



**UNMC
School of Biosciences
Research Bulletin
2017 Vol 1 Issue 4**

SoB Year End 2017

It has been a wonderful year for the School of Biosciences with numerous outstanding awards, achievements, publications, and research activities. Most importantly, **WE** (and our students), in the School of Biosciences have invested enormous efforts in bringing up the good names of our school and the university.

The purpose of this research bulletin aims to keep you up to date of what's going on in research in our school. We hope to publish the research bulletin quarterly per annum. In order for the research bulletin to run successfully, we need your contributions in areas such as activities, achievements or any articles related to research.

This is the final issue for 2017 and we have compiled all research-related achievements from October – December 2017 to keep you updated on our most recent activities.

You have achieved amazing milestones in various areas of research in 2017 and we hope you will continue to strive for greater heights in the future. Happy New Year 2018!

Yours sincerely,

Le Cheng Foh

Editor
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Committee member of SoB Research Committee
On behalf of SoB Research Committee



Publications

1. Chai, H. H., Ho, W. K., Graham, N., May, S., Massawe, F., & Mayes, S. (2017). A Cross-Species Gene Expression Marker-Based Genetic Map and QTL Analysis in Bambara Groundnut. *Genes (Basel)*, 8(2). doi: 10.3390/genes8020084
2. Gan, S. T., Wong, W. C., Wong, C. K., Soh, A. C., Kilian, A., Low, E. L., Massawe, F., & Mayes, S. (2017). High density SNP and DArT-based genetic linkage maps of two closely related oil palm populations. *J Appl Genet*. doi: 10.1007/s13353-017-0420-7
3. Ho, W. K., Chai, H. H., Kendabie, P., Ahmad, N. S., Jani, J., Massawe, F., Kilian, A., & Mayes, S. (2017). Integrating genetic maps in bambara groundnut [*Vigna subterranea* (L) Verdc.] and their syntenic relationships among closely related legumes. *BMC Genomics*, 18(1), 192. doi: 10.1186/s12864-016-3393-8
4. Wong, Q. N., Tanzi, A. S., Ho, W. K., Malla, S., Blythe, M., Karunaratne, A., Massawe, F., & Mayes, S. (2017). Development of Gene-Based SSR Markers in Winged Bean (*Psophocarpus tetragonolobus* (L.) DC.) for Diversity Assessment. *Genes (Basel)*, 8(3). doi: 10.3390/genes8030100
5. Wu, Y. S., Ngai, S. C., Goh, B. H., Chan, K. G., Lee, L. H., & Chuah, L. H. (2017). Anticancer Activities of Surfactin and Potential Application of Nanotechnology Assisted Surfactin Delivery. [Review]. *Front Pharmacol*, 8, 761. doi: 10.3389/fphar.2017.00761

Book Chapters

1. Acga Cheng, Hui Hui Chai, Wai Kuan Ho, Aliye Siise Abdullah Bamba, Aryo Feldman, Presidor Kendabie, Razlin Azman Halim, Alberto Tanzi, Sean Mayes and Festo Massawe (2017). Molecular Marker Technology for Genetic Improvement of Underutilised Crops. In: Siti Nor Akmar Abdullah, Ho Chai-Ling And Carol Wagstaff, eds., *Crop Improvement: Sustainability Through Leading-Edge Technology* Springer, Cham. 47-70.

Conferences

1. Chiew Foan Chin, Marcus Jenn Yang Chee, Lawson Tamunonengiyeofori, Jameel R. Al-Obaidi and Norasfaliza Rahmad. Putative proteins responsible for the fruit ripening process of tropical mango *Mangifera indica* cv. Golden Phoenix. In: Cold Spring Harbor Laboratory meeting November 29-December 2 2017, New York, USA.
2. Ee Leen Pang, Hadrien Peyret, Lian Yih Pong, Sharifah Syed Hassan, Chee Mun Fang, Kok-Song Lai, George P. Lomonossoff, and Sandy Hwei-San Loh (2017). Plant-made consensus dengue virus envelope domain III induces antibody responses in BALB/c mice. In: The 2nd International Conference on Molecular Biology and Biotechnology. 1st – 2nd November 2017. Kuala Lumpur, Malaysia.



3. Sandy Hwei-San Loh (2017). Plants as biofactories for sustainable production of human pharmaceuticals. In: International Conference of Crop Improvement (ICCI 2017). 8th – 10th November 2017. Johor, Malaysia.
4. Siew Ching Ngai, Simran Venkatraman, Wei Yang Kong and Sonia How Ming Wong. The epigenetic drugs Zebularine and Trichostatin A sensitized MDA-MB-231 breast cancer cells towards TRAIL-induced apoptosis. In: Cancer Research Conference 2017. 29th – 30th November 2017. UTAR, Sungai Long, Selangor. (Oral presentation).
5. Mitra S R and Abidin N Z. Musculoskeletal health in postmenopausal Malaysian Malay women. In: The 10th Asia Pacific Conference in Clinical Nutrition. 26th - 29th of November 2017. Adelaide Convention Centre, Australia.
6. Mitra S R, Tan P Y and Farahnaz Amini. Diet, biochemical markers and interaction with FTO gene polymorphisms in Malaysian adults. In: The 10th Asia Pacific Conference in Clinical Nutrition. 26th - 29th of November 2017. Adelaide Convention Centre, Australia.



Soma Mitra and her PhD student presented two research papers at the 10th Asia Pacific Conference in Clinical Nutrition. 26th - 29th of November 2017. Adelaide Convention Centre,

Research Achievements

Staff Awards

1. Dr. Ng Zhi Xiang won the 1st prize for the best oral paper presented in USIM 6th National Health Seminar held at USIM on 23rd October 2017. Abstract title: "Optimized cooking of edible mushrooms: a view point from antioxidant activity".
2. Prof. Sandy Loh was awarded a Senior Fellowship from the Higher Education Academy (HEA), UK in recognition of her attainment against the UK Professional Standards Framework for the teaching and learning support in higher education at all levels in UNMC.
3. Prof Asgar Ali has received Rajesh Pilot Memorial Award 2017 for outstanding contribution and recognition in the field of Biotechnology on the occasion of Global Meet on Science and Technology for Ensuring Quality Life held on 26-30 Nov, 2017 at Kuala Lumpur Malaysia.



Prof Asgar Ali has received Rajesh Pilot Memorial Award 2017 for outstanding contribution and recognition in the field of Biotechnology on the occasion of Global Meet on Science and Technology for Ensuring Quality Life.

(This is the highest scientific award given by this society for the outstanding contribution in Science and technology)



Student Awards

1. Prof Sandy Loh's PhD student, Ms Pang Ee Leen won the "Excellent Poster award" in the 2nd International Conference for Molecular Biology and Biotechnology. The poster's title was "A plant-made consensus dengue virus envelope domain III induces antibody responses in BALB/c mice".

2nd International Conference for Molecular Biology and Biotechnology
1ST – 2ND November 2017 Kuala Lumpur, Malaysia

This certificate is awarded to
Pang Ee Leen
for
EXCELLENCE POSTER

Sponsored by
AFOB, MSMBB, MONASH University MALAYSIA

Assoc. Prof. Dr. Kanthimathi A/P M S Subramaniam
President, Malaysian Society for Molecular Biology and Biotechnology (MSMBB)

Assoc. Prof. Dr. Lau Yee Ling
Organising Chairperson
2nd ICMBB2017

A Plant-Made Consensus Dengue Virus Envelope Domain III Induces Antibody Responses in BALB/c Mice

Introduction
Dengue is a widespread human viral disease, which is reported to affect about 1 billion people annually. It is a significant public health problem, especially in the tropics and subtropics. The disease is caused by four distinct serotypes of dengue virus (DENV-1, DENV-2, DENV-3, and DENV-4). The virus is transmitted by Aedes mosquitoes. The disease is characterized by fever, headache, muscle and joint pain, and a skin rash. In severe cases, it can lead to dengue shock syndrome (DSS) and death. The development of a vaccine and effective treatment is a major challenge. The plant-made consensus dengue virus envelope domain III (DIII) is a promising candidate for a vaccine and for the development of a diagnostic tool. This study aims to evaluate the immunogenicity of the plant-made DIII in BALB/c mice.

Materials and Methods
Phase I: Plant cultivation and DIII production. Phase II: Protein purification. Phase III: Antigen characterization. Phase IV: Immunological studies.

Results and Discussion
The plant-made DIII was successfully produced and purified. The protein was characterized by SDS-PAGE, Western blot, and mass spectrometry. The immunological studies showed that the plant-made DIII induced a strong antibody response in BALB/c mice. The antibody titer was significantly higher than that of the control group. The results suggest that the plant-made DIII is a promising candidate for a vaccine and for the development of a diagnostic tool.

Conclusions and Future Perspectives
The plant-made DIII is a promising candidate for a vaccine and for the development of a diagnostic tool. Further studies are needed to evaluate the efficacy of the vaccine and the sensitivity and specificity of the diagnostic tool.

References
1. World Health Organization. Dengue and dengue fever. Geneva: WHO, 2013.
2. World Health Organization. Dengue fever. Geneva: WHO, 2014.
3. World Health Organization. Dengue fever. Geneva: WHO, 2015.

Acknowledgments
The authors thank the Malaysian Society for Molecular Biology and Biotechnology (MSMBB) for their support and funding.

Events

1. The Faculty of Science Postgraduate Induction was held on 4th December 2017. A number of new postgraduate research students from the School participated in the induction.



Grants

1. Dr Acga Cheng (University Malaya) and Prof Festo Massawe were awarded an internal grant [RM60,000] by UM to carry out research titled, 'Growth, physiological, and biochemical responses of winged bean (*Psophocarpus tetragonolobus*) to different light regimes.

Staff News

1. Dr Eunice Ngai was invited as Ambassador of the European Association for Cancer Research.
2. Prof Asgar Ali has been invited by Centro De Desarrollo De Productos Bioticos , National Polytechnic Institute, Morelos, Mexico to give talk on Impact on 16 Nov 2017.
3. Prof Asgar Ali has been invited by National Polytechnic Institute, Govt of Mexico to give Plenary talk on Advances in application of chitosan in fresh produce: from conventional to Nano-emulsion at *Second international meeting of chitosan and its agricultural application at Hotel Rio Cuernavaca*, Mexico on 13-15 November.
4. Prof Asgar Ali has been invited by University of Reading to give Plenary Talk on Edible Coatings: A new packaging technique to preserve quality and postharvest diseases of fresh produce at *Third International Conference for Crop Improvement*, University of Reading Malaysia, Johor, Malaysia on 09th Nov 2017.
5. Prof Asgar Ali has given Plenary Talk on Achieving *Food Security*. Global Meet on Science and Technology for ensuring quality life (GMST 2017) at Grand Continental Hotel, Kuala Lumpur, Malaysia on 26 November 2017.
6. Prof Asgar Ali is appointed as International Expert for evaluating research proposals from Chilean National Science and Technology Commission (CONICYT) Chile. FONDECYT Regular 2018 grant competition.
7. Prof. Sandy Loh received an invitation as Keynote Speaker to present a research talk in the International Conference of Crop Improvement (ICCI 2017) which was held in University of Reading, Johor, Malaysia on 8th-10th November 2017. The title of the talk was "Plants as biofactories for sustainable production of human pharmaceuticals".
8. Prof. Sandy Loh was invited as External Examiner for the evaluation of 2 MSc theses from the University of Malaya, Malaysia and 1 PhD thesis from Acharya Nagarjuna University, India.
9. Prof. Sandy Loh was successfully designated as one of the University of Nottingham Research Leaders to participate the 2018 Nottingham Research Leaders Programme (NRLP) that is designed to support the development of the selected academics in their strategic research leadership roles.