ISSUE 1 / 2023

THE AOAPO

NEWSLETTER

ASIA OCEANIA AGRICULTURAL PROTEOMICS ORGANIZATION

HIGHLIGHTS

WELCOMING NEW COUNCIL MEMBERS

JOINT 11TH AOHUPO AND 7TH AOAPO CONGRESS

SPOTLIGHT: YOUNG PROTEOMICS RESEARCHERS

AOAPO
Asia Oceania Agricultural Proteomics Organization

EDITOR'S FOREWORD

It is with great pleasure and a deep sense of honour that I assume the role of Editor for the Asia Oceania Agricultural Proteomics Organization (AOAPO). As we embark on this journey of discovery, collaboration, and knowledge sharing, I am excited to play a pivotal role in facilitating the exchange of ideas and research within our vibrant scientific community.

First and foremost, I would like to extend my heartfelt appreciation to Prof Dr Chin Chiew Foan, the outgoing Editor, for her dedicated service to AOAPO. Prof. Chin's unwavering commitment to the organisation has fostered strong collaboration and partnership among our members. Her passion and expertise have set a high standard, which I am committed to upholding.

As we move forward, AOAPO will continue to serve as a platform for scientists, researchers, and professionals across the Asia-Oceania region who are committed to advancing the field of agricultural proteomics. Our collective efforts will push the boundaries of scientific knowledge and contribute to addressing the pressing challenges in agriculture that our region faces.

Pursuing excellence in agricultural proteomics is a collaborative endeavour, and I look forward to working closely with all of you to ensure the success and continued growth of AOAPO. Our members' diverse perspectives, expertise, and dedication are our greatest assets, and I encourage you to share your research, insights, and innovative ideas with our community.

Let us continue to explore, innovate, and make a lasting impact on agriculture in the Asia-Oceania region and beyond.

Thank you.

Boon Chin Tan
boonchin@um.edu.my

@The 2nd AOAPO conference in South Korea in 2015

First and foremost...

It is with mixed emotions that I write to you as the outgoing editor of our beloved AOAPO newsletter. Over the years since 2015, it has been a privilege to serve as your source of information, inspiration, and organisational engagement.

As I reflect on my journey as AOAPO newsletter editor, I am filled with a deep sense of gratitude for all the AOAPO council and associate members who have provided me with their unwavering support. I would like to particularly thank Prof Setsuko Komatsu for her guidance and commitment to helping deliver the high-quality content of this newsletter.

Together, we have explored a wide range of topics in agricultural proteomics, from the latest developments in technology to the introduction of various laboratories of our members and the wonderful research achievements of our early career researchers.

"Our mission has always been to provide you with valuable insights, spark meaningful conversations, and offer a platform for diverse voices to be heard"

I am proud of the strides we have made in embracing inclusivity and fostering a sense of belonging within our organisation. We have actively sought diverse perspectives, ensuring that our content reflects the richness and variety of experiences in honing our skills to better understand developing agricultural proteomics and its applications. It is my hope that this commitment to inclusivity will continue to be upheld by my successor and the team.

As I pass the baton to the incoming editor, Dr Tan Boon Chin, I have complete faith in his ability to lead this newsletter to new heights. He brings with him a fresh vision and innovative ideas that will undoubtedly breathe new life into the publication. I encourage you to offer him the same warm support and enthusiasm that you have shown me throughout my tenure.

Finally, I want to express my deepest gratitude to each and every one of you. Your unwavering support, feedback, and engagement have been the driving force behind the success of publishing each newsletter. It has been an honour to be a part of your lives, and I am humbled by the trust you have placed in the newsletter as one of your go-to sources of information.

While my time as editor may be coming to a close, I will forever cherish the memories and relationships I have formed during this remarkable journey. As I embark on a new chapter in my life, I am excited to see the newsletter thrive under new leadership and continue to make a positive impact on all those who engage with it.

Thank you for being a part of this incredible adventure.

Prof Dr Chin Chiew Foan
Outgoing Editor

Chiew Foan Chin is a Professor in Plant Biotechnology at the University of Nottingham Malaysia. Prof Chin is currently the co-director of Research Center of Excellence Future Food Malaysia and Director of Research at the School of Biosciences.

She is the Founder and President of Malaysian Agricultural Proteomics Society (2016-2020) and currently a council member of Asia Oceania Agricultural Proteomics Organization (AOAPO).

Prof Chin has been the newsletter editor for AOAPO (2015-2020) and currently an editorial board member for Frontier in Plant Science in Plant Proteomics section.

Prof Chin is also a Fellow of Higher Education Academy (FHEA) in UK since 2010.

Chiew-Foan.Chin@nottingham.edu.my

WELCOME

New Asia Oceania Agricultural Proteomics Organization Council Members

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JOINT 11TH AOHUPO AND 7TH AOAPO CONGRESS

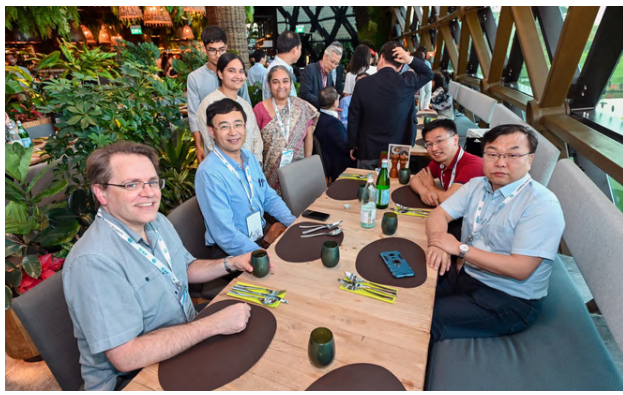
MAX Atria @ Singapore EXPO

THE 7TH AOAPO CONFERENCE REPORT

By Boon Chin Tan

The Asia Oceania Agricultural Proteomics Organization (AOAPO) was established in 2010 to facilitate the exchange of regional and international knowledge and research techniques. We achieve this through various means, including training workshops, conferences, seminars, and regional and international meetings.

This year marked another significant milestone as our meeting was held in Singapore from May 8 to 10 in conjunction with the 7th AOAPO conference. The Singapore Society for Mass Spectrometry (SSMS) was initially tasked with organising the 7th AOAPO conference in Singapore in 2020. However, the event was postponed due to the unprecedented challenges brought on by the COVID-19 pandemic. In late 2021, the Malaysian Proteomics Society (MAPS) was approached by SSMS to explore the possibility of co-hosting the Joint 11th Asia Oceania Human Proteome Organization (AOHUPO) and 7th Asia Oceania Agricultural Proteomics Organization (AOAPO) Congress. After several rounds of discussion, both societies agreed to co-organise the joint AOHUPO-AOAPO congress in Singapore.



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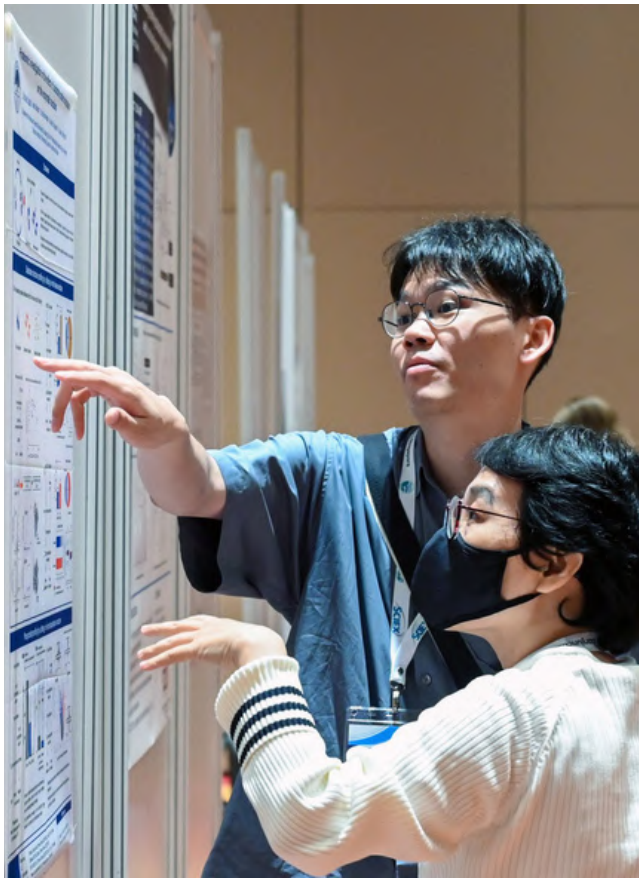
The Joint 11th AOHUPO and 7th AOAPO Congress held a special significance, marking the return to in-person events following the COVID-19 pandemic. More than five hundred scientists from the Asia Oceania region, representing approximately 22 countries, gathered at the MAX Atria @ Singapore EXPO in Changi, Singapore, for the main congress.



64 invited speakers, 7 plenary lectures, 27 concurrent symposia, and 174 poster presentations

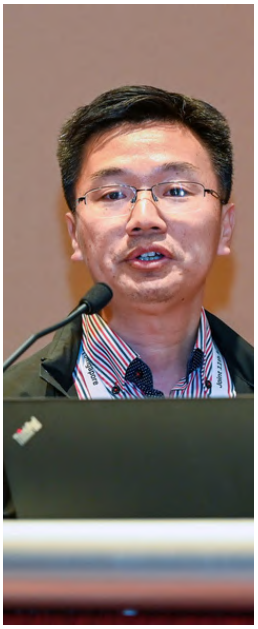
The diverse program featured 64 invited speakers and panellists, delivering seven plenary lectures, 27 concurrent symposia, pre-congress and post-congress workshops, and a remarkable display of 174 poster presentations.

This remarkable event provided a platform for exchanging ideas and expertise, reaffirming our commitment to advancing the field of agricultural proteomics and its vital role in addressing regional and global challenges.

AOAPO Council Members 2023







AOAPO SPEAKER 2023




https://www.aohupo-aoapo-2023.org/

SPOTLIGHT

ISSUE 1 / 2023

MEET OUR YOUNG PROTEOMICS RESEARCHER

DR LAU SU EE
UNIVERSITY OF MALAYA
MALAYSIA

MEET THE YOUNG PROTEOMICS RESEARCHER

By Su-Ee Lau

ABOUT ME

Su-Ee Lau, a Research Officer at the Centre for Research in Biotechnology for Agriculture at the University of Malaya (UM), Malaysia, has been awarded a government scholarship and University Consortium Student Grant for Research Activities to pursue her PhD in Boon Chin's lab.

EMBARKING ON MY PROTEOMICS JOURNEY

"The knowledge and techniques gained from this study will provide a strong foundation for my current research and make a valuable contribution to this field in my home country"

ABOUT MY STUDY

With these awards and support, Su-Ee investigated how banana plants respond to drought stress using cutting-edge technologies, such as proteomics. The water deficit caused by drought profoundly impacts crop growth and productivity. Su-Ee believes that with the expertise of the UM team, the fundamental mechanisms underlying the drought stress responses in neglected crops important to developing countries, such as bananas, will be elucidated.

BANANAS: A NUTRITIVE GLOBAL CROP FACING CLIMATE CHALLENGES

Bananas are the fourth most important food crop globally (Tan, 2022). It is a highly nutritive fruit originating in Southeast Asia (Chin et al., 2014). Bananas are now produced by millions of people across 150 nations (Alagesan et al., 2019). Among many cultivars, the triploid banana cultivar (*Musa acuminata* AAA) is one of the leading commercial cultivars due to its sweet taste and fruit quality (Talla et al., 2022). However, drought stress caused by climate change has significantly affected banana yield (Varma & Bebber, 2019).

As current agricultural management practices are inadequate to address the global banana demand and withstand the agricultural vulnerability of climate change, significant innovations are indispensable to ensure the sustainable production of bananas. One such alternative is to develop climate-resilient banana varieties.

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Significant innovations are indispensable to ensure the sustainable production of bananas

HOW DO BANANAS RESPOND TO DROUGHT?

WHAT HAPPENS IN PLANT MOLECULAR RESPONSES TO DROUGHT STRESS?

In this study, Su-Ee examined the changes in the appearance and proteins of banana plants when subjected to drought and after rehydration. She found that during the drought, the banana plants had smaller leaves, shorter height, and weighed less. Their stems were thinner than well-watered ones, and they had less water in their leaves. Also, they had less chlorophyll and shorter roots.

On the other hand, certain substances like proline, malondialdehyde (MDA), and hydrogen peroxide increased in the leaves, and their defence mechanisms (like antioxidant enzymes) were activated. After the drought period, many of these factors returned to normal, but some protein changes related to genetic information, amino acids, and carbohydrates were still noticeable. With the help of the tandem mass tags (TMT)-label LCMS/MS technique, Su-Ee found that drought-stressed banana plants abundantly produced ribosomal and chaperone proteins. All these proteins perform pivotal roles in maintaining proper protein synthesis and folding and disaggregation of denatured proteins, aiding in stress adaptation (Wu et al., 2022). In contrast, the imposed drought stress has reduced photosynthetic-related protein abundance.

Su-Ee highlighted that these findings could provide insights into how bananas deal with drought, which could help develop drought-resistant banana varieties in the future. However, more studies are needed to comprehensively grasp how bananas handle drought in real-world conditions.

For more information, read the article from the Journal of Plant Growth Regulation https://link.springer.com/article/10.1007/s00344-023-11039-3

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INTERESTED IN CONTRIBUTING ARTICLES?

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