NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

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SEMINAR

Tues, 4 Nov 2025 | 4 pm | S3-05-02 Conference Room 1

Hosted by Associate Professor Lau On Sun

Omics Studies of Salt Stress Responses in Soybean and Applications

By Hon-Ming LAM

The Chinese University of Hong Kong

Global climate change poses a severe threat to agricultural productivity and stability. Predictive models indicate a likely decline in crop yields and quality, coupled with increasing demands on freshwater resources. Conversely, conventional food production is a significant contributor to greenhouse gas emissions, with agrochemical use being a major factor. For example, the life cycle of synthetic nitrogen fertilizers accounts for approximately 5% of total global emissions. Soybean presents a sustainable alternative. As a legume, it uniquely supports sustainable agriculture through symbiotic nitrogen fixation, reducing the need for synthetic fertilizers. Soybean is also a critical global food source, providing 28% of the world's plant oil and 70% of its protein meal. Our research employs genomic studies and field analysis to investigate soybean seed resources. By identifying key genes associated with stress tolerance, we aim to develop new, climate-resilient soybean varieties capable of thriving in suboptimal environments. This work represents a direct pathway to enhancing crop resilience and promoting sustainable agricultural practices.

About the Speaker

Prof. Hon-Ming Lam is the Choh-Ming Li Professor of Life Sciences at The Chinese University of Hong Kong, where he also directs the State Key Laboratory of Agrobiotechnology. An internationally recognized scientist, he has authored over 240 highly-cited publications.

Prof. Lam is a trailblazer in plant genomics. His landmark research first unlocked the vast genetic diversity of wild soybeans, proving them a vital resource for crop improvement. He later led an international consortium to construct the world's first high-quality reference genome for wild soybean, providing an indispensable tool for breeders.

His work consistently bridges fundamental science and real-world impact. By identifying key stress-tolerance genes, his team has developed new soybean varieties cultivated on over 100,000 hectares, generating millions in farmer income and significantly reducing carbon emissions. His vision extends to empowering global food security through projects in developing nations, donating stress-tolerant seeds and training local scientists to build long-term agricultural resilience.