

SYMPOSIUM REPORT

The LaMer Symposium entitled, “Metabolomics and advanced analytical technologies in the study of insects, vector-borne diseases and biological control”, was held on October 2, 2024, at EL33 Room, Lecture Hall C, Ehime University from 9:30AM to 12:00PM. The symposium was jointly funded by LaMer through its funding for “International symposium and research meeting”, JSPS-DOST Bilateral Joint Research Projects, and the JSPS Bilateral Joint Research Projects (Open Partnership) with Indonesia.



Figure 1. Symposium title slide showing various funding sources.

The event started with a brief introduction to the symposium by host and organizer, Asst. Prof. Kohei Hamamoto. This was followed with the opening remarks from Prof. Kozo Watanabe, one of the organizers and head of the Molecular Ecology and Health (MECOH) Laboratory, as well as CMES' Office for International and Social Cooperation. He called for everyone to take the opportunity to get to know each other and discuss with one another, in order to help build friendship and trust that will serve as foundation in working together. He also emphasized the need to form international networks and collaborate, highlighting as examples the collaborations of CMES which led to the establishment of International Collaborative Research Laboratories (ICRLs) in De La Salle University in the Philippines and in Padjadjaran University in Indonesia.



Figure 2. Assoc. Prof. Kohei Hamamoto with his introduction of the symposium.



Figure 3. Prof. Kozo Watanabe giving the opening remarks to the symposium.

The first session of the symposium started with a presentation by Dr. Anna Karen Laserna of De La Salle University (DLSU). In her presentation, Dr. Laserna provided an overview of mass spectrometry (MS) technology and how it can be used in various applications. She then highlighted applications of MS in vector and biological control studies. The second presentation was delivered by Mr. Juan Miguel Esguerra of DLSU, who presented the use of their developed particle film technology in conjunction with biological control strategies in addressing cacao pest infestation. The third presenter was Mr. Kris Lord Santos of DLSU who presented the use of volatilomics in the study of vector-borne diseases and biological control. He provided an overview of chemical ecology and how volatile organic compounds are involved in signaling within and between insects and plant hosts. He also provided sample applications on the use of GC-MS-based volatilomics in vector and biological control studies. The last presenter of the first session

was Prof. Md. Abdul Muhi of the University of Dhaka. He presented on the biological and phytochemical characterization of four marine macro algae species, namely, *Sargassum polycystum*, *Padina tetrastomatica*, *Spatoglossum aperum*, and *Hypnea muciformis*, which were collected from St. Martin's Island in Bangladesh. After each presentation, there was some time for the presenters to address questions from the participants.



Figure 4. Presenters for the first session of the symposium (from upper left, clockwise): Dr. Anna Karen Laserna, Mr. Juan Miguel Esguerra and Mr. Kris Lord Santos of De La Salle University, and Prof. Md. Abdul Muhi of University of Dhaka.

After a short tea break, the second session of the symposium commenced. The first presentation for the second session was provided by Prof. Mary Jane Flores of DLSU. Prof. Flores presented an overview of the zoonotic helminth fauna found in pet hamsters. Afterwards, she presented a study involving the assessment of green papaya seeds extract for the control of soil-transmitted helminths in pet hamsters. This was followed by a presentation by Prof. Thaddeus Carvajal of DLSU. He presented on how by leveraging international collaboration efforts, particularly, between DLSU and Ehime University, efforts in the control of *Aedes aegypti* mosquitoes in the Philippines was strengthened, through better understanding of the biology and ecology of the said dengue vector mosquitoes. He also highlighted various research outputs of DLSU in collaboration with Ehime University and other international collaborators. Mr. Muhammad Akbar Thufail of Padjadjaran University then presented on the comparison of the dengue virome in mosquito and human vectors in Cimahi City, West Java, Indonesia. Lastly, Prof. Ashekul Islam of Mawlana Bashani Science and Technology

University presented on the asymmetrical mating interference between *Aedes aegypti* and *Aedes albopictus* and what is its implications in terms of co-existence. After each presentation, the participants also had some time to ask the presenters some questions.



Figure 5. The presenters for the second session of the symposium (from upper left, clockwise): Prof. Mary Jane Flores and Prof. Thaddeus Carvajal of DLSU, Mr. Muhammad Akbar Thufail of Padjadjaran University, and Prof. Ashekul Islam of Mawlana Bashani Science and Technology University.

A panel discussion followed the presentation sessions where the presenters also served as discussants. The discussion was moderated by Asst. Prof. Kohei Hamamoto. The topics discussed were on future directions for implementing multiple techniques to investigate insects and vector-borne diseases, and how can international collaborations help in better mosquito control. First, the discussants talked about what are the current efforts in integrating advanced techniques, as well as what are the current challenges faced in these integrations, and what are the desired breakthroughs in the future. Subsequently, the panel talked about the challenges faced in terms of international collaboration on mosquito control and what is needed to engage and involve the citizens in mosquito control. The discussion ended on a positive and hopeful note with the panel highlighting the importance of multi-disciplinary research and continued international collaborations.



Figure 6. The presenters served as discussants in the panel discussion.

The symposium was attended by over 40 participants comprising of undergraduate and graduate students, as well as early career, mid-career, and senior researchers from different countries.



Figure 7. The participants, presenters and organizers of the symposium.

APPENDIX

on “Metabolomics and Advanced Analytical Technologies in the Study of Insects, Vector-Borne Diseases and Biological Control”

Date: October 2, 2024 ***Free, No registration needed!***

Venue: EL33 room, Lecture Hall C, Ehime University →

Opening Remarks: Prof. Kozo Watanabe 09:30-09:35



1st Session

09:35-09:50 Karen Laserna, De La Salle University

“Applications of Mass Spectrometry in Vector and Biological Control Studies”

09:50-10:05 Juan Miguel Esquerro, De La Salle University

“A Hybrid of Particle Film Technology and Biological Control Agents: An Innovative Method of Controlling Insect Pest Damage and Infestation in a Cacao Plantation”

10:05-10:20 Kris Load Santos, De La Salle University

“Volatilomics Applications in Vector-Borne Diseases and Biological Control”

10:20-10:35 Md. Abdul Muhi, University of Dhaka

“Biological and Phytochemical Investigations of Four Marine Macro Algae *Sargassum polycystum*, *Padina tetrastromatica*, *Spatoglossum aperum* and *Hypnea musciformis* Collected from the St. Martin's Island, Bangladesh”



2nd Session



10:40-10:55 Thaddeus M. Carvajal, De La Salle University

“Unveiling the Biology, Ecology, and Control of *Aedes aegypti* in the Philippines: Strengthening Efforts through International Collaboration”

10:55-11:10 Muhammad Akbar Thufail, Padjadjaran University

“Comparative Virome Study of Vectors Mosquito and Human in Cimahi City, West Java, Indonesia”

11:10-11:25 Ashekul Islam, Mawlana Bhashani Science and Technology University

“Asymmetrical Reproductive Interference Between *Aedes aegypti* and *Aedes albopictus*: Implications for Coexistence”

Panel Discussion and Photo Session: 11:25-12:00

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