

HOI SZE (SANDRA) LEUNG 梁凱思

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PROFILE

I am an aspiring ecologist and nature photographer who believes that safeguarding our planet is the key to a thriving society. My research focuses on using high-resolution multi-omics to decipher the interplay between plants and the soil microbiome, thereby harnessing their synergy for sustainable agriculture. Alongside my academic engagement, I contribute to a STEAM education social enterprise, translate local ecology programmes for RTHK, and share nature stories on social media, aiming to foster conservation through scientific curiosity and compassion.

EDUCATION

The Chinese University of Hong Kong

PhD in Molecular Biotechnology

Hong Kong
Aug 2023 – Ongoing

Interactions between soybean root phenotypes and the functionality of the soil microbiome

I aim to understand which soybean root phenotypic traits, and their genetic controls, underpin the enrichment of agronomically-beneficial soil microbiome. My study could inform breeding strategies for crop root systems that optimise the ecosystem services of soil.

- Scholarship:
 - Butterfield Croucher Studentship (Croucher Foundation)
 - Hong Kong PhD Fellowship Scheme (Research Grant Council)
 - CUHK Vice-Chancellor's PhD Scholarship (CUHK Graduate School)

The University of Edinburgh

BSc (Hons) Biological Sciences (Zoology)

Edinburgh, UK
2018 – 2021

- First Class Honour, Direct Entry into year 2, Programme Representative for Zoology Degree
- Relevant courses: Project Design & Analysis, Data Science for Ecologists & Environmental Scientist, Oceanography, Evolution & Climate Change, Population & Community Ecology

St. Paul's Co-educational College

International Baccalaureate Diploma Programme: 45/45, Awarded Siao Chee Yuen Scholarship

Hong Kong
2012 – 2018

RESEARCH

– Undertaking since mid 2022 in Professor Hon-Ming Lam's Laboratory (SKLA, CUHK) –

Publication:

Twenty years of mining salt tolerance genes in soybean.

Leung, H. S., Chan, L. Y., Law, C. H., Li, M. W., & Lam, H. M. (2023). *Molecular Breeding*, 43(6), 45.

Deciphering metabolite signalling between plant roots and soil pathogens to design resistance

Ku, Y. S., Cheng, S. S., Luk, C. Y., Leung, H. S., Chan, T. Y., & Lam, H. M. (2025). *BMC Plant Biology*, 25(1), 308.

Wild Soybean (*Glycine soja*) germplasm and genetic resource in the Republic of Korea

In collaboration with Professor Gyuhwa Chung, Chonnam National University

South Korea
Collab. Since 2016

- Surveying *G. soja* germplasms and facilitating in experiment field harvest
- Whole genome sequencing and metabolite characterisation of different *G. soja* accessions
- Isolation of rhizospheric and endospheric microbes from different *G. soja* accessions
- Management and inspection of seed resources

Imbewu Yethemba – Seed of Hope: Sustainable Soy Agriculture in South Africa

In collaboration with Professor Ndiko Ludidi, University of the Western Cape

Western Cape, South Africa
Collab. Since 2016

- Soybean breeding to hybridise stress-tolerant cultivars to the local pathogen-resistant cultivar
- Investigating the effects of farmland revival on soil macrofauna
- Teaching locals how to utilise soybean for household consumption and commercialisation

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BSc Honours Thesis - Intraclutch egg size variation in a burying beetle with hatching asynchrony

- Examined whether females mediate the competitive hierarchy within the brood, caused by asynchronous hatching, via intraclutch egg size variance.
- R and RStudio: multivariate general linear model, model simplification, data visualisation
- Awarded 75/100 (Grade A)

Edinburgh, UK
January – April 2021

Cataloguing the Spiders of Hong Kong

Self-initiated project in collaboration with Colin Hoi Wai Chiu

- Taxonomic literature review; Specimen collection, rearing, datalogging and taxonomic ID

Hong Kong
June 2020 – Oct 2021

WORK EXPERIENCE

State Key Laboratory of Agrobiotechnology (SKLA), Chinese University of Hong Kong

Junior Research Assistant of Prof. Hon-Ming Lam, School of Life Sciences, CUHK

- Please refer to 'RESEARCH' for the full list of project participation

Hong Kong
2022 – 2023

Soyvestors Co., Ltd. (STEAM education social enterprise)

Education Programme Developer and Tutor

- Designing the theme, content and lab activities of the module 'Soybean and Nutrition'
- Producing the teaching materials, including lab protocols and student handbook
- Delivering the lessons to local secondary school students; Training student helpers
- Coordinating with school teachers for workshop arrangement and programme improvements

Hong Kong
2022 – 2023

Ecology Programme Translation & Narration, Radio Television Hong Kong

Translator, narrator and voice dubbing artist of *Ecologists S1 - 3*, *Biodiversity in 5 Minutes*, *Biodiversity of Hong Kong – The Forces of Nature*, and *Biodiversity of Hong Kong S3*

Hong Kong
2018 – 2023

Ecology Research Internship with Operation Wallacea

Research Assistant, funded by the University of Edinburgh (James Rennie Bequest)

Terrestrial: Cusuco National Park

- Conducted habitat survey for carbon sink calculation and monitoring habitat condition
- Surveyed dung beetle (pitfall trap), moth (light trap), bird and bat (mist-net) populations
- Assessed chytrid fungus infection rate in amphibian communities

Marine: Utila Island

- Assessed the corallith abundance and characteristic of Utila
- Assessed the importance of mangrove to pelagic species by DNA metabarcoding

Honduras
June – July 2019

Research Internship in Insect Laboratory, University of Hong Kong

Research Assistant of Dr. Benoit Guénard, School of Biological Sciences, HKU

- Conducted arthropod specimen sorting using stereomicroscope, and ant specimen sampling using Winkler extractor, aspirator, and pitfall trap
- Assessed ant diet functional traits by stable isotope analysis
- Documented morphological traits of Hainan ant specimens using focus-stack imaging

Hong Kong
June – August 2018

Yan Oi Tong Sulawesi Ecology Expedition

Exploration ambassador, awarded 'Most Outstanding Ambassador' and Scholarship

- Assisted animal rehabilitation in Tasikoki Wildlife Rescue Centre
- Conducted biodiversity survey in Tangkoko National Park and Bunaken National Marine Park
- Examined the Masarang Sugar Palm Project as a sustainability development case study

Sulawesi, Indonesia
July 2017

Research Internship in Soy Genetics Laboratory, Chinese University of Hong Kong

Research Intern of Prof. Hon-Ming Lam, School of Life Sciences, CUHK

- Compared the salinity resistance of soybean cultivars by measuring plant tissue ion concentration, PCR analysis, gel electrophoresis and fluorescent protein assays

Hong Kong
June – August 2016

LEADERSHIP

Hosting committee member and event MC, International Symposium on Agricultural Genomics for Food security and Plant-Environment Interaction in a Changing Climate (August 2023)

Executive Director, World University Peace Assembly (January 2020 – December 2021)

Web Editor, Science Journal Society, University of Edinburgh (2020 – 2021)

Event Organiser, Conservation Biology Society, University of Edinburgh (2020 – 2021)

Publicity Officer, Zoological Society, University of Edinburgh (2019 – 2020)

SKILLS

Language: Native fluency in Cantonese, English and Mandarin

Technical skills: Proficient in R and RStudio, Microsoft Office suite, Google Workspace suite

Photography: Wildlife, Landscape, Macro (<https://sandraleunghoisze.wixsite.com/website>)

Sports: Certified PADI Open Water Diver, 10K runner, trekking and wild camping