PolyU SCIENCE

Newsletter

Dec 2025 #07

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

FACULTY OF 理學院 SCIENCE

Contents

Editorial Board

As we reflect on the remarkable achievements within our Faculty, I am filled with immense pride in the time marked by exceptional progress and recognition. Our Faculty continues to demonstrate an unwavering commitment to advancing the frontiers of knowledge and making a meaningful impact on society.

First and foremost, I would like to acknowledge Prof. Zhao Jiong, who has been conferred as the prestigious RGC Research Fellow for 2025/26—a recognition of his ground-breaking contributions to the field of advanced materials. Equally noteworthy is Prof. Zhao Yanxiang's success in securing the RGC Strategic Topics Grant of HK$32.4 million for 2025/26, underscoring her innovative approach to advancing next-generation immunotherapy technologies. In addition, the two research projects led by Prof. Chai Yang and Prof. Lee Ming-yuen, Simon, which received funding support from the RAISe+ Scheme, exemplify the collaborative spirit and forward-looking vision that define our research community.

Our Faculty's achievements resonate not only locally but also globally. I am also reporting that 32 of our scholars have been ranked among the World's Top 2% Scientists by Stanford University in 2025. Furthermore, Prof. Chai Yang, Prof. Daniel Lau, Prof. Wang Lianzhou, Prof. Tom Tao Wu, Prof. Yan Feng and Prof. Zheng Zijian have been recognized as Highly Cited Researchers by Clarivate in 2025. These international distinctions speak to the exceptional quality of research undertaken within our Faculty and the dedication of our academic staff.

Our pursuit of excellence extends beyond research. It was a profound honour to confer degrees upon our graduates at the 31st Congregation, marking the emergence of a new generation of talented scientists. I extend my sincere acknowledgment to all our graduates and look forward to witnessing the positive impact they will make in their future endeavours.

Wishing you a season filled with peace, warmth and strength!

Welcome to the seventh issue of the FS newsletter!

歡迎閱讀理學院第七期學院通訊！

Prof. Wong Wai-yeung, Raymond
Dean, Faculty of Science
Clarea Au Professor in Energy
Chair Professor of Chemical Technology

在回顧本學院傑出成就的同時，我對這段不斷進步與充滿殊榮的日子倍感自豪。理學院一直秉持不懈精神，不斷拓展知識邊界，致力於為社會帶來深遠且實質的影響。

首先，趙炯教授榮獲2025/26年度「研資局研究學者」名銜，以表揚他在先進材料領域的突破性貢獻。同樣值得認可的是趙燕湘教授成功獲得2025/26年度香港研究資助局策略專題研究資助金，其金額高達港幣3,240萬元，這項成就肯定了她在推動新一代免疫療法發展的創新研究思維。此外，柴揚教授及李銘源教授分別領導的兩個研究項目獲得「產學研1+計劃」的資助，充份展現出學院科研團隊的協作精神及具前瞻性的研究視野。

本學院的成就不僅在本地廣受讚譽，更在國際舞台上備受矚目。理學院共有32位學者獲史丹福大學評為2025年度全球前2%獲徵引最多的科學家。此外，柴揚教授、劉樹平教授、王連洲教授、吳韜教授、嚴鋒教授及鄭子劍教授更獲科睿唯安評為「2025年最廣獲徵引研究人員」。這些國際殊榮，印證了學院卓越的研究水平及教研人員的專業精神。

理學院對卓越的追求並不止於科研。在今年第三十一屆畢業典禮上，我們頒授學位予本屆畢業生，見證了新一代優秀科學家的誕生。期待畢業生在未來的道路上繼續發光發熱，為社會作出貢獻。

祝願大家度過一個安寧、溫暖與充滿力量的冬季。

理學院院長
歐雪明能源教授及化學科技講座教授
黃維揚教授

Pioneering Semiconductor Nanomaterials for Renewable Energy and Sustainable Technologies

可再生能源與可持續技術的半導體納米材料研究

Prof. Wang Lianzhou
王連洲教授專訪
Chair Professor of Energy Materials,
Department of Applied Biology and Chemical Technology
應用生物及化學科技學系能源材料講座教授

Prof. Wang Lianzhou leads cutting-edge research on semiconductor nanomaterials for renewable energy conversion and storage, with a focus on solar-to-chemical and solar-to-electricity conversion and storage systems. His work addresses two major challenges in the field: efficiency and cost. By designing advanced catalysts and electrode materials, his team aims to improve energy conversion—from solar water splitting to hydrogen production—and storage capacities in batteries, making renewable technologies more practical and economically competitive.

A key focus of Prof. Wang's research is improving solar water splitting—a well-established process for generating green hydrogen through artificial photosynthesis. His team develops advanced semiconductor nanomaterials to boost the efficiency and stability of this reaction. While titanium dioxide remains a reliable, low-cost photocatalyst, its limited sunlight absorption restricts performance. He is designing new materials that capture a broader solar spectrum, aiming to significantly enhance conversion efficiency and move solar hydrogen production closer to large-scale application.

Prof. Wang's team has incorporated AI and machine learning to accelerate materials discovery, particularly in designing catalysts and selecting dopants. Though the approaches are currently constrained by the limited size and reliability of current databases, AI assisted approach is promising and has huge potential, allowing faster identification of potential materials, guiding experimental validation and development.

Beyond renewable energy, Prof. Wang's research has expanded into industrial and environmental applications. His group is scaling up cathode materials for commercial batteries and developing new catalysts that can decompose high-crystalline plastics into reusable monomers, offering a sustainable pathway for plastic recycling. He is also advancing eco-friendly, lead-free perovskite solar cells, achieving certified record efficiencies and paving the way for flexible, semi-transparent and indoor solar technologies.

Several of Prof. Wang's innovations in semiconductor materials have been patented, ranging from UV-blocking nanomaterials used in cosmetics to new-generation battery electrodes, plastic upcycling catalysts and lead-free perovskite solar cells. His team continues to explore collaborations with industry partners in Hong Kong and the Greater Bay Area to bring these technologies closer to commercialization.

Through his work, Prof. Wang exemplifies the integration of fundamental science, innovative materials design and translational research, driving sustainable solutions for the world's energy and environmental challenges.

王連洲教授致力研究可再生能源轉換，以及用作儲存能源之半導體納米材料，尤其專注於將太陽能轉化為化學能與電能的相關系統。透過研發先進的催化劑及電極物料，他的團隊不斷提升能源轉換及電池儲能的效能，讓可再生能源技術變得更為實用且具成本效益。

王教授的研究核心之一是提升太陽能分解水技術，以人工光合作用產生綠色氫能。雖然二氧化鈦一直是可靠且成本較低的光催化劑，但其對陽光吸收範圍有限，導致效率受限。他相信，透過設計出能吸收更寬廣太陽光譜的高性能新型半導體納米材料，能大幅提升轉換效率及穩定性，讓太陽能製氫技術能邁向大規模應用。

王教授亦引入了人工智能與機器學習技術，以加快研發進度。雖然現階段資料庫的規模與可靠性仍受限，但人工智能的確能協助更快地尋找具潛力的材料，包括催化劑及材料結構，並為實驗提供方向。

除了可再生能源，王教授的研究亦拓展至工業與環境應用範疇，當中包括推動量產商業電池正極物，及研發能將高結晶度塑膠分解為可再利用單體的新型催化劑，為塑膠回收提供可持續的解決方案。此外，他亦致力研發環保型無鉛鈣鈦礦太陽能電池，並已取得認證的世界記錄，為柔性、半透明及室內太陽能技術研發提供了新方向。

王教授在半導體材料的多項創新研究已取得專利，包括用於化妝品的防紫外線納米材料、新一代電池電極、塑膠升級再造催化劑，以及無鉛鈣鈦礦太陽能電池等多個範疇。他的團隊亦不斷與區內產業夥伴合作，以將這些技術應用其中。

王連洲教授的研究充份體現出基礎科學、創新材料設計與轉化研究的多方面融合，為全球提供可持續的創新解決方案。

Integrating AI and Computation for Sustainable Optoelectronic Materials Design

融合人工智能與運算技術 推動可持續光電材料設計

Prof. Yin Jun
殷駿教授專訪
Assistant Professor,
Department of Applied Physics
應用物理學系助理教授

Prof. Yin Jun and his team specialize in the theoretical and computational design of optoelectronic materials, focusing on sustainable, high-performance systems such as lead-free perovskites. Their research integrates artificial intelligence (AI) into traditional computational workflows, significantly enhancing the efficiency and predictive accuracy of materials discovery.

Using high-precision simulations, Prof. Yin's team generates comprehensive datasets detailing crystal, electronic and optical properties. These rigorously verified datasets train AI models that can rapidly screen millions of material candidates and predict their performance in photovoltaic and optoelectronic applications. A major breakthrough is the development of machine learning potentials. By training AI on small-scale systems, the team can simulate large, complex materials, such as hybrid interfaces or perovskite structures containing hundreds of thousands of atoms, through custom force fields. This enables large-scale molecular dynamics simulations that were previously beyond reach.

Prof. Yin and his team also pioneer the search for environmentally friendly perovskites by replacing toxic lead with tin or other transition metals. AI tools help identify dopants that preserve optical performance while improving stability, balancing efficiency, durability and environmental safety. While efficiency is often prioritized in academic research, Prof. Yin notes that industry also emphasizes cost-effectiveness and practical deployment, such as alternatives to silicon solar cells.

Despite AI's acceleration of discovery, challenges remain in bridging the gap between theoretical predictions and experimental observations. Simplifications in computational models, such as approximations for kinetics, solvent interactions and temperature effects, mean simulations cannot yet fully replicate complex experimental conditions. Prof. Yin believes that advances in computational power will allow future models to incorporate these factors, bringing theory and experiment closer together.

Experimental validation remains essential throughout. Prof. Yin's workflow tightly couples theory and experiment, ensuring predictions retain physical meaning. The team plans to release their datasets after publication to support the broader research community, further advancing the integration of AI, computation and experiment, and bringing theoretical materials design closer to real-world application.

殷駿教授的研究團隊長期深耕於光電材料理論與計算領域，致力於設計並開發具可持續性的高性能無鉛鈣鈦礦材料體系。團隊將人工智能融入傳統計算流程，大幅提升了材料研發效率與預測準確度。

團隊運用高精度模擬技術，建構了涵蓋晶體結構、電子特性及光學性質的大型數據庫，並透過嚴謹的實驗進行驗證，確保數據的可靠性。這些數據作為人工智能模型的訓練基礎，使模型得以在短時間內從數百萬種候選材料中快速篩選，並預測其在光伏與光電元件中的性能表現。其中一項重要突破在於開發出機器學習勢能模型：通過訓練人工智能理解小尺度系統的物理規律，進而實現對複雜大尺度材料結構的模擬，包括表面結構複雜、含有數十萬個原子的鈣鈦礦體系，使以往難以實現的含重原子大尺度分子動力學模擬成為可能。

團隊積極投入環保型鈣鈦礦材料的研發，以錫或其他過渡金屬取代具毒性的鉛元素。藉助人工智能技術，團隊迅速篩選出既能維持光學性能、又可提升材料穩定性的摻雜原子，在效率、穩定性與在環境友好之間取得平衡。殷教授指出，學術界通常聚焦於提升效率指標，而產業界則更關注成本效益與實際應用，例如開發可替代矽基太陽能電池的可行方案。

儘管新材料的開發效率已顯著提升，理論與實驗之間仍存在差距。由於計算模型在反應動力學、溶劑效應及溫度條件等方面仍需簡化，現有模擬結果未必能完全反映真實實驗環境。殷教授相信，隨着運算能力與模型方法持續進步，未來將能納入更多複雜因素，進一步縮小理論預測與實驗觀測之間的差距。實驗驗證始終是科研的關鍵一環。殷教授的研究範式強調理論與實驗的深度融合，使各項預測在物理上的準確性顯著提升。團隊亦計劃在相關論文發表後，將數據庫公開予學術界共享，持續為綠色能源與先進光電科技的發展貢獻力量。

Nourishing Fat, Nurturing Health: The Science of Functional Adipose Tissue

滋養脂肪, 培育健康：功能性脂肪組織的研究

Prof. Zhu Yuyan
朱玉燕教授專訪
Associate Professor,
Department of Food Science and Nutrition
食品科學及營養學系副教授

Prof. Zhu Yuyan studies obesity as a complex metabolic condition shaped by genetics, lifestyle and stress. She emphasizes that adipose tissue is a vital endocrine organ for energy regulation and that excessive fat loss can harm metabolic and immune health, underscoring the need to maintain healthy fat tissue.

Her research targets both prevention and treatment of metabolic disorders, aiming to uncover mechanisms that guide strategies to improve metabolic health and extend healthy lifespan. Prof. Zhu's team focuses on adipose tissue regulation, lipid and cholesterol metabolism, and adipocytes' role in systemic energy balance, exploring how functional dietary components and nutrients mitigate obesity and related syndromes while enhancing adipose tissue function through adiponectin signalling.

Central to this work is the study of white adipose tissue (WAT), a key regulator of systemic metabolism and a major cholesterol reservoir containing up to half of the body's cholesterol in obesity. By examining how cholesterol homeostasis in WAT influences endocrine and energy-storage functions, the team seeks to establish mechanistic foundations for safer, personalized anti-obesity strategies that integrate dietary interventions with other therapeutic approaches.

To accelerate discovery, Prof. Zhu's team integrates AI-driven molecular screening with in vitro and in vivo studies to identify natural and synthetic compounds that activate adiponectin receptors or enhance adiponectin expression. Promising candidates are validated experimentally, with several already shown to boost adiponectin signalling and improve energy metabolism.

Her lab also examines how environmental pollutants affect metabolic health. Under energy-dense dietary conditions, they found that oral exposure to 6-PPD at current environmental levels has only a minor metabolic impact in mice. In contrast, rising concerns over microplastics (MPs) and nanoplastics (NPs) led the team to identify their potential obesogenic effects: nanoplastics reduce lipid mobilization in white adipose tissue of obese mice, positioning lipolysis-related parameters as potential clinical indicators for MP and NP impact.

Prof. Zhu is launching a clinical study on obesity-related fatty liver disease, testing a repurposed dietary supplement that boosts energy metabolism through adiponectin signalling. Her goal is to create safe, effective, food-based strategies that turn metabolic research into health solutions.

朱玉燕教授致力
於研究肥胖這一由
遺傳、生活方式與壓力
共同塑造的複雜代謝疾病。她
強調，脂肪組織是能量調節的重要
內分泌器官，過度減脂會損害代謝與免疫
健康，因此必須重視健康脂肪組織的維持。

她的研究同時聚焦肥胖相关的代謝疾病的預防與治療，旨在揭示關鍵機制，以制定改善代謝健康、延長健康壽命的策略。團隊重點研究脂肪組織中的脂質與膽固醇代謝，以及脂肪細胞在全身能量平衡中的作用，並探索功能性膳食成分與營養素如何增強脂肪組織功能，改善肥胖及相關症候群。

她研究的核心是白色脂肪組織(WAT)这一全身代謝的關鍵調節器，也是主要的膽固醇儲存庫之一，在肥胖狀態下可容納高達人體一半的膽固醇。團隊透過研究WAT中的膽固醇穩態如何影響其內分泌與能量儲存功能，旨在為整合飲食干預與其他療法、更安全且個人化的抗肥胖策略奠定機制基礎。

為加速研發，朱教授團隊將人工智慧驅動的分子篩選與體外、體內研究相結合，以識別能激活脂肪因子增強脂聯素表達或脂聯素受體的天然與合成化合物。其中極具潛力的候選物質已通過實驗驗證，部分證實可有效增強脂聯素信號並改善能量代謝。

她的實驗室也研究環境污染物對代謝健康的影響。針對日益受到關注的微塑膠(MP)與纳米塑膠(NP)顆粒，朱教授團隊發現纳米塑膠顆粒會減少肥胖小鼠白色脂肪組織中的脂質動員能力，這使得脂解相關參數有望成為評估MP與NP影響的潛在臨床指標。

朱教授正啟動一項關於肥胖相關脂肪肝疾病的臨床研究，將測試一種能透過脂聯素信號通路提升能量代謝的膳食補充劑。她的目標是創造安全有效、以食物為基礎的策略，將代謝研究成果轉化為實質的健康解決方案。

FS Scheme on Advance HE Fellowship
理學院支援計劃 - 英國高等教育促進會會士認證

Dr Ho Chi-fong, Susan
ABCT
Fellowship

Dr Lam Kim-hung
ABCT
Senior Fellowship

Dr Jim Kwok-lung, Michael
AP
Senior Fellowship

Dr Daniel Mok
FSN
Senior Fellowship

The Faculty of Science continues to promote academic excellence through the Advance HE Fellowship Scheme. In its second round (2024/25), eight colleagues joined the programme, which includes seminars, workshops, mentorship, and editing support. Notably, four more colleagues have successfully attained Fellowship recently. This initiative not only enhances teaching and learning practices but also fosters a culture of professional growth and recognition across the Faculty.

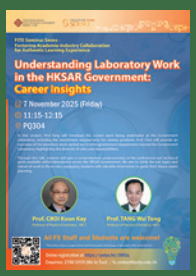
理學院致力推動優質的教學環境，第二期英國高等教育促進會會士認證支援計劃（2024/25年度）共有八位同事參與，計劃涵蓋不同講座、工作坊、導師配對計劃及編輯支援等。最近，再有四位同事成功獲得會士認證。此計劃不僅大幅提升教學質素，更能推動專業發展與讓更多資歷受到認可。

FITE Seminar Series
科教創新基金研討會系列

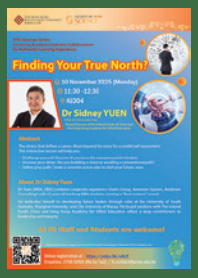
The FITE Seminar Series continues to strengthen learning through academia–industry collaboration. Four seminars, held in October and November 2025, featured experts from the biotechnology sector and the Government of the HKSAR, bridging the gap between science and industry. These sessions provided students and staff with valuable insights into real-world applications and career pathways, reaffirming the Faculty's commitment to experiential learning.

科教創新基金研討會致力促進學術與業界合作，學院並於10及11月成功舉行四場研討會，以連繫學界與業界。當中邀請了來自生物科技及香港特區政府的專家分享經驗。研討會為師生提供了業界行情及職涯資訊，展現出理學院重視將學習融入生活的教學理念。

Preparing Graduating Students for Careers in the Biotech Industry
Date:
24 Oct 2025
Speaker:
Prof. Pele Chong
(Professor on Practice, ABCT)



Understanding Laboratory Work in the HKSAR Government: Career Insight
Date:
7 Nov 2025
Speaker:
Prof. Choi Koon Kay
(Professor on Practice, ABCT)
Prof. Tang Wai Tong
(Professor on Practice, ABCT)



Finding Your True North?
Date:
10 Nov 2025
Speaker:
Dr Sidney Yuen
(CEO, CX University Asia/ Board Director of the Ireland Funds of China and HKAGE)

Sustainbility Governance, Risk Management & Climate Resilience
Date:
14 Nov 2025
Speaker:
Mr Steve Tse
(Officer of Sub-Committees for Sustainable and ESG Certifications, HKICES)

Bachelor's Degree Scheme in Science (BDSS) Orientation & Student–Staff Consultative Group Meeting
理學組合學士課程(BDSS)迎新活動及師生諮詢會議

To enhance student engagement and communication, the Faculty held the BDSS Orientation and Student–Staff Consultative Group Meeting on 27 August and 15 October, respectively. The Orientation included briefings, campus tours, and networking sessions to help new students transition smoothly into university life. The Consultative Meeting provided a platform for open feedback on curriculum and student support, helping to shape an inclusive and collaborative learning environment. The Faculty sincerely thanks all participants for their valuable contributions.

為促進學生參與及溝通，理學院於8月27日及10月15日分別舉行了BDSS迎新活動及師生諮詢會議。迎新活動包括課程簡介、校園導覽及交流環節，協助新生順利適應大學生活；而諮詢會議則提供平台予師生就課程及支援交流意見，以塑造具包容性的學習環境。理學院在此感謝所有參與者的寶貴意見，期望未來繼續攜手提升學生的學習體驗。

Virtual Info Session for International Students
理學院國際學生網上資訊講座

The Virtual Info Session for International Students, held on 24 June, successfully welcomed 22 international offer holders. The comprehensive programme featured a presentation by the GEO, introductions from academic staff of three departments, and engaging networking sessions hosted by international student representatives from Greece, Indonesia, and Pakistan. Participants gained meaningful insights about study life, and its supportive environment, diverse community, and exciting academic opportunities at PolyU.

理學院國際學生網上資訊講座已於6月24日成功舉辦。講座內容豐富，涵蓋理大環球事務處的簡介、理學院三個學系教職員的介紹，以及由來自希臘、印尼和巴基斯坦的國際學生代表主持的互動交流環節。講座反應熱烈，吸引了22位國際取錄生參與。參加者深入了解在理大學習的獨特優勢，包括完善的支援系統以及為他們提供的精彩學習與發展機會。

PolyU Summer Institute 2025
理大暑期學院2025

The PolyU Summer Institute 2025 concluded successfully on 21–25 July on campus. The Faculty organised a variety of inspiring activities, including hands-on scientific experiments in advanced laboratories, a Cleanroom tour, and a visit to the Yakult factory to explore food science in action. Over 70 local and overseas high school students participated, gaining an early taste of university life and discovering their academic passions.

理大暑期學院於7月21-25日在理大校園圓滿舉行。今年，理學院精心設計了一系列精彩活動，包括在學院先進實驗室進行科學實驗、參觀無塵室，以及到益力多工廠了解食品科學的奧秘。活動吸引了超過70名本地及海外高中學生參與，讓他們提前體驗大學生活，並探索當中的學術興趣。

Faculty Retreat
學院退修日

The Faculty of Science Retreat was held on 4 August to strengthen collaboration and strategic planning among faculty members. The event provided an open platform for colleagues to exchange ideas, share innovative perspectives, and discuss key initiatives in teaching & learning, research, and management. The discussions fostered a spirit of teamwork and helped shape the Faculty's strategic direction, reinforcing our commitment to excellence.

理學院於8月4日成功舉辦退修日，以促進教職員之間的協作與策略規劃。此次聚會為同事們提供了深入交流討論與分享創新理念的機會，並一同探討教學、研究及管理等核心議題。與會者的積極參與營造了充滿活力的合作氣氛，不僅有助發掘學院的發展方向，亦進一步鞏固了我們持續追求卓越的承諾。

PolyU Info Day 2025 (for Undergraduate Admissions)

理大本科入學資訊日2025

PolyU Info Day 2025 (for Undergraduate Admissions), held on 27 September, attracted over 43,000 visitors, creating a vibrant and energetic atmosphere across the campus. The Faculty of Science and its departments hosted a range of engaging activities, including information seminars, exhibitions, laboratory tours, and hands-on workshops. Visitors had the chance to interact directly with our students and staff, explore cutting-edge research facilities, and learn about the latest undergraduate programme offerings and admission details.

理大本科入學資訊日於9月27日圓滿結束，吸引逾43,000名來賓參與，現場氣氛相當熱烈！理學院及轄下各學系舉行了一系列的課程講座、展覽、實驗室導賞以及工作坊，讓出席者能夠親身與師生交流，參觀學院先進的教學與科研設施，並了解本科課程的最新入學資訊。

PolyU SCIENCE Young Talents Competition 2026

理大科學青年人才比賽2026

The PolyU SCIENCE Young Talents Competition 2026 will be taken place from January to March 2026. The competition is open to Secondary 4–5 / Grade 10–11 / Year 11–12 students. It features two rounds assessing both theoretical knowledge and practical laboratory skills, giving participants an exciting opportunity to experience university-level science first-hand. Covering Biology and Food Science, Chemistry, and Physics, the competition offers attractive cash prizes for winning teams.

為培育下一代科學青年人才，理學院將於2026年1月至3月舉辦「理大科學青年人才比賽2026」。比賽對象為中四至中五 / 第 10 - 11級 / 第 11 - 12 年級的學生，旨在評估中學生的理論知識水平，並提供在理大的實驗室裡實踐學習的機會。比賽將分為兩個階段，所有問題和任務將涵蓋生物與食品科學、化學、物理三個科目，讓參賽學生發掘對科學的興趣，親身體驗香港理工大學的先進研究設施，踏出成為未來科學家的第一步，勝出隊伍將會獲得豐富的現金獎。

Competition Website
比賽網站

University of Cambridge – PolyU Bilateral Workshop on Organic Electronics

劍橋大學 – 香港理工大學有機電子雙邊工作坊

On 3 October, the Faculty of Science of PolyU, and the University of Cambridge co-hosted a Bilateral Workshop on Organic Electronics. The event brought together 12 experts from world-leading institutions—including the University of Cambridge, The University of Manchester, Princeton University, CUHK, CityU, HKUST, and PolyU—attracting nearly 80 participants. The workshop highlighted cutting-edge research in flexible displays, wearable sensors, organic photovoltaics, and bioelectronic interfaces, creating a vibrant platform for international academic exchange and collaboration. Highly praised by participants, the Faculty will continue to promote such high-level dialogues to broaden research horizons and foster interdisciplinary partnerships.

香港理工大學理學院與英國劍橋大學於10月3日合辦了有機電子雙邊工作坊，匯聚了來自多所海內外頂尖學府包括劍橋大學、曼徹斯特大學、普林斯頓大學、香港中文大學、香港城市大學、香港科技大學和香港理工大學的12位專家講者，吸引近80人參與。

工作坊展示了有機電子領域的創新成果，聚焦柔性顯示器、可穿戴式傳感器、有機光伏及有機生物電子界面等尖端科技，為學術交流與科研合作搭建了專業平台。活動獲得廣泛好評，理學院將會持續推動同類高水平的學術對話，協助師生擴闊科研視野，推動跨領域協作。

Faculty of Science Research Seminar Series & Lectures

理學院科研講座系列

The Faculty of Science Research Seminar Series provides ongoing opportunities for in-depth academic exchange among researchers and postgraduate students. Complementing this, the Faculty also hosts Chair Professor Inaugural Lectures, offering valuable insights into professors' areas of expertise. Additionally, distinguished external experts are regularly invited to deliver thematic talks on global scientific developments and practical topics such as publishing in top-tier academic journals. Through these diverse academic initiatives, the Faculty continues to cultivate a dynamic and intellectually enriching research environment.

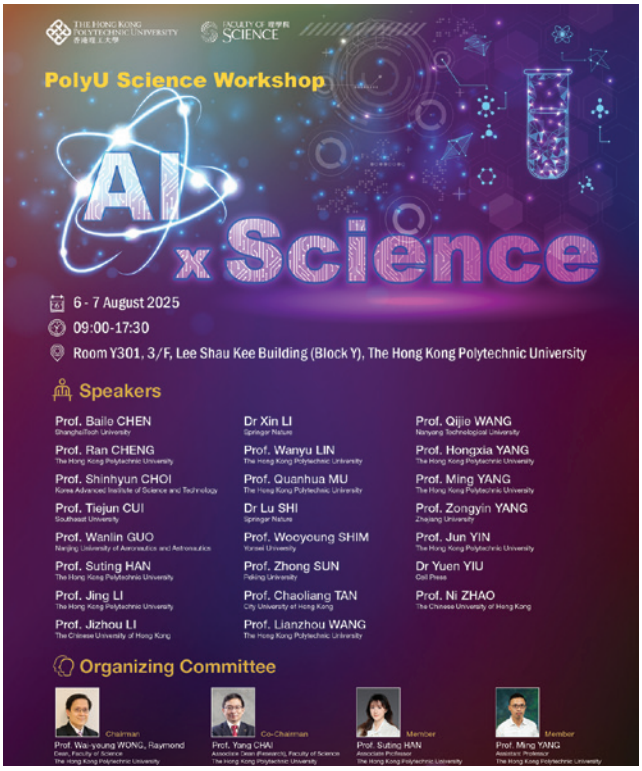
科研講座系列是理學院的常設學術活動，目的為本院青年科研人員及研究生提供持續而深入的交流機會，促進大家互相啟發學術思維。此外，學院更邀請了新任講座教授發表就職演講，讓師生更了解其研究專長；亦邀請了國際學者和專家到訪理大並舉行專題講座，內容既涵蓋全球科學發展趨勢，亦涉及如頂尖期刊投稿等實用範疇。透過一系列多元化講座，理學院為師生的科研發展提供了穩健支持與基礎。

PolyU Science Workshop – AI × Science

理學院科研工作坊 – 人工智能x科學

The Faculty successfully hosted the PolyU Science Workshop – AI × Science on 6–7 August, featuring 23 interdisciplinary scholars exploring AI's transformative role in designing, characterizing, and modelling advanced materials and functional devices. Through keynote lectures, panel discussions, and editor sharing sessions, nearly 100 participants engaged in meaningful dialogue on how AI can overcome research bottlenecks in materials science and inspire new methodologies. The workshop received overwhelmingly positive feedback and will further propel the Faculty's pursuit of scientific innovation.

理學院於8月6日至7日成功舉辦人工智能×科學科研工作坊，當中邀請了23位跨領域學者，深入探討人工智能在先進材料與功能器件設計、表徵與建模方面的變革性影響。活動涵蓋主題演講、專題討論和期刊編輯分享，吸引近百位與會者交流互動，一同剖析人工智能如何突破材料研究的傳統瓶頸，並就多項創新提出意見。工作坊成效顯著，並獲學界的熱烈回響，理學院將持續推動前沿科學的發展。



Navigating Challenging Concepts: My Approach to Teaching and Mentorship

探索艱深概念的教與學之道：我的教學與導師理念

"I believe that effective teaching extends beyond the transfer of knowledge—it is about inspiring lifelong learning, curiosity, and confidence.

我深信有效的教學不僅是知識的傳遞，更在於啟發學生終身學習的熱情、好奇心與自信。"

Prof. Zhao Yanxiang
趙燕湘教授
Associate Head and Professor,
Department of Applied Biology and Chemical Technology
應用生物及化學科技學系副系主任及教授

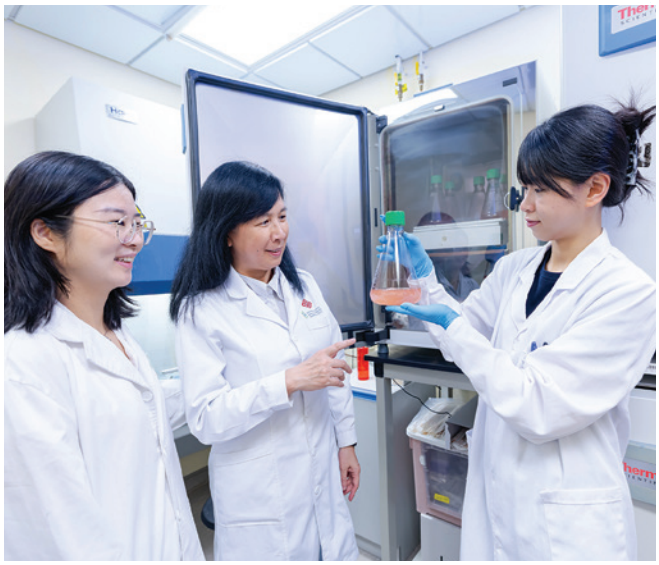
Teaching at the university level is both a privilege and a responsibility, particularly when guiding students through subjects that are conceptually demanding yet fundamental to their academic growth. Over the years, I have taught several biochemistry-related subjects and served as a supervisor for Final Year Projects (FYPs). My teaching philosophy centers on making complex topics accessible, engaging, and relevant, while fostering a supportive learning environment that encourages students to think critically and independently.

A significant portion of my teaching portfolio involves biochemistry, a discipline often perceived as challenging due to its heavy workload and abstract concepts. To address this, I break down intricate ideas into manageable components and use analogies, visual aids, and real-world examples to bridge the gap between theory and application. For example, when teaching metabolic pathways, I connect them to familiar biological processes or highlight current biomedical research, helping students appreciate their real-world significance. I also incorporate problem-based learning and case studies that prompt students to apply their knowledge in novel contexts—deepening conceptual understanding while honing problem-solving skills.

Another challenge in teaching biochemistry is the large number of metabolic pathways students must learn, such as glycolysis and the TCA cycle. To reduce rote memorization and promote analytical thinking, I provide students with a comprehensive information sheet containing all key pathways for mid-term quizzes and final exams. This approach allows them to focus on understanding mechanisms and relationships rather than memorizing details. My assessments are designed to encourage critical thinking and synthesis of information, and I offer tutorial sessions to help students practice these skills in a supportive environment.

Beyond the classroom, I place great emphasis on developing students' research skills through the Final Year Project (FYP)—a hypothesis-driven, hands-on research experience conducted under my supervision. My goal is to cultivate intellectual curiosity, independence, and resilience in the research process. While I provide guidance and structure, I encourage students to take ownership of their projects, ask meaningful questions, and learn from setbacks. It is deeply rewarding to see my students progress beyond the undergraduate level—several of those I supervised have gone on to pursue postgraduate studies at prestigious institutions, often attributing their FYP experience as a turning point that shaped their academic trajectory and strengthened their competitiveness.

Ultimately, I believe that effective teaching extends beyond the transfer of knowledge—it is about inspiring lifelong learning, curiosity, and confidence. By continuously refining my teaching methods and responding to student feedback, I strive to create an inclusive and stimulating learning environment where every student can thrive, regardless of the challenges posed by the subject matter. Through my teaching and mentorship, I hope to empower students not only to master difficult concepts but also to develop the skills, mindset, and confidence needed to excel in their future endeavours.



在大學任教既是一種榮譽，亦是一份責任，尤其是在引導學生理解那些既具挑戰性又是學術發展基礎的科目時。多年來，我教授過多門與生物化學相關的課程，並擔任多位學生的畢業專題研究導師。我的教學理念是讓艱深的主題變得易懂、有趣且具實際意義，並營造一個充滿支持與啟發性的學習環境，鼓勵學生培養批判思考與自主學習的能力。

生物化學是我教學範疇中的主要部分之一，這門學科以內容繁重與概念抽象而聞名。為了幫助學生克服這些挑戰，我將複雜的概念拆解成可理解的小單元，並透過比喻、視覺輔助工具與真實案例，協助學生將理論與實際應用連結起來。例如，在講解代謝途徑時，我會將其與熟悉的生物過程作對比，或介紹最新的生物醫學研究，讓學生理解所學知識在現實世界中的重要性。同時，我設計了以問題為本的學習活動與個案研習，引導學生將所學應用於新情境中，以強化概念的理解與解難能力。

生物化學課程的另一挑戰在於學生須掌握理解不同的代謝途徑，如糖解作用及三羧酸循環，往往令學生感到負擔沉重。為了減少死記硬背的壓力，並將重點轉向分析與理解，我會為學生提供一份包含所有主要代謝途徑的資料表，可於期中測驗及期末考試中使用。這樣，學生就能有更多時間投入於理解機制與關聯性，而非單純死記。我的評核設計亦圍繞批判性思維與綜合分析，並透過課後輔導課協助學生訓練這些技能。

課堂以外，我亦十分重視透過畢業專題研究來培養學生的科研能力，讓我協助學生以假設為導向，在實驗室進行實踐性研究。我的目標是啟發學生的求知慾、研究能力與獨立思考。在提供必要指導的同時，我亦鼓勵學生嘗試思考自己的研究方向，勇於提問並在面對挫折時培養堅毅的解難精神。看到學生在本科畢業之後繼續取得進步，尤其令人欣慰。不少在我指導下完成畢業專題研究的學生，現已入讀國際知名學府的研究院課程，並表示在我實驗室的研究經驗是影響他們學術發展的重要轉捩點，同時提升了他們申請頂尖課程的競爭力。

最終，我深信有效的教學不僅是知識的傳遞，更在於啟發學生終身學習的熱情、好奇心與自信。我不斷改進教學方法，並積極回應學生的意見，致力營造一個具包容性、啟發能力與挑戰性的學習環境，讓每位學生都能在艱深的學習旅途中茁壯成長。透過我的教學與導師工作，我期望學生不僅能掌握複雜的概念，亦能培養在未來學習與事業發展中所需的能力、思維與信心。

From Mushrooms to Metabolism:

How a Tiny Fungus Could Change the Way We Eat

從蘑菇到新陳代謝：一株微小真菌，或將改變我們的飲食方式

For decades, it has been well understood that not all yoghurts are created equal. Different bacterial strains present in yoghurt can have vastly different effects on our health—some aid digestion, while others enhance immune function. In contrast, mushrooms have been simply lumped together and considered to impart a generic "mushroom flavour", with little attention paid to differences in species or strains.

This perspective changed when we decided to dig deeper.

We selected various strains of the same mushroom species and grew them under identical conditions. Employing a standardized extraction process, we fed these extracts to laboratory mice maintained on a high-fat diet. The outcomes were astonishing: certain mushroom strains were found to mitigate obesity, whereas others exacerbated weight gain in the mice.

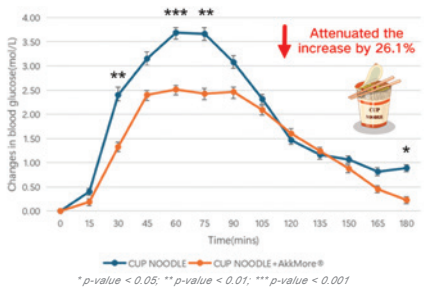
This marked the first occasion on which we identified what we now refer to as the "strain ID card" for mushrooms. Among all the strains we tested, one was particularly noteworthy. We named it AkkMore®—our "star student" strain.

In animal studies, mice that consumed AkkMore while on a high-fat diet exhibited 53.8% less weight gain, a 94.5% reduction in liver fat accumulation, and a 26% decrease in postprandial blood glucose spikes. Even more unexpectedly, anxiety-related behaviours in these mice declined by 40%. Notably, AkkMore is extracted exclusively through physical methods, without the use of chemicals or genetic modification. As a result, it does not require the protracted approval process for new food ingredients. It is compatible with existing food manufacturing equipment and can be seamlessly substituted for butter or cream, thereby reducing fat and caloric content without altering taste or texture.

What might this innovation look like in real life?

Imagine enjoying a scoop of ice cream at your favourite café in Hong Kong, containing 80% less fat than conventional varieties. Picture indulging in cookies from a luxury hotel that are not only delectable but also healthier. Or consider a high-end afternoon tea where every buttery bite has been quietly upgraded with this mushroom magic.

Dr Chang Jinhui, Gail
常金輝博士
Research Assistant Professor,
Department of Food Science and Nutrition
食品科學及營養學系助理教授（研究）



Postprandial blood glucose response after consumption of cup noodles with or without AkkMore. Co-consumption of AkkMore significantly reduced blood glucose spikes following consumption.

In essence, wherever high fat content is present, there is potential for AkkMore to make a meaningful impact.

From baked goods and desserts to gelato and health supplements, this tiny mushroom strain is ready to revolutionize the food industry.

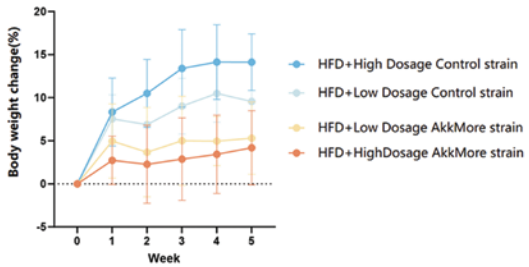
But how can mushrooms replace animal fat in the first place?

Here is a fun fact: animals store fat for energy, insulation, and protection. Mushrooms—containing less than 3% fat—need to perform the same functions. To achieve this, they have evolved a clever alternative: a structure composed of polysaccharides and water that mimics the texture and behaviour of fat. This is the natural mechanism we are harnessing.

Concerns regarding cost and taste—two primary considerations for consumers—are also addressed.

Encouragingly, only a small amount of AkkMore is needed to deliver results. Its use can even reduce the need for synthetic additives such as emulsifiers and thickeners. Regarding taste, blind taste tests show that 95% of participants are unable to distinguish between products made with AkkMore and their full-fat counterparts.

In summary, this innovative mushroom strain, AkkMore, represents a promising advancement in the pursuit of healthier, lower-fat foods—without compromising on taste or texture.



Effects of different mushroom strains on weight gain in mice fed a high-fat diet. AkkMore strain demonstrated significant reductions compared to other strains.

多年來，人們早已明白並非所有乳酪都有同樣功效。不同的乳酸菌菌株對健康的影響各異，它們當中有幫助消化的，亦有增強免疫的。然而，說到蘑菇，我們卻往往將之一概而論 — 無論是什麼品種、菌株，都只是一般有「蘑菇味」的食材。

直到我們決定對蘑菇進行更深入的探索。

為此，我們選取同一蘑菇品種的多個菌株，在相同條件下進行培養，並以相同的方式萃取。然後，我們將這些萃取物給予高脂飲食的實驗室老鼠進行餵食試驗。結果令人震驚：部分菌株能有效抑制肥胖，而有些卻令老鼠體重上升。

這是我們首次發現蘑菇也擁有屬於自己的「菌株身份證」。

在眾多菌株中，有一個菌株表現尤為突出。我們把它命名為AkkMore®，是我們的「明星菌株」。

在動物實驗中，食用AkkMore的高脂飲食老鼠，體重增加減少了53.8%、肝臟增重下降了94.5%、餐後血糖曲線下面積降低了26%，甚至焦慮行為指標亦減少了約 40%。

更令人驚喜的是，AkkMore完全以物理方式萃取，即是無添加任何化學物質，當中亦無基因改造。因此，它無須經歷漫長的新資源食品成份審批程序，即可投入生產。只需以AkkMore替代牛油或忌廉，即可製作出少脂、少卡路里的產品，同時保持原有的口感與風味。

那麼，如何可以將AkkMore融入現實生活中呢？

想像一下，在香港的一間你深愛的咖啡店裡，品嚐著一口雪糕，而它的脂肪含量竟比一般雪糕低80%；在高級酒店享用香濃可口的曲奇時，竟然會越吃越健康；又或在下午茶時，每一口牛油芳香撲鼻的甜品，加入了這些「蘑菇魔法」後，健康程度都能驟然升級。

簡而言之，凡是高脂之處，都可以讓AkkMore發揮到功效。

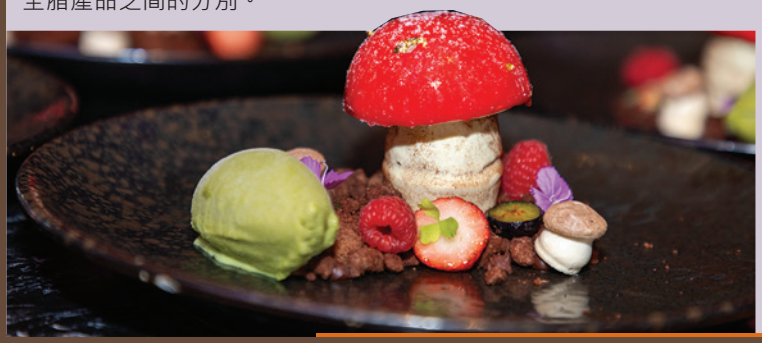
從烘焙食品到甜品、從茶飲到健康補充品，這株微小的蘑菇菌株，正準備為食品產業帶來全新的變革。

但蘑菇為何能取代動物脂肪？

事實上，動物儲存脂肪是為了獲取能量、保暖及保護身體；而蘑菇脂肪含量不足3%，卻同樣需要達成這些功能。於是，它們進化出一種聰明的替代方案：一種由多醣體與水分組成的結構，能模仿脂肪的質感與功能。 這正是我們所運用的天然奧秘。

至於成本與味道，這兩個消費者最關心的因素，答案同樣令人欣慰。

好消息是，我們發現只需極少量的AkkMore便能發揮出效果，甚至能減少對人工合成食品添加劑（如乳化劑與增稠劑）的依賴。至於味道，盲測結果亦顯示，95%的受試者分辨不出AkkMore產品與原版全脂產品之間的分別。



Promotions and New Appointments

Congratulations to the following academic members who have recently taken up new capacities in the Faculty of Science.

Promotions

From Associate Professor to **Professor**

Prof. Leung Chi-wah, Dennis
AP

Prof. Zhao Jiong
AP

From Assistant Professor to **Associate Professor**

Prof. Chua Song-lin
ABCT

Prof. Leung King-chi, Franco
ABCT

Prof. Wong Wing-leung
ABCT

Prof. Leng Kai, Kathy
AP

Prof. Li Mingjie
AP

Prof. Zhu Yuyan
FSN

*The above promotions are effective from 1 July 2025.

New Appointments

Prof. Liu Dongsheng
Chair Professor of Polymer Science and Chemical Biology, ABCT

Prof. Wang Lianzhou
Chair Professor of Energy Materials, ABCT

Prof. Xing Bengang
Chair Professor of Chemical Biology, ABCT

Prof. Tan Zhiwu
Assistant Professor
ABCT

Prof. Yu Han
Assistant Professor
ABCT

Prof. Yang Shengyuan
Professor
AP

Prof. Su Jie
Assistant Professor
AP

Prof. Xia Xiaodong
Associate Professor
FSN

Prof. Lu Xuanxuan
Assistant Professor
FSN

Dr Wu Mei Yi
Assistant Professor of Practice, FSN

Awards

Congratulations to the following faculty members on receiving outstanding awards and recognition both locally and internationally.

Faculty Awards for Outstanding Achievement 2025
2025年度理學院傑出成就獎

Individual Awards

Teaching: Early Career Teacher
Dr Wong Ho-yin, Marcus
Lecturer, FSN

Research and Scholarly Activities
Prof. Zhao Xin
Professor, ABCT

Research and Scholarly Activities: Early Career Researcher
Prof. Yin Jun
Assistant Professor, AP

Research Student Supervision
Prof. Tsang Yuen-hong, Peter
Professor, AP

Knowledge Transfer: Industry
Prof. Zheng Zijian
Chair Professor, ABCT

Knowledge Transfer: Industry
Prof. Lee Ming-yuen, Simon
Chair Professor, FSN

Knowledge Transfer: Society
Prof. Wong Ka-hing
Professor, FSN

Team Award - Teaching

Prof. Lee Kin-wah, Terence
Associate Head & Professor, ABCT

Prof. Wong Tsun-ting, Clarence
Assistant Professor, ABCT

Prof. Mu Quanhua
Assistant Professor, ABCT

Dr Cheung Ching-mei, Chartia
Lecturer, ABCT

Dr Yan Sau-woon, Clare
Lecturer, ABCT

Dr Wong Wai-ting
Instructor, ABCT

The Outstanding Alumni Award of PolyU Faculty of Science 2025
2025年傑出理大理學院校友獎

Outstanding Alumni Award in Scholarly Achievement
Prof. Lee Wang Fat
ABCT

Outstanding Young Alumni Award in Scholarly Achievement
Prof. Li Danfeng
AP

Muliawan Gregory Kenneth

– Doctor of Philosophy, Department of Applied Biology and Chemical Technology
– Graduate of BSc (Hons) in Applied Biology with Biotechnology

My academic journey at PolyU began with a BSc (Hons) in Applied Biology and Biotechnology, which provided me with a strong foundation in life sciences. This path has led me to my current pursuit as a PhD candidate under the supervision of Prof. Terence Lee, where my research focuses on elucidating the molecular mechanisms underlying therapeutic resistance in liver cancer, with the goal of identifying novel strategies to improve treatment outcomes for patients.

The vibrant research environment at PolyU—enriched by exceptional faculty members, comprehensive departmental resources, and the unwavering support of my supervisor and colleagues—has been instrumental in shaping my development as a researcher. I have had the privilege of presenting my work at major international conferences, including the AACR Annual Meeting in the United States and Liver Week in South Korea. These invaluable experiences have broadened my scientific perspective, refined my critical thinking, and strengthened my commitment to translating scientific discoveries into meaningful societal impact.

我的理大學習旅程始於應用生物兼生物科技（榮譽）理學士課程，為我對生命科學領域的研究奠定了堅實的基礎。這條學術之路帶領我成為李建華教授指導下的博士生，專注於研究肝癌治療抗藥性的分子機制，以尋找改善肝癌患者治療成效的新策略。

在這段歷程裡，充滿活力的研究環境、卓越的師資與學系資源，以及導師與同儕之間的支持，一切都是推動我前進的重要力量。我很榮幸地曾在多個重要國際會議上展示我的研究成果，包括美國癌症研究協會年會與韓國肝臟週。這些寶貴的經驗不僅持續拓寬了我的科學視野和提升了批判性思考能力，更激發了我將科研成果轉化為社會影響力的重大使命。

Zhu Qizheng 朱启正

– BSc (Hons) in Physics with a Secondary Major in Artificial Intelligence & Data Analytics (AIDA)

My journey at PolyU has been immensely rewarding. Through rigorous coursework and participation in research groups, I have grown both academically and personally. Under my professor's guidance, I developed a flexible mechanical sensor for robotics as part of a national physics competition. In addition, through the Undergraduate Research and Innovation Scheme (URIS), I integrated Density Functional Theory (DFT) with artificial intelligence to explore innovative material solutions. My academic exchange experience at the University of Science and Technology of China further honed my research skills and broadened my scientific perspective.

Beyond academics, I actively participated in the "Start-up Weekday" event co-organised by my department and the University of Macau, where I collaborated with business students to develop creative and practical innovation proposals. I also contributed to community service in Guizhou and served as Treasurer of the Departmental Student Association, helping to plan and organise a variety of student activities. These experiences strengthened my interdisciplinary mindset, teamwork, and leadership abilities, laying a solid foundation for my future development.

No regrets — my youth was truly well spent at PolyU.

Liu Yawen 刘雅文

– BSc (Hons) in Food Safety and Technology

The BSc (Hons) in Food Safety and Technology was the major reason I chose to study at PolyU. I was deeply drawn to the philosophy behind its core curriculum and eager to immerse myself in this meaningful and dynamic field. As I had hoped, the programme offered countless valuable opportunities for hands-on learning and real-world application in addressing food safety challenges. Although I faced difficulties when conducting experiments independently for the first time, these experiences ultimately deepened my understanding of microbiology and strengthened my confidence as a researcher.

Moreover, the professors and lecturers have always been exceptionally supportive, approachable, and willing to assist students—whether in academics or personal growth. Over the past four years, my hard work has been met with encouragement, guidance, and friendship. I am truly grateful to have learned from such dedicated mentors and to have shared this journey with inspiring peers. The memories I've made at PolyU will remain some of the most precious in my life.

Lastly, may we all find what we seek, and love what we have.

食品科技與食物安全（榮譽）理學士課程是我報考理大的主要理由。我被其核心課程的理念所深深吸引，渴望能在這個我充滿熱忱的領域裡深入學習。正如所願，這個課程為我提供了許多寶貴的實踐機會，讓我能親身體驗食品安全問題的解決過程。雖然在初次獨立完成實驗時我曾遇到挑戰，但正是這些經歷讓我對微生物學有了更深刻的理解與體會。

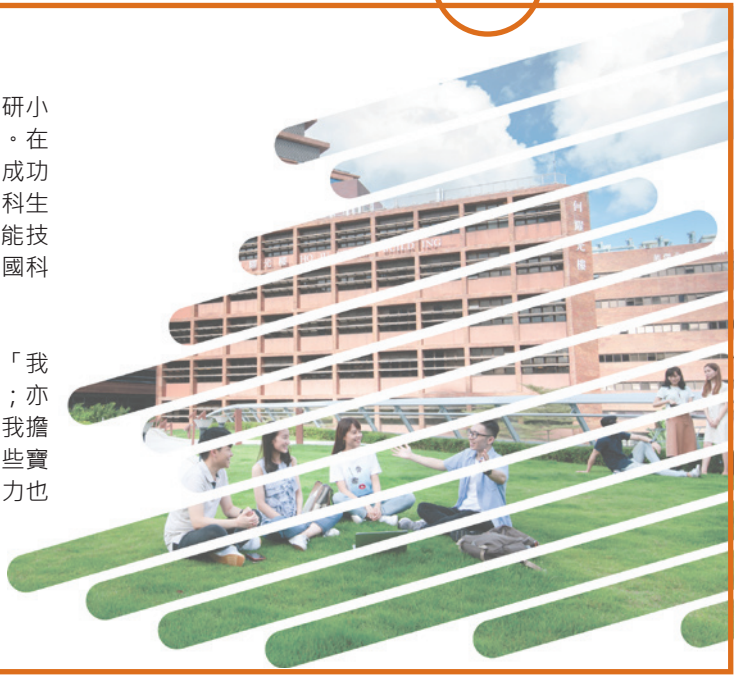
此外，理大的教授和講師都十分友善，他們樂於幫助在學業或個人方面遇到困難的學生。過去四年，我的努力得到了肯定，而他們的鼓勵亦成為了我前進的動力。我們之間亦師亦友，而作為學生，能在畢業時帶着如此珍貴的大學回憶離開理大，我感到無比幸運。

最後，願你我皆能尋得所求，亦愛所得。

理大的求學之旅讓我獲益良多。透過嚴謹周全的課業與科研小組的實踐，我在學術與個人成長方面都得到了重大的提升。在教授的悉心指導下，我參加了全國大學生物理實驗競賽，成功研製出可應用於機器人的柔性力學傳感器。此外，我在本科生科研計劃(URIS)中，將密度泛函理論(DFT)計算與人工智能技術兩者結合，以創新材料探索不同解決方案，並曾前往中國科學技術大學進行學術交流，進一步拓寬了科研視野。

在學術以外，我亦積極參與由學系與澳門大學共同舉辦的「我的初創時代」培訓營，與商科學生協作完成創新商業方案；亦身體力行履行社會責任，遠赴貴州參與義教服務。同時，我擔任了學系的學生會財務秘書，協助策劃多項學生活動。這些寶貴的經驗不僅培養了我的跨領域思維、團隊合作和領導能力也為未來的發展奠定了堅實的基礎。

我的青春，無悔於理大。



31st Congregation and Dean's Honours list 2024/25

第三十一屆畢業禮及2024/25年度院長嘉許名單

We would like to extend our heartfelt congratulations to our graduates at the 31st Congregation and the recipients of the Dean's Honours List 2024/25 for their outstanding academic achievement.

我們衷心祝賀第三十一屆畢業生和2024/25年度院長嘉許名單的得獎者取得的傑出學術成就。

Details of Dean's Honours List 2024/25
院長嘉許名單詳情

PolyU Science Creates Impact 理大科學 探理創新

Room TU502, Yip Kit Chuen Building, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

2766 5057 - 5059 2362 2578 fs.contact@polyu.edu.hk (Student) fs.info@polyu.edu.hk (General)

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