers from various countries. I have had many memories to think that the spirit of mutual aid and tolerance existed at IPSR. Especially my research visit in 2018 was very special for me and very productive for my systematic microbiology career. During this period, the group of AEM was focusing on lanthanum-dependent methanol metabolism, and I had the opportunity to contribute to the identification of three new bacterial species with the members of the group. As an expression of our gratitude to the IPSR and the Ohara foundation, and the beautiful historic city of Kurashiki, we have designated the Latin genus names as *Oharaeribacter diazotrophicus* and *Novimethylophilus kurashikiensis*. In addition, I had the opportunity to attend a research trip to Okinawa region and Iriomote mangrove forests in 2018, which was one of the very special times in my life. In this 2022 summer visit, unlike other years, I had the opportunity to visit Japan more and see its natural beauties, participate in various activities and communicate with Professors, researchers and students from other nationalities at IPSR. Thank you all for sharing all these beautiful moments and memories together. Once again I would like to thank my respected colleagues and friends at IPSR, whose valuable discussions and supports I have always highly appreciated.

3. Recently released publications

Kuhn, J.H., Adkins, S., Alkhovsky, S.V., Avsic-Zupanc, T., Ayllon, M.A., Bahl, J., Balkema-Buschmann, A., Ballinger, M.J., Bandte, M., Beer, M., Bejerman, N., et al. (170)

2022 Taxonomic update of phylum Negarnaviricota (Riboviria: Orthornavirae), including the large orders Bunyavirales and Mononegavirales.

Archives of Virology, 10.1007/s00705-022-05546-z [doi] (2022)

Doi.org/10.1007/s00705-022-05546-z

Xu, Z., Cai, M., Yang, Y., You, T., Ma, J.F., Wang, P., Zhao, F.

The ferroxidases Lpr1 and Lpr2 control iron translocation in the xylem of Arabidopsis plants.

Molecular Plant, S1674-2052(22)00403-8 (2022)

Doi.org/10.1016/j.molp.2022.11.003

Wang, Q., Kawano, Y.

Improving disease resistance to rice false smut without yield penalty by manipulating the expression of effector target.

Molecular Plant, S1674-2052(22)00409-9 (2022)

Doi.org/10.1016/j.molp.2022.11.009

Pallas, V., Serio, F.D., Suzuki, N.

The simplest RNA replicons, viroids: A tribute to Ricardo Flores.

Virus Research, 323:198996 (2022)

Doi.org/10.1016/j.virusres.2022.198996

Wang, P., Jia, H., Guo, T., Zhang, Y., Wang, W., Nishimura, H., Li, Z., Kawano, Y.

The secreted peptide Irp1 functions as a phytocytokine in rice immunity.

Journal of Experimental Botany, erac455 (2022)

Doi.org/10.1093/jxb/erac455

Jiang, D., Ayllon, M.A., Marzano, S.L., Kondo, H., Turina, M., ICTV Report Consortium.

ICTV virus taxonomy profile: Mymonaviridae 2022.
The Journal of General Virology, 103(11):10.1099/jgv.0.001787 [doi] (2022)
Doi.org/10.1099/jgv.0.001787

Pang, T., Peng, J., Bian, R., Liu, Y., Zhang, D., Andika, I.B., Sun, L.
Similar characteristics of SiRNA of plant viruses which replicate in plant and fungal hosts.
Biology, 11(11):10.3390/biology11111672 [doi] (2022)
Doi.org/10.3390/biology11111672

Tian, M., Wei, S., Bian, R., Luo, J., Khan, H.A., Tai, H., Kondo, H., Hadidi, A., Andika, I.B., Sun, L.
Natural cross-kingdom spread of apple scar skin viroid from apple trees to fungi.
Cells, 11(22):3686 (2022)
Doi.org/10.3390/cells11223686

Arata, M., Usami, F.M., Fujimori, T.
Coordination of cilia movements in multi-ciliated cells.
Journal of Developmental Biology, 10(4):47 (2022)
Doi.org/10.3390/jdb10040047

4. Call for the national Joint Research collaborative proposals in 2023

Applications for the fiscal year 2023 Joint Research collaborative projects at the Institute of Plant Science and Resources (IPSR) are currently open at the institute's website. Similar to previous year, applications are accepted in three categories: A (Priority research), B (Young research), and C (General research). Details about each category, application procedures, and application forms (in Japanese) can be downloaded from this website:

<https://www.rib.okayama-u.ac.jp/collaboration/collaboration1.html>

Deadlines for applications (depending on category) will be:

A (Priority research) & B (Young research): 13-December, 2022

C (General research): 11-January, 2023

For additional information, or if you do not speak Japanese, please contact IPSR office directly by E-mail: kyodo1247@adm.okayama-u.ac.jp

5. Student recruitment - Online Graduate School Briefings

The Institute of Plant Science and Resources (IPSR) offers many opportunities for graduate students to engage in various aspects of plant research, in particular stress-related topics. The Institute recently announced three online briefing sessions via Zoom on the following dates:

26-December 2022 (Monday) 13:00~16:00

27-December 2022 (Tuesday) 13:00~16:00

6-January 2023 (Friday) 13:00~16:00

Registration page (Japanese):

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

Information page (English):

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

[Q&A] (English - Japanese)

Daisuke Saisho, Institute of Plant Science and Resources,

Okayama University

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6. Posting request

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

7. Postscript from the issue Editor

It was the article from online news portal in Czech language that brought my attention to this information. The news was reported from the Institute of Experimental Botany ASCR in Prague (<http://www.ueb.cas.cz/>) and it was striking enough for me to start searching for more details. According to the institute's website, a new growth stimulant was developed by Czech scientists, which works as a potent inhibitor of senescence in plants. Chemically, it is the urea derivative abbreviated as MTU (1-(2-methoxy-ethyl)-3-1,2,3-thiadiazol-5-yl urea), that is an analog of the well-known plant hormone, cytokinin. MTU appears to be (one of) the most potent inhibitor(s) of senescence reported so far. In the field trials in several European countries, the application of MTU increased yield of various crops by 5-15%! The biostimulator containing MTU (2g/L) combined with picolinic acid (320 g/L) is currently sold in the UK under a commercial name "Status" by the IntraCrop company. In addition, reduced degradation of chlorophyll allowed less application of nitrogen fertilizer in the maize field experiments that showed no negative effects on the crop yield. It sounds like a miracle compound and I wonder if MTU becomes a world phenomenon in the future. Cheap synthesis, solubility in water and extremely high efficiency (effective dose = 0.4 g/ha) make this MTU a great candidate for universal tool to increase yield and stress resilience of many crops growing under stress conditions! It may also become a useful tool in the photosynthesis research of plants.

The MTU compound was first published in the Frontiers in Plant Science article in 2018:

Nisler J., Zatloukal M., Sobotka R., Pilny J., Zdvihalova B., Novak O., Strnad M., Spichal L. (2018) New urea derivatives are effective anti-senescence compounds acting most likely via a cytokinin-independent mechanism. Front Plant Sci 9, 1225.

<https://www.frontiersin.org/articles/10.3389/fpls.2018.01225/full>

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