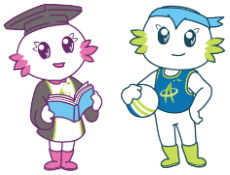
香 港 資 優 教 育 學 苑
The Hong Kong Academy for Gifted Education
香港特別行政區政府教育局資助
Subvented by the Education Bureau, the Government of the HKSAR



Learn about Gigi & Yoyo

S3STM001C
(Token- required)

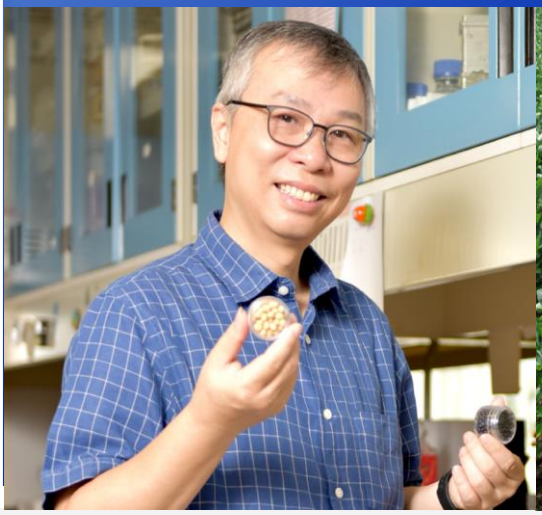
[**Gifted Programme**]

STEAM Course (Level III)

A Challenge-Approach in Learning about Biotechnology and Sustainability: The Case of Soybean Science

Professor Lam Hon Ming (Soyvestors Co. Limited)

*Designed by Professor Lam Hon Ming, a world-renowned scholar in soybean research, this course embodies his efforts in translating university-level research into inspirational STEAM programmes for secondary students.



Application Deadline
28 July 2025 12:00 noon
Result Release
30 July 2025

Intended Learning Outcomes

Upon completion of the gifted programme, gifted students should be able to:

1. master biotechnological techniques and their practical applications in agricultural science;
2. grasp the basic principles behind DNA markers and bioinformatics;
3. acquire skills in the observation of the nitrogen-fixing rhizobia under a microscope using staining techniques;
4. comprehend the concept of symbiotic nitrogen fixation in soybean and its role in agricultural and environmental sustainability;
5. appreciate the importance of integrating scientific knowledge with humanistic care and values.

If student members withdraw from the programme after the Application Deadline, the token will be deducted.

Gifted Programme Introduction

An important crop with increasing economic and political significance, soybeans not only possess rich nutritional value but also play an important role in agricultural and environmental sustainability, Against the backdrop of rapidly decreasing and deteriorating arable lands, soybeans' unique nitrogen-fixing properties can help reclaim marginal lands, reduce the use of chemical fertilizers, thereby reducing carbon emission caused by excessive use of fertilizers.

It is noteworthy that soybean was first domesticated in China and China has the richest collection of soybean seed resources. These seed resources are important tools to improve current cultivated soybeans to increase their resilience to environmental challenges. In combination with the genomic sequencing technology, we can identify and replicate advantageous genes, providing new possibilities for groundbreaking developments in new soybean cultivars that can grow better in the midst of extreme weather conditions as a result of global climate change. The symbiotic nitrogen-fixation ability of soybean, together with its partner rhizobia, enables environment-friendly agriculture practices.

This course will combine theory and practice, allowing students to engage in biotechnological experiments firsthand while systematically developing scientific inquiry skills and experimental design techniques.

The programme is designed by Prof. Lam Hon Ming, a world-renowned pioneer in soybean research. His groundbreaking soybean genomic research was featured on the cover of *Nature Genetics* (top-notched science journal). Named Choh-Ming Li Professor of Life Sciences at CUHK, he is also the Director of the State Key Laboratory of Agrobiotechnology under the Ministry of Science and Technology, PRC. In Session 5, Prof. Lam will debrief and provide feedback on the students' presentation and give a lecture on how science could contribute to humanity and environment using his soybean research as an example.

Schedule

Session	Date	Time	Venue
1 (Challenge 1 Part 1)	9 Aug (Sat)	9:30 a.m. - 1:00 p.m.	CUHK
2 (Challenge 2 Part 1)	9 Aug (Sat)	2:00 p.m. – 5:30 p.m.	CUHK
3 (Challenge 1 Part 2)	16 Aug (Sat)	9:30 a.m. - 1:00 p.m.	CUHK
4 (Challenge 2 Part 2)	16 Aug (Sat)	2:00 p.m. – 5:30 p.m.	CUHK
5 (Presentation, Debriefing, and Lecture)	23 Aug (Sat)	9:30 a.m. - 1:00 p.m.	HKAGE

Suitable for

- S3 to S5 HKAGE student members in 2024/25 school year
- Class size: 25

Pre-requisite

Students should possess foundational knowledge in biotechnology and sustainability.

Medium of Instruction

Cantonese with English Handouts

Screening

Please answer the screening questions in the online application form.

**Selection is based on students' performance in answering the questions.The screening questions are designed to help the applicant understand the course level and the course content. The questions must be answered by the student applicant and it can only be attempted once. The answer cannot be changed once the application is submitted.*

Recognition

E-Certificate will be awarded to gifted students who have:

- completed **at least ONE Challenge,** and
- taken part in **Session 5** including the Group Presentation, Debriefing and Lecture by Prof. Lam

Enquiries 3940 0101 programme@hkage.org.hk