Maria Lee Ai Lan

Background

Maria Lee obtained her BSc. (With Honours) in Biology at Winona State University, MN, in the United States. She then pursued her master’s degree in clinical microbiology with emphasis in Mycology at the University of Wisconsin-La Crosse, WI studying a dimorphic pathogenic fungus, *Penicillium marneffei* (now, *Talaromyces marneffei*) affecting immunocompromised patients in Southeast Asia. Following completion of the graduate studies, she worked as a Research Lab Specialist at the University of Michigan-Ann Arbor on various fungal research projects, from studying population genetics of the frog pathogen, *Batrachocytrium dendrobatidis* to understanding the mating behaviour in white rot fungus *Phanerochaete chrysosporium*. She then held a position as a Research Associate at the Department of Biological Sciences in the National University of Singapore. Her assignments there included documenting fungal diversity in the forests of Southeast Asia, from peat swamps in Brunei to the fragmented secondary forests, wooded wastelands, abandoned rubber plantations and the dipterocarp forests of Singapore through field surveys and molecular methods.

Research Interests

My current research interests focus broadly on understanding: 1) co-evolution and tripartite interactions between plants-fungi and its ecological environments, and 2) molecular mechanisms of fungal pathogenicity using bioinformatics, mathematical modelling, and genetics. One of my long-term goals is to help improve agricultural practices with a sustainable return in farm productivity, improved pest management strategies, better health for the environment, and ultimately food security as we face inevitable global climate change. This Ph.D. program under the supervision of Prof. Jacqueline Batley will further help me to mature as a researcher to work in these areas of biological research and knowledge application towards policy implementations by federal agricultural agencies. I look forward to the challenges ahead and hope to contribute my knowledge to advance this field both as a teacher and a researcher.

Publications

**Research**

* Izuddin, M., A. Srivathsan, **Ai Lan**, **Lee**, W.Y., Tim, and E.L. Webb. 2019. Availability of orchid mycorrhizal fungi on roadside trees in a tropical urban landscape. *Scientific Reports Nature Research*. 9:19528.
* Bourguignon, T., N. Lo, J. Šobotník, S.Y.W. Ho, N. Iqbal, E. Coissac, **M. Lee**, M. Jendryka, D. Sillam-Dussès, B. Křížková, Y. Roisin, and T.A. Evans. 2016. Mitochondrial phylogenomics resolves the global spread of higher termites, ecosystem engineers of the tropics. *Molecular Biology & Evolution*. 34:589-597.
* Schloegel, L.M., L.F. Toledo, J.E. Longcore, S.E. Greenspan, C.A.Vieira, **M. Lee**, S. Zhao, C. Wangen, C.M. Ferreira, M. Hipolito, A.J. Davies, C.A. Cuomo, P. Daszak, and T.Y. James. 2012. Novel, panzootic and hybrid genotypes of amphibian chytridiomycosis associated with the bullfrog trade. *Molecular Ecology*. 21:5162-5177.
* James, T.Y., **M. Lee**, and L. van Diepen. 2011. A single mating-type locus comprised of homeodomain genes promotes nuclear migration and heterokaryosis in the white-rot fungus, *Phanerochaete chrysosporium*. *Eukaryotic Cell*. 10:249-261.

**Education and Public Outreach**

* “A Guide to Macrofungi in Singapore” by Serena Lee and Dr. Amy Choong - I prepared the life cycles of Ascomycota and Basidiomycota infographics. I also drafted illustrations of *Cookeina speciosa* and *Amanita* sp. for the book. 2021.
* “Jelly fungus - doesn’t matter if you’re black or white!” Gardenwise - The Magazine of the Singapore Botanic Gardens. Aug 2020. Vol. 55. ISSN 0129-1688. Co-authored: Serena Lee.
* Inky art: Using ink processed from *Coprinus comatus* mushroom to illustrate. FUNGI magazine. Summer 2020. Vol. 13, No. 2. ISSN 1941-4943. Editor: Britt Bunyard.
* Paintings on Petri dishes using bacteria, yeast, and fungi with different development of color pigments and textures. Mushroom the Journal of Wild Mushrooming magazine. Spring 2009. Issue 103, Vol. 27, No. 2. Editor: Leon Shernoff.
* I prepared the four types of basidia illustration for April 2004 Fungus-of-the-Month at TomVolkFungi.net on *Auricularia auricula-judae*, Judas’ ear fungus.
* I designed the “Mushroom Love” T-shirts and sold online at TomVolkFungi.net to promote mycology to the general public. 2003-2004.

Contact Details

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