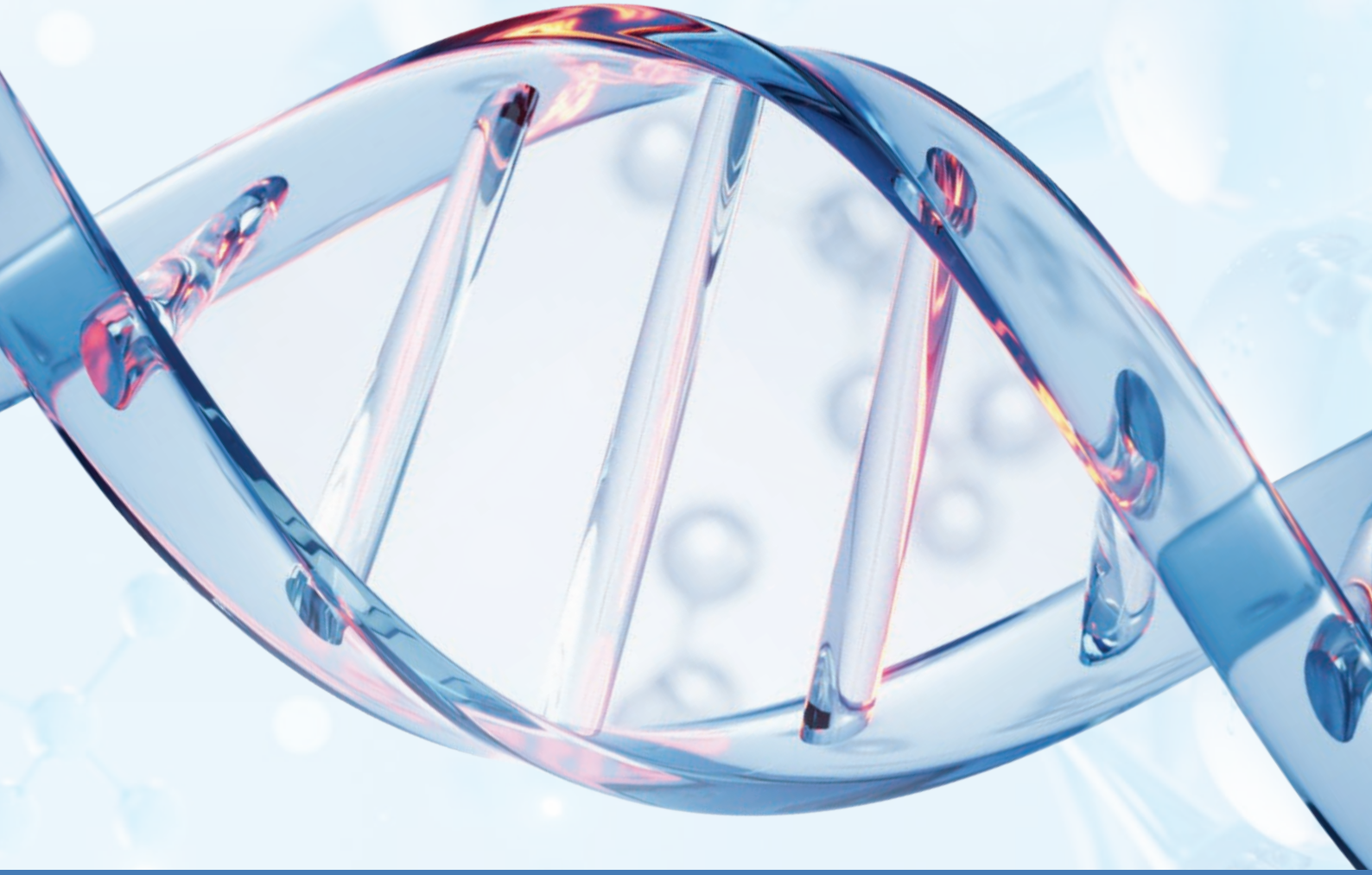
THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

Excel x Impact

Summer 2023

BREAKTHROUGH DISCOVERIES

PolyU Offers New Hope for Patients



New partnerships with the Mainland to foster I&T development

Significant research funding secured to advance sustainable development and mental healthcare in Hong Kong

PolyU impactful startups to commercialise medical devices for societal benefit

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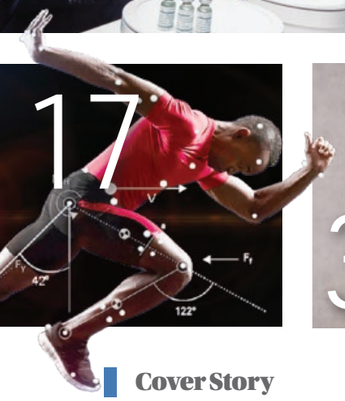


President's Message

The Hong Kong Polytechnic University (PolyU) is committed to leveraging its world-class academic and research excellence to develop innovative solutions for the betterment of society. Our research capabilities were once again recognised when, to our great pride, our researchers successfully received major grants totalling around HK$137 million from the Research Grants Council's Theme-based Research Scheme and the Strategic Topics Grant recently. The awarded projects will lead to research breakthroughs in sustainable development and mental healthcare.

In a broader context, the University is striving to establish translational research institutes across various Mainland cities. Our aim is to conduct research and development work that not only has a significant impact, but also facilitates the transfer of knowledge to meet the industrial and societal needs of each city. Such efforts will also augment Hong Kong's status as an international innovation and technology hub and contribute to the Nation's development.

Last but not least, to make our students better independent learners who are able to adapt to a tech-driven world, we have plans to enhance our education by incorporating generative AI, flipped classrooms and other innovative pedagogies, nurturing a new generation of graduates who will be better prepared for success in a society that will change much faster than before due to the rise of AI.

Through all of the above initiatives, we are demonstrating our commitment to being an innovative world-class university that directly benefits society..

Jin-Guang Teng
President

The Hong Kong Polytechnic University
香港理工大學

BREAKTHROUGH DISCOVERIES

at PolyU Offer New Hope for Patients

As humans continue to fight against numerous diseases, not the least of which is the latest COVID-19 pandemic, of huge concern to scientists are the health risks posed by obesity, linked to such chronic conditions as diabetes, heart disease, high blood pressure, and cancer, and the overuse of antibiotics, which can trigger antibiotic resistance and even the creation of "superbugs". There are reports of the emergence of "superbugs" which do not respond to all currently available antibiotics.

Fortunately, after years of dedicated efforts, PolyU research teams have made significant breakthroughs in addressing the above risks.

ABarginase, a new drug curing multiple obesity-related diseases

Nowadays, patients often have to take multiple medications for treating various metabolic diseases related to obesity and insulin resistance. Researchers from PolyU and The Chinese University of Hong Kong (CUHK) have jointly made a ground-breaking drug discovery that opens the door for safe, long-lasting cures for multiple obesity-related diseases through an ingenious process – arginine starvation.

Who are the masterminds?

Always aspiring to bring new hope to patients with obesity-related metabolic diseases, Professor Thomas Leung Yun-chung of PolyU joined with Professor Alisa Shum Sau-wun of CUHK to develop ABarginase. It is the world's first therapy providing safe and effective treatment via arginine starvation for multiple metabolic diseases related to obesity and insulin resistance like prediabetes, type 2 diabetes and more importantly, non-alcoholic fatty liver disease for which there is no FDA-approved drug.

Prof. Leung of PolyU (left) and Prof. Shum of CUHK (right) introduced the 3D molecular models of ABarginase, albumin and FcRn receptor on a cell surface.

> As scientists, we dream of building a better world. The successful development of ABarginase is an important step towards realising our dream.
>
> **Professor Leung and Professor Shum**

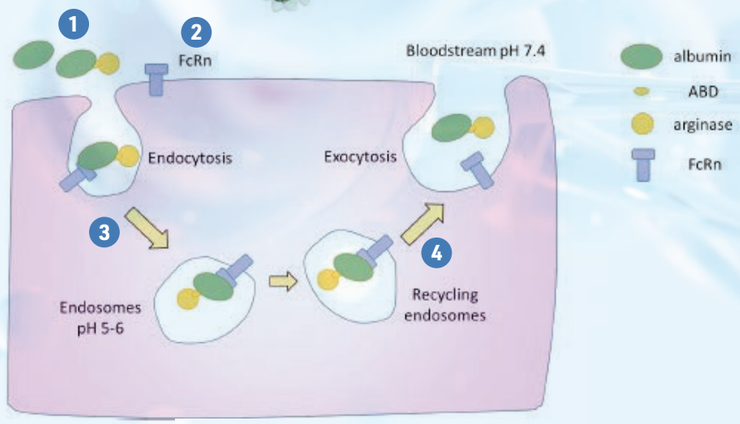
Professor Thomas Leung Yun-chung

- Director of University Research Facility in Life Sciences
- Lo Ka Chung Charitable Foundation Professor in Pharmaceutical Sciences
- Professor of the Department of Applied Biology and Chemical Technology

Professor Alisa Shum Sau-wun

- Associate Professor, School of Biomedical Sciences, Faculty of Medicine, CUHK

■ *The name ABarginase comes from Albumin-Binding Arginase.*



■ *In the blood stream, ❶ ABarginase's albumin-binding domain (ABD) attaches to albumin, ❷ which then binds to the neonatal Fc receptor (FcRn) on the cell surface, ❸ allowing the drug to enter the cell. Taking advantage of the natural recycling mechanism of FcRn, ❹ the drug will be released back to the blood stream. In this way, the drug can circulate through the blood stream, and its circulatory half-life is considerably prolonged.*

How does ABarginase work?

The PolyU-CUHK research team discovered that a low level of arginine (a semi-essential amino acid) in the blood can suppress fat synthesis, promote fat breakdown and sensitise cells to insulin. Based on the discovery, the team developed ABarginase, a long-lasting recombinant human arginase.

ABarginase contains an albumin-binding domain, attaching it to the stable and abundant albumin in the blood stream to extend its circulatory half-life by about 200 folds compared to native arginase. It exhibits strong catabolic activity and only requires once-weekly dosing to maintain circulating arginine at a low level to achieve arginine starvation.

What sets ABarginase apart?

Using an advanced fusion protein strategy, the team engineered ABarginase in an inexpensive and highly efficient fabrication process, making it cost-effective in production. As a result, it allows a lower selling price and potentially benefits many people. The new drug is long-acting and develops no drug resistance, thus safe for long-term use and widely adoptable for clinical applications.

What's next?

Patent applications for this invention have been filed in multiple countries. The research team is now scaling up the production of ABarginase at Good Manufacturing Practices (GMP) grade in preparation for conducting clinical trials.

PolyU scientists found new ways to treat Klebsiella pneumoniae strains

The World Health Organization has repeatedly warned that the emergence and spread of multidrug-resistant "superbugs" could lead to the next wave of public health disasters. Among the known superbugs, Klebsiella pneumoniae is considered one of the most dangerous, as evolution of this organism has generated strains that are not only multidrug-resistant, but also hypervirulent. Such strains (CR-HvKP) were found to be able to cause potentially fatal infections with few treatment options, even among healthy people.

The PolyU research team which discovered CR-HvKP in 2017 has recently identified two promising therapeutic options that may be used alone or in combination to combat the growing threat of this superbug. Clinical trials to validate the findings will be conducted soon.

Who is the mastermind?

In 2017, the research team led by Professor Chen Sheng, discovered a multidrug-resistant and hypervirulent Klebsiella pneumoniae strain (CR-HvKP) through analysis of clinical samples of a patient in China. The patient eventually died of CR-HvKP infection. Subsequent studies in China showed a sharp increase in CR-HvKP infection in recent years, with a 25-45% mortality rate. Medical experts worldwide have classified CR-HvKP as an urgent threat to human health.

Five years since the discovery of the CR-HvKP strain, Professor Chen's team has made significant breakthroughs in their efforts to delineate the pathogenic mechanism of CR-HvKP. It was found that CR-HvKP produced virulence factors that triggered a strong inflammatory response in the host during the process of infection and that such inflammatory reactions could cause widespread tissue damage and septic shock in the host, resulting in an extremely high death rate.

■ *A research team led by Prof. Chen identified two promising therapeutic options that may be used to combat the growing threat of Klebsiella pneumoniae.*

Professor Chen Sheng

- Head of Department of Food Science and Nutrition
- Chair Professor of Microbiology
- Member of State Key Laboratory of Chemical Biology and Drug Discovery

How to fight the superbug?

Professor Chen's team devised two novel approaches for the treatment of CR-HvKP. The first involves the use of Acetylsalicylic acid (ASA), commonly known as Aspirin, to suppress the infiltration of inflammatory cells into the lungs and drastically reduce cytokine production in patients infected with CR-HvKP, thereby decreasing the likelihood of septic shock in the host.

Although ASA can protect patients against septic shock during CR-HvKP infection, this compound cannot eradicate the pathogen. The team then adopted a "drug repurposing" approach, involving the screening of drugs approved for the treatment of other illnesses, in order to identify those which can also be used as antimicrobial agent. The advantage of drug-repurposing is that effective and ready-to-use antimicrobial agents can be identified without having to go through a lengthy drug development and approval process.

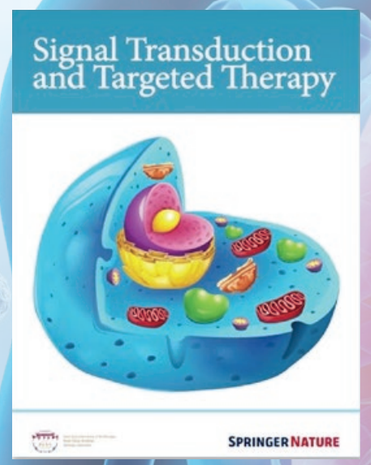
The team eventually found that zidovudine, an anti-Human Immunodeficiency Virus (HIV) agent, could act synergistically with the antibiotic rifampicin to eradicate CR-HvKP. Doctors may therefore use a combination of zidovudine and rifampicin alongside immunosuppressants to treat critically ill CR-HvKP infection patients.

What's next?

This is the first time immunosuppressants have been reported to be useful for treating CR-HvKP infection, and the use of immunosuppressants together with zidovudine and rifampicin can further enhance treatment effectiveness. Such discovery provides an important insight into the development of new approaches for clinical management of diseases caused by Klebsiella pneumoniae, and possibly other microbial pathogens. Professor Chen said his team plans to validate the results in clinical trials soon and believes the research will significantly reduce the mortality rate of CR-HvKP-infected patients.

The research findings were featured in two publications, namely *Signal Transduction and Targeted Therapy* under *Nature* and *Journal of Infection*. The research was supported by the Research Grant Council's Theme-Based Research Scheme and Research Impact Fund. The related studies were also backed by the State Key Laboratory of Chemical Biology and Drug Discovery of PolyU. Part of the research was conducted at the City University of Hong Kong (CityU) in collaboration with a CityU researcher.

Their findings are published in two prestigious journals: Signal Transduction and Targeted Therapy under Nature and Journal of Infection.



YIRA2023

PolyU Recognises SIX YOUNG RESEARCHERS with the YOUNG INNOVATIVE RESEARCHER AWARD

The young generation is spearheading a new wave of innovations and technologies, as a growing force that will also change our perception of the future society. With the aim of encouraging and nurturing young scholars, PolyU held its first Young Innovative Researcher Award (YIRA) in 2022. In 2023, we honoured six outstanding young researchers with the YIRA Award as a tribute to their exceptional efforts and passion for scientific research.

The six young researchers are dedicated to scientific exploration to advance technology. Their innovative mindsets have expanded the research horizons in various fields, including renewable green energy, wearable medical rehabilitation devices, nanotechnology, soft materials in aid of visually impaired individuals, human-machine collaborative manufacturing system and information networks.

The results of their research contribute to building a sustainable future and improving people's lives, demonstrating PolyU's academic and research excellence in effectively meeting societal demands and implementing practical solutions.

"Their remarkable work showcases novelty, contributes to technological advancements, and drives transformational innovation towards solutions for addressing societal problems, with a vision for a positive future. I would like to take this opportunity to extend my heartfelt congratulations to our exceptional awardees and express my pride in having them as valued members of the PolyU community." Professor Christopher Chao, PolyU Vice President (Research and Innovation), said.

Since its inception in 2022, the YIRA for PolyU researchers under the age of 35 has received exceptional submissions and become a platform for innovators to showcase their talents.

YIRA 2023 Panel Committee

Professor Christopher Chao, Vice President (Research and Innovation)
Professor Christina Wong, Director of Research and Innovation
Professor Fu Xiaowen, Professor and Head of the Department of Industrial and Systems Engineering
Professor Sylvia Chen, Associate Dean of the Faculty of Health and Social Science
Professor Chai Yang, Associate Dean of the Faculty of Science

We are thrilled to contribute to a cleaner world through solar energy. Our explorations will pave the way for a sustainable future.

This project aims to improve the lifespan and efficiency of perovskite solar cells by revealing the microscopic mechanisms that cause perovskite solar cell performance degradation in the working environment. The research results are expected to equip the industry with the necessary experience for promoting the practical application of perovskite solar cells.

Dr Cai Songhua

Assistant Professor
Department of Applied Physics

Research Focus: Towards next-generation halide perovskites: in situ STEM characterizations assisted structure engineering

To help individuals with visual impairment interact with digital devices and the digital world more easily, this project aims to develop a novel touch feedback technology on soft materials that can generate various touch sensations. Advanced haptic technologies and artificial intelligence algorithms will be combined to create a more efficient and user-friendly experience.

Dr Ma Yuan

Assistant Professor
Department of Mechanical Engineering

Research Focus: Flexible surface haptics technology for aiding the visually impaired population

Driven by the potential of surface haptic technology to revolutionise human-machine interactions, I am committed to advancing this field by developing a cost-effective haptic feedback system, specifically designed to aid the visually impaired.

The project focuses on developing a lightweight, wearable, easy-to-use medical-grade rehabilitation robotic exoskeleton. The system is designed to detect the movement intent of users and provide adaptive assistive force to empower joint movement. Regular use during rehabilitation training can aid reorganising the brain cortex and recovery of mobility. Dr Heung is the co-founder of Fleming MedLab, which was named in "Forbes Asia 100 to Watch 2023".

Dr Kelvin Heung Ho-lam

Research Assistant Professor
Department of Building and Real Estate

Research Focus: Robot-assisted recovery system for survivors with stroke

Our wearable robotics help patients with daily activities, aiming to help restore their mobility and independence. We aim to significantly impact the lives of stroke patients and their families, providing hope and a path to a better quality of life.

I am extremely grateful for the enormous support received from the university, faculty, and department for developing my research. In the future, I hope to make further contributions in 6G.

With the rise of mobile data traffic and the emergence of mobile applications like virtual reality, this research focuses on intelligent reflecting surfaces (IRS) as a pivotal technology to achieve high data rates in 6G wireless communication networks. This project also aims to devise efficient IRS phase shift optimisation algorithms, thereby approaching the data rate limits of IRS-aided 6G networks in practice.

Dr Zhang Shuowen

Assistant Professor
Department of Electrical and Electronic Engineering

Research project: Smart and reconfigurable 6G wireless networks aided by intelligent reflecting surface

Currently, my team focuses on wafer scale growth of hybrid 2D perovskite monolayers and their large-scale device integration. The achievement of large-scale growth will enable our grand-scale application.

A set of nanotechnology tools and methods has been developed for the molecularly thin 2D hybrid perovskite, including preparation, materials transfer, atomic characterization, and nano-device fabrication. Her team currently focuses on achieving scalable growth for hybrid 2D perovskite monolayers and their integration into large-scale devices, to further enable the realisation of their grand-scale applications.

Dr Kathy Leng Kai

Assistant Professor
Department of Applied Physics

Research Focus: Scalable growth of 2D hybrid perovskite film

This project aims to establish a holistic human-machine symbiotic manufacturing environment by exploring manufacturing system technologies, immersive human-robot interaction mechanisms and robot learning methods. The environment will enable humans and machines/ robotics to more effectively and efficiently co-exist, collaborate and evolve together through improved collaborative intelligence.

Ir Dr Zheng Pai

Assistant Professor
Department of Industrial and Systems Engineering

Research project: Towards futuristic human-machine symbiotic manufacturing system

Being selected as one of the YIRA awardees is a great honour to me and our RAIDS team. I will dedicate to the futuristic human-machine symbiotic manufacturing systems/technologies development.

> Our objectives in the next few years are to consolidate our undergraduate programmes and provide more interdisciplinary choices for PolyU students.

SIMULTANEOUS PURSUIT:

Advancing Technology and Nurturing Student Wellness

Associate Vice President (Undergraduate Programme) Professor Daniel T. L. Shek

Professor Shek is an accomplished psychologist with over 30 years of experience teaching social work at undergraduate and postgraduate levels. Throughout his impressive career, he has made significant contributions to positive youth development. As the PolyU Associate Vice President (Undergraduate Programme) for a decade, he has been devoted to developing Service-Learning with a view to nurturing well-rounded students. To date, the University has attained two UGC Teaching Awards from the University Grants Committee, a Teaching and Learning Strategy Award from Times Higher Education Awards Asia, and several QS Reimagine Education Awards, commonly regarded as the "Oscars in Education".

As someone who has always been passionate about teaching, we would like to have your insights in your role as Vice President (Undergraduate Programme) into the University's future development of undergraduate programmes e.g., objectives, strategies and initiatives.

The world is changing rapidly and there are many new developments in teaching and learning, such as the use of artificial intelligence and augmented and virtual reality. Hence, the Undergraduate Programme, particularly the General University Requirements (GUR), strives to provide a holistic education to PolyU students that is responsive to such changes. Our objectives in the next few years are to consolidate the undergraduate programmes and to provide more interdisciplinary choices for PolyU students. Additionally, more non-local learning opportunities through credit-bearing Service-Learning (SL) and Cluster-Area Requirements (CAR) subjects will be provided.

In 2027/28, 60% of the non-local learning opportunities for undergraduate students will be provided by SL and CAR subjects. Responding to technological advances, we will develop more online teaching and learning initiatives for undergraduate students. Responsive policies and appropriate use of generative AI tools within PolyU will also be sharpened.

In what ways does PolyU education stand out and differentiate itself from that of other universities?

Starting from the 2012/13 academic year, we expanded the GUR to 30 credits. Our GUR has some distinct features. As undergraduate students are leaders of tomorrow and there is a strong need for nurturing 21st-century skills among university students, we have a Leadership Education and Development graduation requirement. We are also the first university in Hong Kong making SL a graduation requirement for all undergraduate students and PolyU has become a centre of SL excellence in Asia.

PolyU places strong emphasis on the importance of evaluation, particularly for SL and Leadership subjects, and our Leadership and SL programmes are well-recognised in the professional and international communities.

As Chair Professor of Applied Social Sciences, and Li and Fung Endowed Professor in Service Leadership Education, could you share some of your recent projects and research expertise with us?

During the three years of COVID-19, I conducted several cross-sectional and longitudinal studies in Mainland China and Hong Kong to better understand the mental health of students, predictors of student mental health, and the effectiveness of online teaching and learning. The studies yielded several interesting findings. First, student mental health problems were prevalent during the pandemic. Second, financial difficulty and COVID-19 related stressors were significant predictors of student mental health during this period. Third, positive psychological attributes such as resilience, emotional competence and life meaning can buffer the negative impact of pandemic stress on student mental health. Fourth, leadership education was able to help promote student well-being during the pandemic. Finally, online Service-Learning is an effective means of promoting leadership, as well as the well-being of service providers and service recipients.

Besides the COVID-related studies, I have collaborated with Dr Janet Leung in the Department of Applied Social Sciences on a project on family resilience in Hong Kong, and with Dr Grace Ngai in the Department of Computing to promote Service-Learning in Hong Kong high schools.

You are a psychologist with research interests in positive youth development, family process, quality of life and spirituality. What are your suggestions for achieving mental wellness?

Some time ago, I was invited by the Positive Education Division of International Positive Psychology Association to share my thoughts on this question. I have outlined "Seven Wisdoms about Life".

Seven Wisdoms About Life

1. Everybody can thrive (and shine)
2. Focus on "being" instead of "ranking"
3. Men shall not live by bread alone – spiritual values are the cornerstones of human existence
4. Look at the bright side of adversity
5. Appreciate oneself, others and life
6. Nurture one's competence, character and care (3Cs)
7. Serve to learn and learn to serve

What advice would you give to young people?

The Confucian notion of "self-cultivation" is the key to a fulfilled life: nurture one's values and virtues; find meaning in life; acquire a moral compass that distinguishes "right" from "wrong"; do the "right" things instead of simply doing things "right"; Before asking "what can I do?" ask the question "who am I?"

Do you have a motto that you live by?

Always have faith (upholding cardinal beliefs), hope (maintaining a positive outlook) and love (caring for others) in life.

What are your hobbies?

In my spare time, I enjoy playing guitar and singing hymns and folk songs. I also regularly hike and I used to play table tennis.

HK$13 million granted to undergraduates via the Undergraduate Research and Innovation Scheme

In response to the government's initiative to develop Hong Kong into an international innovation and technology hub, PolyU launched the Undergraduate Research and Innovation Scheme (URIS) in the 2021/22 academic year to cultivate academic curiosity and enquiry-based learning among undergraduate students. Since the launch of the scheme, the University has granted more than HK$13 million to more than 410 undergraduate researchers to conduct over 280 research projects.

Offering prestigious support and opportunities
URIS offers an important opportunity for students to develop higher-order thinking skills, such as logical, creative, and critical thinking. The experience and skills students acquire through their research also help broaden their future academic and career horizons.

Under URIS, each approved participant can receive opportunities and funding to undertake individual or group scientific research projects. The support includes:

- Scholarships and project grants of up to HK$50,000
- With priority admission to the College of Undergraduate Researchers and Innovators Residential College (CURI RC) at the Homantin Student Hall
- One-to-one guidance and supervision from experienced academic staff
- Integrated research training on enquiry-based learning, research competence, and research dissemination
- Research workshops and seminars, including the annual PolyU Research Student Conference
- Global exposure and networking events

Starting from the 2023/24 academic year, URIS will extend its support by offering sponsorships of up to HK$65,000 for students to gain research and learning experience overseas.

at least HK$13 million granted since 2021/22

more than 410 undergraduate researchers awarded scholarships and grants

over 280 research projects approved

Let's hear what the URIS students say:

Encouraged to contribute to research
Ada Lam, a URIS participant studying applied social sciences at PolyU, said the scheme provided one-to-one supervision and has refined her skillsets in data management and individual research. "Research is interesting because it is nothing like traditional learning." She felt encouraged when her research was published in an academic journal. She became more passionate about using scientific methods to solve real-life problems and benefiting the wider community.

Vision broadened
"URIS provides an opportunity for us to study interdisciplinary subjects and keep up with the latest technology. The University Pitch Competition in 2022 also provided valuable exposure to us."

Network grown
"URIS offers me a chance to live in the CURI RC specially designed for undergraduate research students. I made new friends doing research and joined organised activities together."

Skillsets strengthened
"I learnt valuable experiences in critical thinking, time management and collaboration skills for successful research projects and career development."

Research goals realised
"I learnt how to be a researcher through URIS. My research paved the way for industry and academia to innovate together. Now I am more determined and passionate to achieve my research goals."

Faculty of Business collaborates with Web3 partners to provide real-world experience

PolyU topped the list of 240 universities worldwide in the "Best Universities for Blockchain" listed by CoinDesk in 2022, recognising the University's efforts in fostering blockchain technology education and research.

Staying at the forefront of business education, the Faculty of Business currently offers several programmes and courses that incorporate Web3 into the curriculum, such as the Master of Science in Business Analytics programme, and the Master of Science in Accounting and Finance Analytics programme.

The Faculty of Business recently held an event, "Link Web3 to PolyU", jointly with industry-leading Web3 partners: Chainlink, BNB Chain, and Moonbeam, for students to better understood how data is transferred from real life to the blockchain with the trust mechanism. Students not only knew more about the blockchain-related innovations in the market, as well as building the Web3 world with the necessary tools. The faculty will further explore collaboration opportunities with Web3 companies to enhance the curriculum.

Students learned about Web3 and blockchain technology in the event "Link Web3 to PolyU" held by the Faculty of Business in April.

Four students awarded Innovation and Technology Scholarship

PolyU places great emphasis on nurturing students' technology literacy and innovative mindset. By launching initiatives such as the Artificial Intelligence and Data Analytics course as an undergraduate requisite and the Undergraduate Research and Innovation Scheme, the University has created a positive atmosphere and a supportive environment to boost students' interest and competence in innovation and technology (I&T).

With a strong passion for I&T and outstanding academic achievements, four PolyU students have recently been awarded the Innovation and Technology Scholarship 2023 jointly offered by the Innovation and Technology Commission, HSBC, and The Hong Kong Federation of Youth Groups. They are:

- Kwok Hin-chi, Bachelor of Science (Hons) in Enterprise Engineering with Management
- So Cheuk-yin, Bachelor of Science (Hons) in Medical Laboratory Science
- Killian Tang, Bachelor of Science (Hons) in Nursing
- Wong Sze-lam, Bachelor of Sciences (Hons) in Property Management.

Congratulations!

So Cheuk-yin (sixth from right), Killian Tang (centre), and Wong Sze-lam (sixth from left) received the Scholarship, as well as congratulations from Prof. Ben Young, Vice President (Student and Global Affairs) (fifth from right) and other PolyU academics.

Tripartite exchange programme to promote Chinese culture

The Research Centre for Chinese History and Culture (RCCHC) at PolyU collaborated with Tsinghua University and the University of Macau to host an academic and cultural exchange programme, aimed at promoting Chinese culture to teachers and students from Hong Kong, Beijing, and Macau. 70 teachers and students from the three universities gathered in Hong Kong to participate in the five-day programme, including lectures and excursions.

Partners with Tsinghua and the University of Macau
PolyU was honoured to receive strong support from Tsinghua University's Rixin College and School of Humanities, and the University of Macau's Faculty of Social Sciences and Faculty of Arts and Humanities. Renowned scholars from the three universities shared their knowledge and insights on modern Chinese history and culture through lectures and seminars.

The exchange programme served as an important platform for students to explore modern Chinese history and new perspectives on traditional Chinese culture, as well as deepen professional learning in the context of national development. Apart from attending lectures, participating students were required to write a paper of at least 3,000 words on a selected topic related to modern Chinese culture and history and the global relationship of China. They then presented their reports for discussion with instructors and peers.

Prof. Zhong Wei-min, Director of the Institute of Humanities, Head of the Department of History, Tsinghua University

Prof. Lin Shao-yang, Distinguished Professor of the Department of History, University of Macau

Dr Chen Bin, Research Assistant Professor, Department of Chinese History and Culture, PolyU

The Research Centre for Chinese History and Culture (RCCHC) held the plaque unveiling ceremony in June, officiated by members of PolyU: (from left) Prof. Wing-tak Wong, Deputy President and Provost, Dr Lam Tai-fai, Council Chairman and Advisory Committee Chairman of RCCHC, Prof. Jin-Guang Teng, President, and Prof. Li Ping, Dean of the Faculty of Humanities.

Excursions to local heritage and landmarks
RCCHC also arranged excursions to visit cultural sites in Hong Kong, such as the Sheung Wan Heritage Trail, West Kowloon Cultural District, Hong Kong Palace Museum, Tai Kwun, and The Peak. These visits gave the participants a first-hand experience of Hong Kong's modern historical and cultural developments.

This exchange programme was the inaugural event organised by RCCHC, established in January this year. The centre held the plaque unveiling ceremony in June.

SHTM's Global Hospitality Business programme won THE's International Strategy of the Year award

PolyU's tripartite Master of Science in Global Hospitality Business programme, won the International Strategy of the Year award at the Times Higher Education (THE) Awards Asia 2023, out of the 700 submissions from 16 countries and territories. The award acknowledges the programme's effectiveness in offering students a global perspective and helping them develop essential future-oriented management skills.

Launched in 2015, the Master's programme features a one-of-a-kind collaboration among three world-leading institutions - EHL Hospitality Business School, Switzerland, Conrad N. Hilton College of Global Hospitality Leadership at the University of Houston, USA and the School of Hotel and Tourism Management at PolyU. The programme aims to enable international graduates to meet the intellectual and practical challenges of managing dynamic careers in the global hospitality sector.

Ranked No. 1 in the world in the "Hospitality and Tourism Management" category in ShanghaiRanking's Global Ranking of Academic Subjects 2022 for the sixth consecutive year, PolyU's SHTM has been providing high quality education and research in hospitality and tourism for over 40 years, offering programmes at levels ranging from PhD to undergraduate qualifications to more than 1,400 students per year.

Scan the QR code to learn more about SHTM's Master of Science in Global Hospitality Business:

Establishment of the Department of Food Science and Nutrition

Department of Food Science and Nutrition
食品科學及營養學系

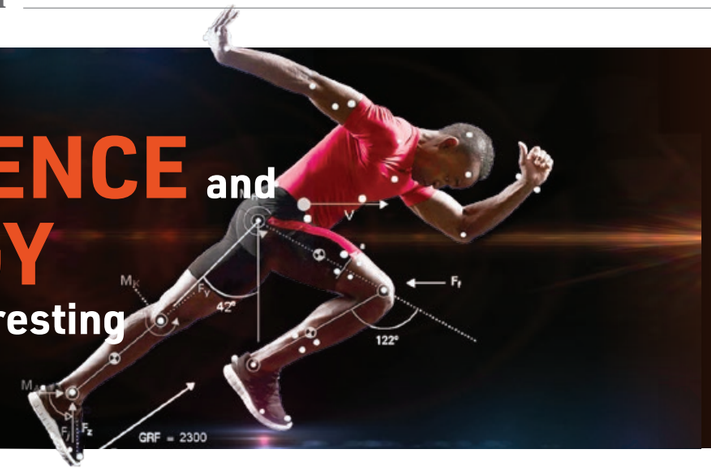
PolyU established the Department of Food Science and Nutrition (FSN), the first academic department specialising in food science and nutrition funded by the University Grants Committee, to nurture food specialists and promote innovative and sustainable development.

FSN's opening ceremony was held at PolyU in mid-July, and attended by 300 guests, including government officials, community leaders, industry partners, and staff. An International Conference on Food and Human Health was also held in celebration of the inauguration of the department.

Under the Faculty of Science, FSN is dedicated to providing professionally crafted training to nurture food specialists based on four key pillars: food safety, food technology, human nutrition, and Chinese medicine. It also focuses on addressing health-related issues and pursuing impactful research to promote innovative and sustainable development that benefits the world and humanity. FSN will work closely with the Research Institute for Future Food (RiFood) and the Research Centre for Chinese Medicine Innovation (RCMI) to provide interdisciplinary solutions for major societal challenges.

Miss Vivian Lau Lee-kwan, Permanent Secretary for Environment and Ecology Bureau (Food Branch) of the HKSAR (third from right), officiated the launch of the Department of Food Science and Nutrition (FSN), along with Prof. Raymond Wong, Dean of Faculty of Science (first from right), Prof. Chen Sheng, Head of FSN (first from left), Dr Lam Tai-fai, Council Chairman (third from left) and members from the central management team.

Research on SPORTS SCIENCE and TECHNOLOGY to make sports safe, interesting and rewarding for all



PolyU has the range of critical expertise needed for a world-class sports engineering platform, including knowledge in musculoskeletal biomechanics, sports rehabilitation, health science, engineering and design, as well as textiles and clothing.

Ir Professor Zhang Ming,
Director of RISports and Head of
the Department of Biomedical Engineering

Sports have the ability to transcend boundaries and improve human health and well-being, but with the help of science and technology, the impact of sports can be even greater. Sports science and technology not only help optimise athletes' performance in competitions while mitigating the risk of injury, but also address major concerns of public health as well as enabling all people to engage in sports.

Drawing upon its interdisciplinary expertise to support sports development, PolyU established the Research Institute for Sports Science and Technology (RISports) as a constituent research unit of the PolyU Academy for Interdisciplinary Research (PAIR) in June 2022.

A growing need for R&D in sports science and technology

The sports development in Hong Kong and Mainland China calls for a research institute focusing on sports science and technology. The governments have escalated support and promotion for elite as well as public sports, creating new opportunities in the sports sector and industry. While people are paying more attention to health and wellness, achievements in international games by elite athletes have further injected impetus into the popularity of sports in society. The growing consumer needs and expectations for sports experience, together with competitions within the sports product industry have contributed to emerging interests and investments in research and innovation of sports products.

Four research areas

PolyU has the range of critical expertise needed for a world-class sports engineering platform, including knowledge in musculoskeletal biomechanics, sports rehabilitation, health science, engineering and design, as well as textiles and clothing. To address emerging needs in sports research and technology, RISports will collaborate with sports institutes, sporting goods companies, government bodies and non-government organisations in Hong Kong and beyond to provide novel scientific and engineering solutions to the sports world.

RISports's research areas include:

- Sports biomechanics and human-product interaction
- Sports product design, materials and manufacturing
- Sports measurement, feedback and instrumentation
- Sports training and rehabilitation

Its research efforts will be geared towards four main directions:

- Sports-related products, services, and solutions tailored to different groups of people, such as elite athletes, persons with special needs, and the ageing population
- Innovative sportswear, equipment, and solutions for a better sports experience
- Training and rehabilitation efficacy enhancements
- Promotion of sports engagement and sports safety

Ir Professor Zhang Ming, Director of RISports and Head of the Department of Biomedical Engineering, says, "We have a truly dedicated interdisciplinary research team covering advanced, smart and sustainable materials; manufacturing technique and process; engineering; and human performance and related biomedical measurements and instrumentation."

Pushing the frontiers of sports science

Professor Zhang's committed efforts exemplify RISports' dedication to research excellence. He has spent 25 years working on the development of a biomechanical platform integrating experimental studies with computational simulations for the understanding of the human musculoskeletal system and its support effects. His research on the body-support interface during sports and exercises can provide fundamental knowledge in body biomechanics to the field of sports science and technology.

"Our computational simulation, using both a musculoskeletal model and a finite element model, can give a clear picture of the biomechanical performance of the foot and ankle and provide useful information for surgical intervention and shoe and orthosis design," Professor Zhang explains. "This is a useful platform for understanding load transfer inside the body."

By combining in-depth knowledge of sports and exercise performance, innovative ideas and advanced solutions, RISports helps challenge the status quo of existing technologies and the limits of human performance, aiming to create a new level of sports experience to promote a high-quality and healthy lifestyle for all.

RISports inaugurated

Recently, RISports held its special inauguration ceremony on campus, attracting the participation of more than 200 PolyU staff, students, alumni, athletes, industry partners and friends. They were joined by Mr Wong Kam-po, Hong Kong's 2007 Union Cycliste Internationale (UCI) track cycling world champion.

At the Ceremony, Mr Wong was appointed as a sports ambassador of RISports to promote scientific and technological studies in sports. He also shared with the audience some of his memorable moments as an athlete as well as the joy of doing sports.

Mr Wong Kam-po, former Hong Kong Olympic racing cyclist (fourth from left), was invited to officiate at the launch ceremony of RISports together with Prof. Wong Kwok-yin, Vice President (Education) of PolyU (fourth from right); Prof. Chen Qingyan, Director of the PolyU Academy for Interdisciplinary Research (PAIR) (third from right); Ir Prof. Zhang Ming, Director of RISports (third from left); Prof. Lilly Li, Associate Director of PAIR (second from right); and Associate Directors of RISports including Prof. Fan Jintu (second from left), Prof. Amy Fu (first from left) and Ir Prof. Wen Chih-yung (first from right).

PAIR Conference to promote interdisciplinary research excellence

■ *(Front row) Dr Lam Tai-fai, PolyU Council Chairman (third from left); Prof. Jin-Guang Teng, President of PolyU (second from right); Prof. Christopher Chao, Vice President (Research and Innovation) (second from left); Prof. Wang Zuankai, Associate Vice President (Research and Innovation) (first from right); Prof. Chen Qingyan, Director of PAIR (first from left), and Prof. Yan Nieng, Founding President of the Shenzhen Medical Academy of Research and Translation (third from right); attended the opening ceremony of the PAIR Conference. They were joined by PAIR's International Advisory Committee and Management Committee members.*

PolyU inaugurated the PolyU Academy for Interdisciplinary Research (PAIR) Conference, the first and largest interdisciplinary research and development conference in Hong Kong, in May. Around 100 internationally renowned experts shared their knowledge and insights with over 2,500 participants from around the world during the four-day conference.

Themed "Research Excellence for Societal Impacts", the Conference held discussions focusing on three core areas: advanced technologies and manufacturing, good health and well-being, and smart and sustainable cities.

Professor Yan Nieng, Founding President of the Shenzhen Medical Academy of Research and Translation and a world-leading structural biologist, gave a plenary speech on the frontier research of proteins that may play a key role in the pharmaceutical development of pain relief solutions.

Professor Jin-Guang Teng, President of PolyU, said, "This academic conference is specifically dedicated to interdisciplinary research and emerging technologies, which are especially relevant in today's complex world. Tackling pressing societal issues such as climate change, ageing population, poverty, energy shortages and so forth requires game-changing interdisciplinary solutions that transcend the boundaries of individual disciplines."

Competition staged in search of excellent future public housing designs

■ *VIP guests kicking off the Competition include Mr Wong Wai-lun, Deputy Financial Secretary of the HKSAR Government (centre); Dr Wang Weiming, Director-General of the Department of Educational, Scientific and Technological Affairs of the Liaison Office of the Central People's Government in the HKSAR (ninth from left); and Ms Ho Wing-yin, Secretary for Housing of the HKSAR Government (eighth from left).*

The HKBIM Future Public Housing Design Competition, co-organised by PolyU's Research Institute for Land and Space (RILS), was kicked off on campus in July 2023. The Competition's contestants, enrolling either in the Secondary School or the Open category, use the HKBIM software developed by the Smart Construction Laboratory under PolyU's Department of Building and Real Estates to create viable design proposals for future public housing. Designs should be submitted by September this year.

Building Information Modelling (BIM) is a process of generating three-dimensional, digital representation of building data throughout its life cycle. It can enhance productivity by facilitating project management, construction process control, cross-disciplinary collaboration, communication with external stakeholders, decision support, and risk management.

RILS joins forces with China (Hong Kong) Association of Architects and Engineers, Logistics and Supply Chain MultiTech R&D Centre, Hong Kong STEM Education Alliance, Hong Kong Project Management Exchange Centre, and Hong Kong Academy of Management to premiere the Competition.

Fostering urban sustainability through innovative technologies

■ *Some of the VIP guests attending the Symposium: (front row, from left) Prof. Li Xiangdong, Director of RISUD, Dean of Faculty of Construction and Environment and Chair Professor of Environmental Science and Technology, Department of Civil and Environmental Engineering; Ir Prof. Albert Chan, Associate Director of RISUD, and Chair Professor of Construction Engineering and Management, Department of Building and Real Estate; Mr Wong Kam-sing, former Secretary for the Environment, HKSAR Government; Prof. Jiang Guibin, Director of State Key Laboratory of Environmental Chemistry and Ecotoxicology, Chinese Academy of Sciences; Prof. Frank Kelly, Battcock Chair of Community Health and Policy, Imperial College London; Prof. Siaw Kiang Chou, Emeritus Professor (Thermal Systems), National University of Singapore; and Prof. Tao Shu, Professor, College of Urban and Environmental Sciences, Peking University*

The Research Institute for Sustainable Urban Development (RISUD) has recently held its annual international symposium, bringing together about 50 speakers from across the globe to share their insights into frontier topics, including air pollution and human health, large floating infrastructure, and urban carbon neutrality. PolyU established the RISUD in 2012 to develop sustainable solutions for problems generated by high-density urban development.

Sponsored by Ove Arup Foundation and Kwang-Hua Education Foundation, the two-day Symposium, themed "Urban Sustainability through Innovative Technologies", attracted more than 250 on-site participants from different parts of the world.

Five experts gave plenary presentations at the Symposium. They included:

- Mr Wong Kam-sing, Former Secretary for Environment of the HKSAR Government
- Professor Jiang Guibin, Director of State Key Laboratory of Environmental Chemistry and Ecotoxicology, Chinese Academy of Sciences
- Professor Frank Kelly, Battcock Chair in Community Health and Policy, School of Public Health, Imperial College London
- Professor Chou Siaw Kiang, Emeritus Professor, College of Design and Engineering, National University of Singapore
- Professor Lin Ming, Chief Scientist of China Communications Construction Company Limited and Academician of Chinese Academy of Engineering

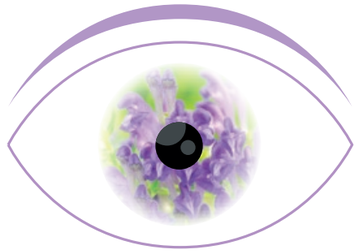
■ *Director of RISUD Prof. Li Xiangdong welcomes the guests and attendees.*

PolyU President Professor Jin-Guang Teng addressed the participants at the opening ceremony, affirming again the University's strong sense of social responsibility and commitment to conducting cutting-edge interdisciplinary research to address pressing societal challenges, including those related to urban sustainability.

■ *Chairman of RISUD's International Advisory Committee Dr Andrew Chan, Senior Consultant, Arup Group, sharing his insights at the Symposium*

PolyU research finds baicalein a promising glaucoma treatment

Glaucoma, an eye condition that can lead to loss of vision, is prevalent among older adults worldwide, affecting a population of 64.3 million in 2013, which is estimated to increase to 111.8 million in 2040. The eye disease has become a pronounced public health concern in an ageing global population.



Research shows that the risk for glaucoma increases with high eye pressure. Despite the lack of cure for glaucoma, lowering the intraocular pressure (IOP) in the early stage can often stop the damage and protect the vision. However, current interventions and medications that slow down glaucomatous vision loss are associated with undesirable side effects and drug resistance. Consequently, patients are less motivated to follow the doctor's advice and the treatment outcomes are jeopardised.

What causes glaucoma?

Glaucoma is a progressive damage of the optic nerve connecting the eye to the brain. It is usually caused by fluid building up in the front part of the eye, increasing pressure inside the eye. Though glaucoma is characterised by the loss of peripheral vision, it usually has no warning signs — the change in vision is so gradual that one can hardly notice it until the later stages.

A PolyU research team is exploring a more effective treatment, having used mouse models to test whether baicalein can produce detectable changes in elevated IOP. Baicalein, a flavonoid found in the roots of a Chinese herb called Scutellaria Baicalensis Georgi, is used in treating cancers, inflammation and cardiovascular diseases, and has been identified as a potential therapeutic agent for eye diseases.

Baicalein

Lowering eye pressure by applying baicalein

The team comprises (below, from left) members from the Research Centre for Chinese Medicine Innovation (RCMI) including Professor To Chi-ho, former Director of the Research Centre for SHARP Vision (RCSV) and former Head of the School of Optometry (SO); Professor Henry Chan, Professor of SO; Dr Thomas Lam and Dr Do Chi-wai, Associate Professors of SO as well as a member from RCSV Dr Samantha Shan, Research Assistant Professor of SO.

In their study, the team applied baicalein to living mouse eyes to explore whether it affects the outflow facility, i.e. the hydraulic system that allows aqueous humour, the liquid occupying the front part of the eye, to exit the eye consistently and yet maintaining an IOP balance.

The results showed that baicalein improved the outflow of aqueous humour, thus lowering the IOP, with the maximum effect occurring three hours after the baicalein treatment. Furthermore, the IOP reduction could last for more than 24 hours. The findings indicate that baicalein is a promising treatment for glaucoma.

Established in 2021, RCMI is committed to fostering inter-disciplinary and translational research for developing novel drugs, new treatment protocols and programmes based on traditional Chinese medicine practices for application in the clinical setting or community.

The RCMI research team on glaucoma

World-class research centre with NVIDIA and more to drive innovation in culture, art-tech, and interactive media

Representatives from the industry and organisations, as well as academic staff and students participated in the Asia Pacific Art and Culture Technology Forum.

To support the local art community and international cultural development, PolyU hosted the Asia Pacific Art and Culture Technology Forum cum the Opening of the Research Centre for Cultural and Art Technology and the PolyU-NVIDIA Joint Research Centre at the end of July. The initiatives aim to establish a world-leading research centre in culture and art technology at PolyU via conducting innovative research, fostering knowledge transfer, and facilitating industrial-academic collaboration.

Leveraging Hong Kong's position in the Greater Bay Area, the PolyU Research Centre for Cultural and Art Technology will serve as a platform to create synergies between PolyU and different industry partners. It will house the newly established PolyU-NVIDIA Joint Research Centre and other joint centres with various corporations in the culture and art-tech, entertainment, and creative sectors. The PolyU-NVIDIA Joint Research Centre is the world's first art technology joint research centre, combining the strengths of NVIDIA's technologies in AI, data analytics and high-performance computing, as well as PolyU's expertise in cross-disciplinary research and education.

To foster industrial-academic collaboration, the Asia Pacific Art and Culture Technology Forum provided opportunities for PolyU and industry partners to explore future creative collaborations. At the event, distinguished leaders from NVIDIA, Tencent Games Lightspeed Studios, Zhejiang University, The University of California at Davis and others shared their insights into the future of technology in arts and culture development, such as the applications of generative AI. Professor Henry Duh, Director of PolyU Research Centre for Cultural and Art Technology and PolyU-NVIDIA Joint Research Centre, announced the "Call for Global Collaboration" that aims at supporting Hong Kong's art and culture.

Hosted by Prof. Christopher Chao, Vice President (Research and Innovation) (centre), the forum was attended by Prof. K. P. Lee, Dean of School of Design (fourth from right); Prof. Henry Duh, Director of PolyU Research Centre for Cultural and Art Technology and PolyU-NVIDIA Joint Research Centre (fourth from left), as well as other speakers from the academia and the industries.

SIGNIFICANT RESEARCH FUNDING secured to advance SUSTAINABLE DEVELOPMENT and MENTAL HEALTHCARE in Hong Kong

Dedicated to impactful multidisciplinary collaborations, PolyU researchers have received significant funding support of close to HK$137 million from the Research Grants Council (RGC)'s Theme-based Research Scheme (TRS) and Strategic Topics Grant (STG) in 2023/24 to conduct breakthrough research in sustainable development and mental healthcare. The encouraging funding achievement highlights the University's strategic importance in driving Hong Kong's long-term development, overcoming imminent challenges and capturing emerging opportunities.

PolyU-led projects funded under TRS 2023/24

Project: High-performance Collaborative Edge Computing Enabling Smart City Applications: Framework and Methodologies

Summary: This project aims to build a new smart city computing infrastructure enabled by collaborative edge computing with edge/cloud collaboration, city-scale edge network deployment and built-in artificial intelligence services. The Collaborative Edge Computing Framework (CECF) will construct a future ubiquitous computing infrastructure by connecting, sharing and managing the resources of numerous edge nodes. CECF provides new abstractions and functionalities for geo-distributed edge nodes to share computing and data resources and perform application tasks, enabling advanced smart city applications.

Approved Budget*: HK$50.821 million

Project coordinator:

Professor Cao Jiannong

- Otto Poon Charitable Foundation Professor in Data Science
- Chair Professor of Distributed and Mobile Computing, Department of Computing
- Dean of Graduate School
- Director, Research Institute for Artificial Intelligence of Things
- Director, Internet and Mobile Computing Lab
- Founding Director and Associate Director, University Research Facility in Big Data Analytics

* RGC provides 90% of the approved budget with the remaining 10% provided by coordinating and collaborating universities.

PolyU-led projects funded under TRS 2023/24

Project: INTACT: Intelligent Tropical-storm-resilient System for Coastal Cities

Summary: The project aims to minimise the losses caused by typhoons through establishing an intelligent tropical storm-resilient system for coastal cities. It devises a framework that enables efficient and accurate assessment of turbulence flows from sparse measurements. It will also quantify urban-environment tropical storm risks arising from complex urban aerodynamics. A real-time urban typhoon risk early-warning and management prototype will be made accessible to the public for guiding effective emergency responses, such as evacuation measures and the temporary reinforcement of glass panels.

Approved Budget*: HK$48.293 million

Project coordinator:

Professor Ni Yiqing

- Yim, Mak, Kwok & Chung Professor in Smart Structures
- Chair Professor of Smart Structures and Rail Transit, Department of Civil and Environmental Engineering
- Director, Hong Kong Branch of National Rail Transit Electrification and Automation Engineering Technology Research Center

PolyU-led project funded under the STG 2023/24

Project: Integrated Innovative Artificial Intelligence (AI), Genomic and Biomedical Technologies in Healthcare: Objective Diagnosis, Personalised Therapy, and Determining the Etiology of Major Mental Disorders

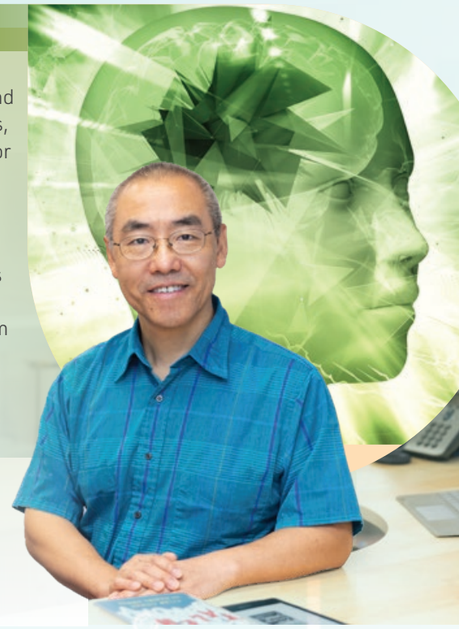
Summary: The project proposes a paradigm shift from symptom-based diagnosis to AI-based, data-driven diagnosis and a personalised therapy approach. By integrating AI, genomics and biomedical technologies, the research team aims to create an explainable AI-enabled treatment planning system that can support reliable diagnosis and guide personalised repetitive transcranial magnetic stimulation therapy.

Approved Budget*: Over HK$37 million

Project coordinator:

Professor Zhang Weixiong

- Chair Professor of Bioinformatics and Integrative Genomics, Department of Health Technology and Informatics and Department of Computing
- Hong Kong Global STEM Scholar



About the funding support under TRS and STG

The TRS aims to focus academic research efforts of the University Grants Committee (UGC)-funded universities on themes of strategic importance to the long-term development of Hong Kong. The maximum duration of each funded project is five years.

The STG is set up to support collaborative research in specific areas which can help Hong Kong overcome imminent challenges and capture emerging opportunities. The maximum duration of each project is five years, with a cost ceiling of HK$40 million (excluding on-costs).

A record 19.31% power-conversion efficiency for organic solar cells

In light of the impact of energy consumption on the planet, generating electricity from solar energy has become essential for achieving a sustainable environment.

A PolyU research team led by Professor Li Gang, Sir Sze-yuen Chung Professor in Renewable Energy and Chair Professor of Energy Conversion Technology, Department of Electrical and Electronic Engineering, has discovered ways to achieve a 19.31% power-conversion efficiency (PCE), the highest for binary organic solar cells (OSCs). That is through the invention of a novel morphology-regulating technique by using 1,3,5-trichlorobenzene as a crystallisation regulator for OSCs.

Improved OSC efficiency helps accelerate future applications

The remarkable breakthrough in OSC efficiency will help enhance future applications of advanced solar energy devices. While most solar cells use silicon to absorb sunlight and generate electricity, OSCs use carbon-based minerals for the same process, but with limited efficiency.

"The new finding will likely create tremendous opportunities in applications like portable electronics and building-integrated photovoltaics," said Professor Li. New doors will be opened when low-cost single-junction OSCs achieve a PCE of over 20%, together with more stable performance and other unique advantages such as flexibility, transparency, stretchability, low weight and tuneable colour.

Professor Li added, "This is a very encouraging result for the long-standing research on OSCs that I have conducted over the past two decades. We have already achieved better OSC efficiency and this will subsequently help accelerate the applications of solar energy."

It took the research team about two years to develop a non-monotonic intermediated state manipulation (ISM) strategy to manipulate the bulk-heterojunction (BHJ) OSC morphology and simultaneously optimise the crystallisation dynamics and energy loss of non-fullerene OSCs. Unlike the traditional approach of using solvent additives, which is based on excessive molecular aggregation in films, the ISM strategy promotes the formation of more ordered molecular stacking and favourable molecular aggregation. As a result, the PCE was considerably increased, while the undesirable non-radiative recombination loss was reduced. Notably, non-radiative recombination lowers the light generation efficiency and increases the heat loss. The research team's findings have been published in *Nature Communications*.

Read more

Professor Li Gang

- Sir Sze-yuen Chung Professor in Renewable Energy
- Chair Professor of Energy Conversion Technology, Department of Electrical and Electronic Engineering
- Associate Director, Otto Poon Charitable Foundation Research Institute for Smart Energy
- A Highly Cited Researcher for nine consecutive years since 2014

PolyU scholars win TechConnect Innovation Awards for seventh consecutive year

PolyU scholars have won two prestigious TechConnect World Innovation Conference and Expo 2023 (TechConnect) Global Innovation Awards, marking the University's seventh consecutive year of winning these esteemed accolades. With these two innovations in the areas of "energy, efficiency and environmental" and "medical devices and materials", PolyU was the only higher education institution in Hong Kong to garner awards at this year's TechConnect, the world's largest multi-sector event for fostering translational innovations and technology commercialisation.

The TechConnect conference was held in Washington, D.C., from 19 to 21 June 2023. During the conference, PolyU's delegation showcased various innovative projects and explored potential collaboration opportunities with technology partners.

Read more about the TechConnect 2023 Innovation Awardees:

PolyU award-winning innovations

Project:
Ammonia-powered fuel cell-based electric vehicle

Principal Investigator:
Professor Eric Cheng Ka-wai
Professor, Department of Electrical and Electronic Engineering
Director, Power Electronics Research Centre

Summary:
Being the world's first ammonia-powered electric vehicle, the innovation adopted ammonia-to-wheel energy conversion, where liquid ammonia stored inside a cylinder is broken down into nitrogen and hydrogen by catalysts to generate electricity and achieve zero carbon emission. In this project, hydrogen is produced from ammonia on the vehicle for feeding fuel cells. A large hydrogen storage is not needed as the hydrogen is consumed immediately. There are no hazardous issues from the hydrogen. Hence, it is safer and can be managed more easily.

Project:
Biomimicking photocrosslinkable nanocomposite bone grafts

Principal Investigator:
Dr Zhao Xin
Limin Young Scholar in Biomedical Engineering
Associate Professor, Department of Biomedical Engineering

Summary:
The innovation mirrors the structure of natural bone. The bone grafts can load and release bioactive molecules and activate cell-signaling pathways to simultaneously promote osteogenesis and angiogenesis while providing optimal mechanical support to the injured area in order to expedite the bone healing process. The product can compete in the growing market and serve a huge number of patients who are receiving orthopedic surgeries.

New partnerships with the Mainland to foster I&T development

To promote synergistic development between the Mainland and Hong Kong, PolyU has maintained close connections with Mainland cities and recently further strengthened ties.

From May to June this year, the University has signed several Memorandums of Understanding (MoUs) with local governments, enterprises, and institutions based in different Mainland cities spanning across Jinjiang, Wenzhou, Ningbo, Hangzhou, and Tianjin, to strengthen industry-academia-research cooperation.

The stepped-up collaboration will unleash the strength of PolyU researchers and foster the application of innovative technologies in driving the country's overall development.

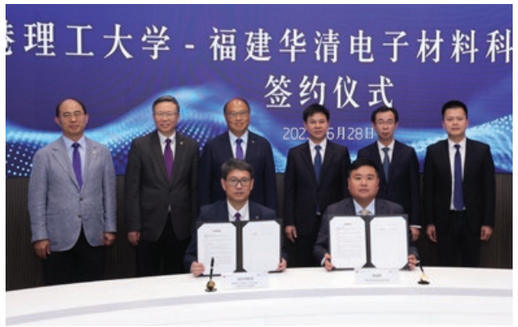
Jinjiang
Establishment of the PolyU-Jinjiang joint research institute and Several new collaborations with Jinjiang enterprises

Jinjiang government officials and enterprise representatives visited PolyU and its major research facilities.

PolyU has signed several MoUs with Jinjiang government and leading enterprises to drive cooperation between Hong Kong and Fujian, the province where Jinjiang is located, during the visit of the delegation led by Mr Zhang Wenxian, Member of the Standing Committee of Quanzhou Communist Party Committee and Communist Party Secretary of Jinjiang city.

Mr Yang Jianxiang, Director of Research and Innovation of ANTA Group (front row, right)

Mr Xu Jintai, Executive Director of SinceTech Group (front row, right)



Mr Shi Junqiao, Executive President of Fujian Huaqing Electronic Material Technology Co., Ltd. (front row, right)

Professor Christopher Chao, Vice President (Research and Innovation) of PolyU, and Mr Zhang Wenxian, inked a cooperation framework agreement to establish the PolyU-Jinjiang Technology and Innovation Research Institute in Jinjiang outlining the future development plan of the research institute.

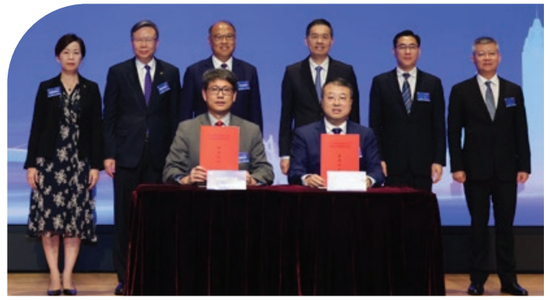
The delegation visited PolyU to gain an in-depth exchange with the University's senior management and researchers and learnt about PolyU's interdisciplinary research, achievements, and future development plans. Among the delegation were representatives from leading Jinjiang-based enterprises in textiles and clothing, sportswear and footwear, new materials, and microelectronics.

They toured the PolyU campus and visited several research facilities, including those related to the establishment of the PolyU-Jinjiang Technology and Innovation Research Institute. To take forward the collaboration, Professor Christopher Chao, signed MoUs with representatives from three Jinjiang-based corporates: ANTA Group, SinceTech Group, and Fujian Huaqing Electronic Material Technology Co., Ltd.

PolyU's research strengths and achievements can help meet Jinjiang's industrial needs and facilitate the city's industrial transformation. Earlier this year, PolyU and the Jinjiang Municipal People's Government reached an initial agreement on the establishment of the PolyU-Jinjiang Technology and Innovation Research Institute. A PolyU delegation then visited Jinjiang in May to discuss the implementation plan for the research institute.

Mr Zhang Wenxian (centre) led a delegation to visit PolyU's major research facilities, including the Centre for Eye and Vision Research at the Hong Kong Science Park.

Wenzhou
Government-academia collaboration to drive I&T advancement in Wenzhou



Witnessed (back row) by Dr Lam Tai-fai, Council Chairman of PolyU (third from left); Prof. Jin-Guang Teng, President of PolyU (second from left); Mr Liu Xiaotao, Standing Committee Member of the Zhejiang Provincial Communist Party Committee and the Party Secretary of Wenzhou (third from right); Dr Miranda Lou, Executive Vice President of PolyU (first from left); Mr Wang Jun, Secretary General of the Wenzhou Municipal Communist Party Committee (second from right); and Mr Wang Chi, Head of the United Front Work Department of the Wenzhou Party Committee (first from right), the framework agreement was signed by Prof. Christopher Chao, PolyU's Vice President (Research and Innovation) (front row, left) and Mr Wang Zhenyong, Vice Mayor of Wenzhou (front row, right).

To support Wenzhou's development into a top-notch innovation and technology hub, PolyU and the Wenzhou Municipal People's Government reached an agreement to establish the PolyU-Wenzhou Technology and Innovation Research Institute during the Eighth Guangdong-Hong Kong-Macao Wenzhou People's Conference.

Through this government-academia collaboration, the two sides will partner in the research of core technologies in various fields including new energy, advanced materials, intelligent wearable devices, maritime engineering equipment, offshore wind power, blockchain, and fashion design.

PolyU will leverage its research excellence to support Wenzhou's development into a key innovation hub, through fostering the city's translational research and commercialisation of research and innovation. Both sides will also join hands to nurture innovative and entrepreneurial talents who are knowledgeable about critical technologies of the future and possess a global outlook. These efforts will contribute to the Nation's self-reliance in its pursuit of technological advancement.

Ningbo
Partner with Eastern Institute of Technology to establish research institute

PolyU and Eastern Institute of Technology (EIT) (tentative), Ningbo, have agreed to establish the PolyU-Ningbo Technology and Innovation Research Institute to promote complementary advantages and coordinated development between the two universities, and develop innovative solutions together.

In June, Professor Christopher Chao, PolyU's Vice President (Research and Innovation), signed a framework agreement with Professor Zhang Dongxiao, Executive Vice President and Provost of EIT, on the PolyU campus. The two universities will collaborate in multiple fields, including advanced manufacturing, chemical energy, and low-carbon sustainability development, to advance innovative research technology and transform core technologies.

PolyU envisions effective collaboration between the two universities in industry, academia, and research, leveraging the advantages of PolyU's scientific talents and innovative research technologies and attracting more high-quality Hong Kong enterprises and researchers. The collaboration will involve PolyU faculty members, students, and alumni engaging in scientific research, exchanging ideas, and starting businesses in Ningbo.

(Front row, from left) Prof. Zhang Dongxiao and Prof. Christopher Chao signed an MoU to establish the PolyU-Ningbo Technology and Innovation Research Institute. The signing was witnessed by: (back row, from left) Prof. Chen Shiyi, President of EIT; Mr Peng Jiaxue, Zhejiang Provincial Committee Standing Committee member and Ningbo Municipal Party Secretary; Mrs Carrie Lam, Former Chief Executive of the HKSAR, and Prof. Jin-Guang Teng, President of PolyU.

Hangzhou
PolyU and Hangzhou government to establish joint research institute

Zhejiang and Hong Kong signed multiple cooperation agreements at the opening ceremony of the Hong Kong & Macao – Zhejiang Week & Zhejiang and Hong Kong Cooperation Theme Forum 2023.

Zhejiang and Hong Kong signed several cooperation agreements under the witness of government officials of the HKSAR and Zhejiang at the opening ceremony of the "Hong Kong & Macao - Zhejiang Week & Zhejiang and Hong Kong Cooperation Theme Forum 2023" held in June. At the event, PolyU signed several agreements to help promote complementary advantages between Hong Kong and Hangzhou, the capital of Zhejiang province.

Two cooperation agreements were signed by Professor Jin-Guang Teng, President of PolyU, and Professor Christopher Chao, Vice President (Research and Innovation) of PolyU, respectively.

Professor Chao and Mr Shen Jianli, Vice District Mayor of Gongshu District, signed a framework agreement to promote the establishment of the PolyU-Hangzhou Technology and Innovation Research Institute. In the initial stage, they will set up three research centres focusing on three key aspects: technology research and development, entrepreneurial incubation, and talent cultivation.

Professor Jin-Guang Teng and Mr Yu Zhihong, Chairman of Zhejiang Transportation Investment Group Co., Ltd., signed an agreement to foster scientific research through cooperation between PolyU's rail transit research team and Zhejiang Transportation Investment Group. They will collaborate in researching and developing new products and technologies, global promotion of innovative achievements, talent cultivation, and scientific research collaboration.

Tianjin
Work with Tianjin Medical University to promote optometry research

Since 2004, PolyU and Tianjin Medical University (TMU) have carried out academic and research cooperation. They signed two new agreements in June to promote the development of optometry in the next five years. The two universities will combine their strengths to develop a collaborative research platform to identify eye disease causes and possible solutions. They will also adopt artificial intelligence technology and leverage extensive clinical data databases to construct a screening system for eye disease.

The School of Optometry expects the collaboration to help solicit more research funding, develop clinical application systems, and enhance eye-care services in Hong Kong and the country.

Representatives from PolyU and Tianjin Medical University attended the signing ceremony to promote the development of optometry in the country and the world.

PolyU and China Resources collaborate on carbon neutral new materials research

In a significant step towards fostering collaboration on sustainability and green technology, PolyU and China Resources (CR) signed a Memorandum of Understanding (MoU) on research collaboration in carbon neutrality and sustainability-driven projects, talent development and startup projects, together with a framework agreement to drive the establishment of the CR-PolyU Joint Research Institute for Carbon Neutral New Materials.

This collaboration will leverage the respective strengths of both organisations, including China Resources' extensive expertise in various sectors such as sustainability and technology, and PolyU's research excellence in science and engineering, fashion and textiles, and carbon neutrality. In addition, the two parties will provide more external opportunities for PolyU graduate students to exchange and collaborate, while China Resources will provide incubation support for PolyU startups. These factors will help Hong Kong become an international I&T hub in the Greater Bay Area.

Witnessed by Mr Wang Xiangming, Chairman of China Resources Group (back row, second from right); Ms Wu Cheng, Deputy Director-General of the Department of Educational, Scientific and Technological Affairs of the Liaison Office of the Central People's Government in the Hong Kong Special Administrative Region (back row, first from right); Dr Lam Tai-fai, Council Chairman of PolyU (back row, second from left); and Prof. Jin-Guang Teng, President of PolyU (back row, first from left), the MoU was signed by Mr Chen Ying, Assistant General Manager of China Resources Group, Chairman and CEO of China Resources Enterprise (front row, right), and Prof. Christopher Chao, Vice President (Research and Innovation) (front row, left) of PolyU.

Establishment of China Harbour-PolyU Joint Research Centre for Land Development

PolyU collaborated with China Harbour Engineering Co. Ltd. (CHEC) to establish the China Harbour-PolyU Joint Research Centre for Land Development to promote practical research into sustainable, green, and low-carbon land development to improve the urban living environment.

The inauguration ceremony of the centre was held on the PolyU campus in May, attended by government officials and industry partners, including Mr Tse Chin-wan, Secretary for Environment and Ecology, Mr Ye Shuiqiu, Deputy Director-General of the Department of Educational, Scientific and Technological Affairs of the Liaison Office of the Central People's Government in the HKSAR, Mr Kwong Ka-sing, Head of Project Strategy and Governance Office of the Development Bureau of the HKSAR.

The centre will harness CHEC's abundant resources and experience in implementing projects and applying technologies in Hong Kong and other parts of the world, with PolyU's solid research strengths in land and infrastructure development. It will initially focus on research innovation, knowledge transfer, and talent cultivation in marine engineering, waste treatment, and applying innovative AI-based spatial information technologies for construction projects.

The collaboration agreement on the establishment of the research centre was signed by: (front row) Professor Christopher Chao, Vice President (Research and Innovation) of PolyU (left), and Mr Xue Yong, Managing Director of China Harbour Engineering Co. Ltd. (right).

GBA Startup Programme: Turning PhDs into Technopreneurs

(From right) Mr Teddy Lui, Operation Director, Alibaba Entrepreneurs Fund, Alibaba Group; Prof. Li Qing, Chair Professor of Data Science and Head, Department of Computing of PolyU; Ms Amy Lung, Court Member of PolyU; Mr Edmund Lee, Director, Application Technology Company Limited; and Mr Wilson Chan, Assistant Director, Entrepreneurship, KTEO of PolyU, were among the panel of judges.

Piloted in 2019, the GBA Startup Postdoc Programme aims to promote research-based entrepreneurship and nurture recent doctoral graduates worldwide with a strong passion and vision to commercialise their research outcomes through startup ventures.

Over 35 doctoral students and graduates around the world competed for the fellowship of PolyU's GBA Startup Postdoc Programme @Hong Kong/Shenzhen this year. During the final assessment in May, candidates strived to impress a panel of prestigious judges with their research-based entrepreneurial proposals.

Leveraging the resources and network of PolyU in the Greater Bay Area, the postdoc fellows can translate their research outcomes into real-world applications through startup venturing. The programme offers a competitive remuneration package, dual mentorship by academia and industry professionals, entrepreneurship training, and the option to work in Shenzhen or Hong Kong.

PolyU won top prizes at leading student entrepreneurship competition

Prof. Ben Young, Vice President (Student and Global Affairs) of PolyU (centre) attended the award presentation ceremony.

PolyU has been crowned the "Outstanding Organisation" at the Hong Kong University Student Innovation & Entrepreneurship Competition, commending the remarkable performance of its 14 award-winning teams. This accomplishment is a testament to PolyU's commitment to fostering entrepreneurial spirit among students and promoting innovation in Hong Kong.

The competition featured 385 teams divided into innovation and entrepreneurship streams. PolyU teams achieved impressive results in the Entrepreneurship Proposal category, garnering the first prize as well as two second prizes, one third prize and one merit prize. Our teams also received prizes in other categories, including Information Technology, Mathematics and Physics/Mechanics and Control Systems, Startup, and Social Enterprise/Cultural & Creative Services.

The annual competition, which is now in its ninth year, is organised by the Hong Kong New Generation Cultural Association and Hong Kong Science & Technology Parks Corporation, with support from the Innovation and Technology Commission.

PolyU impactful startups to commercialise

MEDICAL DEVICES for SOCIETAL BENEFIT

With the support of the University, Ir Professor Zheng Yongping, PolyU's Chair Professor of Biomedical Engineering, has harnessed his research outcomes on ultrasound imaging technologies to co-found two startups of advanced medical equipment, benefiting teenaged scoliosis patients and those afflicted with liver fibrosis. Recently, the two startups, Telefield Medical Imaging Limited and Eieling Medical Limited, have been named in "Forbes Asia 100 To Watch 2023".

Scolioscan® to monitor spinal curve

Scoliosis is the abnormal twisting and sideways curvature of the spine. It affects millions worldwide and is the most common spinal disease among adolescents. X-ray imaging, the prevalent method of diagnosis and monitoring, can only capture two-dimensional images, but most spinal deformities are three dimensional. Usually, X-ray examinations are recommended for no more than once every 6 to 12 months owing to the risk of cancer. That can be a long time for growing teens with fast progressive scoliosis.

A safer and more cost-effective alternative has been developed by Professor Zheng and his PolyU research team, by applying 3D ultrasound imaging technology to generate a radiography-like image of the spine. The breakthrough in assessing spinal deformity, especially in adolescents, is behind the pioneering medical system called Scolioscan®, commercialised by Telefield co-founded by Professor Zheng in 2012.

With more than 120 filed or granted patents, Scolioscan® can measure spinal curve as accurately as X-ray. As the world's first and only ultrasound scoliosis assessment system, Scolioscan® is currently in use in countries and cities including Australia, Bosnia, Germany, Italy, the Netherlands, Poland, Romania, Malaysia, Thailand, Mainland China, Macau, and Hong Kong, having helped more than 20,000 scoliosis patients worldwide reduce harmful exposure to radiation.

■ *Scolioscan® can measure spinal curve as accurately as X-ray.*

Professor Zheng Yongping

- Henry G. Leong Professor in Biomedical Engineering
- Chair Professor of Biomedical Engineering
- Director of Research Institute for Smart Ageing
- Director of Jockey Club Smart Ageing Hub

Professor Zheng has filed over 150 patents and was ranked among the world's top 2% most-cited scientists in rankings compiled by Stanford University in 2021 and 2022. Recently, he has been awarded the inaugural BOCHK Science and Technology Innovation Prize for his outstanding contributions in the field of "Life and Health".

The invention also led to a comprehensive five-year school scoliosis screening programme with ultrasound assisted brace design and monitoring. At least 6,000 schoolchildren are expected to benefit from it. Voluntary organisations from around the world are also interested in acquiring Scolioscan® for children in Tanzania, Ghana, Sri Lanka and the UK.

In April, Telefield has completed the Pre-A round financing totalling nearly HK$40 million, with investors including Fosun Pharma, AEF Greater Bay Area Fund (managed by Gobi GBA), PolyU and other industry investors. So far, Telefield has secured more than HK$100 million for this innovative project.

A handy version

The PolyU system has a portable version known as Scolioscan Air, comprising

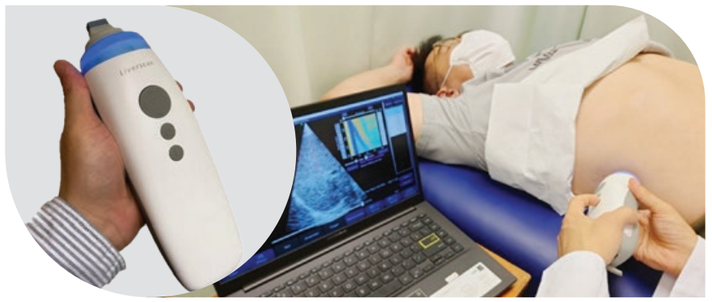
1. a palm-sized wireless ultrasound probe
2. an optical tracking device
3. a laptop or tablet computer
4. dedicated software

It weighs just 1 kg and fits into a suitcase. A typical scanning of the back of an adolescent patient takes only 30 seconds and can be done anytime, anywhere.

■ *With Scolioscan Air, scoliosis scanning can be done anytime, anywhere.*

Liverscan to detect liver fibrosis and fatty liver

Liver fibrosis results from long-lasting injury or inflammation of the liver, and may develop into liver cirrhosis, dysfunction or cancer. In recent years, transient elastography (TE) diagnostic technology has emerged as a non-invasive method to assess liver fibrosis by measuring the organ's stiffness, but it is expensive, difficult to operate, and not fully accurate.



■ *The portable Liverscan is effective in detecting liver fibrosis.*

Professor Zheng and his PolyU research team combined TE with a real-time ultrasound image guided system to develop a better solution called Liverscan.

"TE does measure the stiffness of a certain spot accurately, but the operator needs much experience and expertise to ensure the spot being measured does not contain other non-liver tissues that may interfere with the result, such as blood vessels or tumours," Professor Zheng explained. "Liverscan has a patented B-mode ultrasound image guided feature, so that the stiffness of liver tissues can be measured by TE with real-time guiding. This way, the operator is given a map of where to measure and where to avoid, greatly improving the accuracy."

Startup for social good

Liverscan is a palm-sized wireless device. The light and portable design of the cost-saving solution allows medical staff to perform liver fibrosis detection for patients anytime, anywhere. It is being commercialised Eieling, founded by Professor Zheng in 2018.

"It has always been my dream to benefit the public at large with our research outcomes. Once we license the technology to a company, we often have no say on the project whatsoever. Companies have their own concerns and the product may not turn out the way we envisioned. That's why we founded a startup company to commercialise the technology," Professor Zheng said.

Liverscan makes liver fibrosis and fatty liver assessment more accessible by the public. Eieling has secured funding from PolyU Tech Launchpad Fund and a private investor. It has also been accepted into the Incu-Bio incubator programme at the Hong Kong Science and Technology Parks. Clinical trials are now being conducted on the device with a plan for local release this year, registration in Mainland China in 2024 and USA in 2025, and a full-scale worldwide launch in 2026.

Global competition PolyHack nurtures student innovators

PolyHack organisers, co-organisers, sponsors, and award winners at the award ceremony held in the Chiang Chen Studio Theatre at PolyU.

Read more about the PolyHack 2023 and its winners:

PolyHack 2023, a global hybrid hackathon and ideathon competition initiated by a group of PolyU students, was successfully concluded on 24 June. Jointly organised by PolyHack, the Knowledge Transfer and Entrepreneurship Office at PolyU, and the Hong Kong Science and Technology Parks Corporation, the competition gathered over 700 talented individuals from more than 80 countries and regions worldwide to create their innovative projects.

The two-week competition served as a platform for talented individuals to harness their creativity and technical prowess, focusing on the domains of artificial intelligence (AI), financial technology (FinTech), smart cities, and the Internet of Things (IoT). Featuring a series of inspiring talks by industry leaders, workshops and mentorship sessions, the competition enriched the participants' knowledge and skillsets, and equipped them with the necessary tools to tackle complex challenges and refine their project concepts. Through a rigorous evaluation process, the winners of PolyHack 2023 were selected based on their exceptional performance and groundbreaking solutions.

Hang Seng x PolyU Sustainable Future Challenge encourages young talents to unleash their creativity

The "Hang Seng x PolyU Sustainable Future Challenge: Textile and Fashion" was successfully concluded, with the award ceremony held on 14 July. The Challenge, which comes in two categories – Tertiary Student Category and Open Category, is an ideation and entrepreneurship competition for tertiary students, researchers, industrialists, and all like-minded innovators in Hong Kong to connect and co-innovate impactful innovations and business ideas to address the world's pressing sustainability issues. After the final presentation, the champion of the Grand Finale Awards went to the revolutionary flexible lithium batteries. The innovation involved coating a thin metal layer onto textiles using PolyU-patented technology. The Tertiary Student Innovation Awards champion showcased an innovative approach to reusing pineapple leaves, contributing to a more sustainable future.

Ms Betty Law, Head of Corporate Communications and Community Investments, Hang Seng Bank (third row, fifth from left), Dr Miranda Lou, Executive Vice President (third row, fifth from right), representatives of strategic partners and supporting organisations congratulated the award winners on their creativity at the award ceremony.

Read more about the Challenge:

PolyU and Shenzhen forge cooperation on innovation and entrepreneurship

To foster a deeper level of collaboration between Hong Kong and Shenzhen, PolyU and the Human Resources and Social Security Bureau of Shenzhen Municipality (Bureau) have signed a Memorandum of Understanding (MoU) on innovation, entrepreneurship and talent development.

Under the MoU, PolyU and the Bureau will cooperate closely on multiple initiatives related to innovation and entrepreneurship, employment facilitation, and high-end talent development. The stronger alliance will enhance resource integration and translation of research outcomes, as well as promote in-depth exchanges between the youth of the two cities.

A plaque unveiling ceremony of the "Hong Kong-Macao Youth Innovation and Entrepreneurial Base (The Hong Kong Polytechnic University)" was also held, setting the stage for increased cooperation between the two places.

Mr Zhao Zhongliang, Director of Human Resources and Social Security Bureau of Shenzhen Munipality (eighth from left) and Dr Miranda Lou, Executive Vice President of PolyU (seventh from right), officated at the plaque unveiling ceremony for Hong Kong-Macao Youth Innovation and Entrepreneurial Base (The Hong Kong Polytechnic University).

PolyU alumni share insights on successful entrepreneurship

Three distinguished PolyU startup founders enlightened some 100 seminar participants with their invaluable insights on the opportunities and challenges of entrepreneurship.

These alumni are running startups offering products from a global all-in-one logistics solution platform, AI-enabled voicebots, to on-site recycling waste sorters. Despite their different business nature, their outstanding problem-solving skills and determined mindset are similar.

Mr Lam Wun-chi, Co-founder and CEO of Spaceship, emphasised the importance of trial and error and being proactive in experiencing new things. Founder and CFO of Asiabots Mr Chris Shum stressed the importance of understanding business value and the impact of technology on competitiveness. Mr Declan Leung Chun-hin, Co-founder of Plaper (HK), highlighted the need for good industrial partners and the ability to seize opportunities. They expressed gratitude for PolyU's support, including financial resources, hardware facilities, and business networks, which helped them realise their entrepreneurial dreams.

Hosted by the Alumni Affairs Office, Knowledge Transfer and Entrepreneurship Office and the Industrial Centre, the seminar aimed to connect alumni and enhance the development of PolyU Entrepreneurship Alumni NetworK (PEAK).

Dr Miranda Lou, Executive Vice President (fourth from right) presents souvenirs to the alumni and other panellists.

UGC delegation visits PolyU's innovative teaching facilities

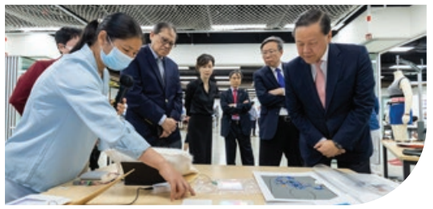
PolyU works closely with the University Grants Committee (UGC) to foster the development of the University and advance higher education. Mr Tim Lui, UGC's Chairman, recently visited PolyU with Professor James Tang, UGC's Secretary-General. They were welcomed by members of the central management team and deans of PolyU. During the visit, Dr Lam Tai-fai, Council Chairman of PolyU, and Professor Jin-Guang Teng, President of PolyU, shared the University's latest education, research, and innovation developments with the guests.

They visited the Research Centre for Deep Space Explorations, a major base for the research and manufacturing of space tools, and learned about PolyU's role in the Nation's lunar and Mars exploration projects.

Mr Tim Lui, Chairman of UGC (centre), and Professor James Tang, Secretary-General of UGC (third from right), visited the Research Centre for Deep Space Explorations, accompanied by Professor Jin-Guang Teng, President of PolyU (second from left), and the senior management team.

The delegation experienced innovative technology in the Artificial Intelligence and Robotics Lab (AIR Lab) and Hybrid Immersive Virtual Environment (HiVE). Developed by PolyU, HiVE is the world's first large-scale full immersive virtual reality classroom, allowing students to visualise abstract concepts and engage in experiences that may not be easy to access in the real world.

The delegation led by Mr Tim Lui (third from right) visited Hybrid Immersive Virtual Environment and experienced the virtual reality technology used for teaching and learning.



Mr Tim Lui visited the Research Institute for Intelligent Wearable Systems.

The delegation toured the Virtual Hospital and laboratories of the Faculty of Health and Social Sciences and learned about the Faculty's healthcare-related teaching pedagogies and research projects, such as the stand-alone therapeutic Music-with-Movement programme for elderly with cognitive impairment.

They also went to the Research Institute for Intelligent Wearable Systems to learn more about the University's innovations in human-centric wearables and the functions which can enhance our everyday lives.

Construction of new student hostel commences to promote holistic development

The groundbreaking ceremony was officiated by Dr Lam Tai-fai, Council Chairman (centre); Dr Lawrence Li Kwok-chang, Deputy Council Chairman (fifth from left); Prof. Jin-Guang Teng, President (fifth from right); Ms Shirley Chan Suk-ling, Council Member (fourth from left); Prof. Wing-tak Wong, Deputy President and Provost (fourth from right); Mr Richard Leung Tim-chiu, Council Member (third from left); Ir Yau Kwok-fai, Council Member (third from right); Mr Sin Yat-kin, Council Member (second from left); Prof. Christopher Chao, Vice President (Research and Innovation) (second from right); Mr Chew Fook-aun, Council Member (first from left); and Mr Alan Wu Wai-kuen, Council Member (first from right).

To help enrich the learning experience for PolyU students and ease the shortfall of student residential places, the University will construct a new student hostel at Tat Hong Avenue in Kowloon Tong, providing 1,680 student hostel places, and both indoor and outdoor recreational space for students. The new student hostel will attract outstanding non-local students to study in Hong Kong, thus helping to broaden the horizon of our local students.

The hostel's groundbreaking ceremony was held in May 2023, with Dr Lam Tai-fai, Council Chairman; Professor Jin-Guang Teng, President; members of the Council and the management team officiating. After the completion of construction works for student hostels at Kowloon Tong and Ho Man Tin, it is anticipated that students will be allowed to experience two years of hostel accommodation during their four-year studies.

Dr Lam Tai-fai (left) and Prof. Jin-Guang Teng (right) also officiated at the plaque unveiling ceremony.

PolyU student hostel in Kowloon Tong

Location	Tat Hong Avenue, Kowloon Tong
Total gross floor area	about 50,200 square metres
Number of buildings	4
Number of hostel places	1,680
Facilities	include a canteen, multi-purpose rooms, common rooms, music rooms, gym room and recreation rooms
Target completion date	2028

Dr Ho Kwon-ping inducted into SHTM's Gallery of Honour

Dr Ho Kwon-ping (left) and his wife, Ms Claire Chiang, visited the Gallery of Honour, accompanied by Prof. Kaye Chon, Dean of SHTM (right).

Dr Ho Kwon-ping, Founder and Executive Chairman of Banyan Tree Holdings Limited, was inducted into the Gallery of Honour of PolyU's School of Hotel and Tourism Management (SHTM). He was also awarded the prestigious SHTM Lifetime Achievement Award, in recognition of his contribution to defining the global hospitality landscape and advancing the industry.

A visionary innovator and a respected leader in the industry, Dr Ho is an ardent supporter of hospitality and tourism education besides being a longstanding partner of SHTM. A former Chairman of the SHTM International Advisory Board, he was conferred an honorary doctorate by PolyU in 2015.

SHTM's Gallery of Honour displays portraits of the SHTM Lifetime Achievement Award recipients, who represent the world's most successful hospitality organisations and recognisable brands.

Dr Ho Kwon-ping received the SHTM Lifetime Achievement Award at the gala dinner.

> I am deeply honoured and humbled to be conferred the SHTM Lifetime Achievement Award. The initial awardees were truly giants of our industry and inspired people of my generation. To join their ranks is truly an honour I could not have possibly envisaged.
>
> Dr Ho Kwon-ping
> Founder and Executive Chairman of Banyan Tree Holdings Limited

Honoured with SHTM Lifetime Achievement Award

An award presentation ceremony of SHTM Lifetime Achievement Award was held in Dr Ho's honour. During the ceremony, Professor Wing-tak Wong, Deputy President and Provost of PolyU, praised Dr Ho as a stellar role model for all hospitality students worldwide.

Professor Kaye Chon, Dean and Chair Professor of SHTM, and Walter and Wendy Kwok Family Foundation Professor in International Hospitality Management, also expressed his heartfelt congratulations to Dr Ho on receiving the honour, "Dr Ho's exemplary accomplishments have not only played an important role in raising the level of the regional and global hospitality business, but also helped transform it through a distinctively Asian focus."

The SHTM Lifetime Achievement Award honours outstanding personalities who have contributed substantially to the development of hospitality and tourism in Hong Kong, the region, and the world.

PolyU establishes Artists' Alliance to advance art and culture

Dr Chung King-fai (circled), Artist-in-Residence 2013/14, co-directed a performance of "Xiaojing Hutong" staged by the PolyU Theatre in 2017.

A student receiving guidance from Dr Liza Wang (right) on the art of Cantonese opera

Dr Liza Wang, PolyU's Artist-in-Residence 2020/21, convened the first meeting of the PolyU Artists' Alliance in April. More than 30 well-known local artists from various fields, including music, visual art, Chinese opera, theatre, dance, and other genres have come together to create the Alliance, which aims to promote art and culture on campus and in the community, with a particular focus on engaging the younger generation.

PolyU is committed to advancing art and culture as part of the University's effort to provide a holistic education. Since its establishment in 1999, the Artist-in-Residence Programme has received extensive support from many professional artists, fostering an appreciation for the arts among the University members. More importantly, numerous PolyU students have benefitted from the artists' direct guidance in their artistic development.

Maestro Mr Leung Kin-fung (front row, left), Artist-in-Residence 2022/23, has been the Artistic Director and Conductor of the PolyU Orchestra since 2016.

PolyU Artists' Alliance

Convenor
Dr Liza Wang

Members
Mr Albert Au
Mr Cheng Kok-kong
Mr Dominic Cheung Ho-kin
Mr Choi Ho-man
Mr Choi Hoi-ying
Dr Eric Fung
King's Harmonica Quintet
- Dr Ho Pak-cheong
- Mr Chan Shu-keung Kenneth
- Mr Lau Chun-bong
- Mr Lok Ying-kei Rocky
- Mr Kuan Man-hou Johnny

Prof. Norman Ko
Mr Lai Ming
Mr Leung Kin-fung
Mr James Mark
Dr Warren Mok
Ms Ng Yuet-lau
Mr Marco Szeto
Mr Tang Hoi-chiu
Dr Joseph Ting
Mr Shum Yat-fei
Mr To Kwok-wai
Ms Wang Bing Bing
Mr Ray Wong
Mr Wucius Wong
Mr Wong Kwok-chung
Ms Yao Jue
Mr Yuen Siu-fai
Chung Ying Theatre Company
Hong Kong Dance Company
Hong Kong Repertory Theatre

PolyU management
Prof. Jin-Guang Teng, President
Dr Miranda Lou, Executive Vice President
Prof. Ben Young, Vice President (Student and Global Affairs)
Prof. Geoffrey Shen, Associate Vice President (Global Partnerships)

President Emeritus Professor Poon and PolyU members on HKSAR Honours List 2023

The HKSAR's Honours List was released in July this year. A total of 32 members of the PolyU community were honoured with awards or appointed Justices of the Peace by the government in recognition of their significant contributions to Hong Kong.

Professor the Honourable Poon Chung-kwong, President Emeritus of PolyU, and the Honourable Jeffrey Lam Kin-fung, Honorary Member of the University Court and University Fellow of PolyU, were among the five recipients of the Grand Bauhinia Medal this year.

Professor the Honourable Poon Chung-kwong received the highest accolade

The Grand Bauhinia Medal is the highest accolade under the HKSAR Honours and Awards system.

The prestigious award recognises Professor Poon's outstanding achievements in scientific research and his tremendous dedication to promoting the development of higher education in Hong Kong over the years, especially in his 18-year tenure as the President of PolyU.

Professor Poon's exceptional contributions were instrumental in steering the institution towards attaining university status and laid a robust foundation for PolyU's development into an innovative world-class university. After his retirement, Professor Poon dedicated himself to preaching Buddhism, participating actively in charity work, and fostering social harmony.

Professor the Honourable Poon Chung-kwong, GBM, GBS, OBE, PhD, DSc, JP
President Emeritus
Emeritus Professor
Honorary Life Member of PolyU Foundation

PolyU members on HKSAR Honours List (in alphabetical order of last name)

The Honourable Jeffrey Lam Kin-fung, GBM, GBS, JP
Honorary Member of the University Court
University Fellow, 2000

The Honourable Frankie Yick Chi-ming, GBS, JP
Outstanding PolyU Alumni Award awardee, 2017

Dr Sunny Chai Ngai-chiu, SBS, JP
Chairman of PolyU Foundation
University Fellow, 2018

Grand Bauhinia Medal	
The Honourable Jeffrey Lam Kin-fung, GBM, GBS, JP	• Honorary Member of the University Court • University Fellow
Professor the Honourable Poon Chung-kwong, GBM, GBS, OBE, PhD, DSc, JP	• President Emeritus • Emeritus Professor • Honorary Life Member of PolyU Foundation
Gold Bauhinia Star	
Mr Paul Cheung Kwok-wing, GBS, JP	• Ordinary Member of PolyU Foundation
Professor Herman Hu Shao-ming, GBS, JP	• Senior Member of PolyU Foundation
The Honourable Frankie Yick Chi-ming, GBS, JP	• Outstanding PolyU Alumni Award awardee • Alumnus, Department of Industrial and Systems Engineering
Silver Bauhinia Star	
Dr Sunny Chai Ngai-chiu, SBS, JP	• Chairman of PolyU Foundation • University Fellow
Dr Eric Cheng Kam-chung, SBS, MH, JP	• Alumnus, School of Fashion and Textiles • Senior Member of PolyU Foundation
Mr David Chiu, SBS	• Life Member of PolyU Foundation
Dr Allen Shi Lop-tak, SBS, MH, JP	• Honorary Life President of PolyU Foundation • University Fellow • Alumnus, School of Fashion and Textiles
Mr Wong Chun-hong, SBS	• Senior Member of PolyU Foundation
Ms Yao Jue, SBS, JP	• University Fellow • Ordinary Member of PolyU Foundation
Bronze Bauhinia Star	
Dr Daniel Chan Ching-yan, BBS, MH	• Honorary Life Vice President of PolyU Foundation
Dr Chow Kam-wai, BBS, MH	• Alumnus, SPEED
Dr Sanly Kam Shau-wan, BBS, MH	• Alumna
Mr Patrick Tsang On-yip, BBS	• Court member
Dr Daniel Yip Chung-yin, BBS, JP	• Council member
Hong Kong Fire Services Medal for Distinguished Service	
Mr Wong Chun-yip, FSDSM	• Alumnus, Faculty of Construction and Environment
Hong Kong Customs and Excise Medal for Distinguished Service	
Ms Lai Sau-ieng, CDSM	• Alumna, Faculty of Business
Hong Kong Correctional Services Medal for Distinguished Service	
Dr Kenneth Leung Kin-ip, CSDSM	• Alumnus, Department of Applied Social Sciences
Medal of Honour	
Professor Chung Kwok-fai, MH	• Professor, Department of Civil and Environmental Engineering • Director of Chinese National Engineering Research Centre for Steel Construction (Hong Kong Branch) at PolyU
Mrs Monica Lee-Müller Yuk-har, MH	• Ordinary Member of PolyU Foundation
Mr Lin Ho-man, MH	• Honorary Life Member of PolyU Foundation
Dr Bobby Liu Kam-hing, MH	• Alumnus, Faculty of Business
Professor Eric Yim Chi-ming, MH, JP	• Honorary Life President of PolyU Foundation • University Fellow
Chief Executive's Commendation for Community Service	
Professor Chetwyn Chan Che-hin	• Alumnus, Department of Rehabilitation Sciences
Mr Benedict Sin Nga-yan	• Court member
Chief Executive's Commendation for Government/Public Service	
Ir Victor Wong Tat-tong	• Alumnus, Department of Industrial and Systems Engineering
Justice of the Peace	
Ms Irene Chow Man-ling, JP	• Court member • Life Member of PolyU Foundation • University Fellow
Mr Christopher Chuang Tze-cheung, JP	• Senior Member of PolyU Foundation
Mr Rayman Chui Man-wai, JP	• Council member
Dr the Honourable Ng Kit-chong, MH, JP	• Outstanding PolyU Alumni Award awardee • Alumnus, Department of Industrial and Systems Engineering
The Honourable Yiu Pak-leung, MH, JP	• Court member • Alumnus, School of Hotel and Tourism Management

PolyU expert honoured with National Award for Excellence in Innovation

Professor Chung Kwok-fai, Director of the Chinese National Engineering Research Centre for Steel Construction (Hong Kong Branch) and Professor of the Department of Civil and Environmental Engineering, has received a Certificate of Merit at the Third National Award for Excellence in Innovation. The Award is a state-level honour in Mainland China for science and technology, which is organised every three years with honours awarded to no more than 300 science and technology talents. Professor Chung is the only recipient from Hong Kong this year.

Professor Chung specialises in research into various structural performance and cost challenges for large steel structures, together with the environmental issue of high carbon footprint in construction. He has conducted cross-disciplinary research in various technological areas, including materials and welding, as well as mechanical properties and structural behaviour of high-strength steel structures, providing solutions for the Nation's development of its "dual carbon" strategy in construction.

Professor Chung's research outputs have been applied in several major construction projects, including the double-arch steel bridge of the Cross Bay Link in Tseung Kwan O in Hong Kong and the Quarta Ponte Marítima Macau-Taipa in Macao. This latest accomplishment showcases the capability of PolyU in research and development, ready to contribute to Hong Kong's development into an international innovation hub.

As an expert in steel construction, Prof. Chung Kwok-fai has made substantial impacts by developing a series of fundamental theories and key technologies for engineering application of high-strength steel in construction.

PolyU scholar garners World Physiotherapy International Service Award

Congratulations to PolyU scholar Professor Marco Pang, Director of the University Research Facility in Behavioral and Systems Neuroscience and Chair Professor of Neurorehabilitation of the Department of Rehabilitation Sciences, on being honoured with the World Physiotherapy International Service Award in Research. Professor Pang is the first physiotherapist from Hong Kong to receive this prestigious recognition.

The World Physiotherapy International Service Award in Research is a highly regarded honour awarded only once every four years in recognition of the awardee's outstanding research contributions and unwavering dedication to advancing the field. Among the recipients of this year's Award Ceremony, Professor Pang stands out as one of the four exceptional physiotherapists from across the globe.

Professor Pang is currently the President of the Hong Kong Physiotherapy Association and the Editor-in-Chief of the *Hong Kong Physiotherapy Journal*. He is currently the Chair of the World Physiotherapy Asia Western Pacific Region Executive Committee.

Prof. Marco Pang (right) received the Award from Dr Emma Stokes, President of World Physiotherapy (left), at the recent 2023 World Physiotherapy Congress held in Dubai.

PolyU researchers win ZPrize for groundbreaking Web3 technology in zero-knowledge cryptography

The research team comprising Prof. Allen Au Man-ho (first from right), Research Assistant Professor Dr Lu Xingye (first from left) from the Department of Computing, and their PhD students Ms Liu Mengling (second from left) and Mr Zhang Chengru (second from right) won the ZPrize for groundbreaking technology on zero-knowledge cryptography.

Zero-knowledge cryptography, also known as zero-knowledge proofs (ZKPs), has emerged from academia into the business world as a solution that could address the pressing issues of data privacy and scalability limits. Led by the University's Department of Computing Professor Allen Au Man-ho; and Research Assistant Professor Dr Lu Xingye, the PolyU research team have won the ZPrize in the Plonk-DIZK GPU Acceleration prize category for innovative solutions in empowering zero-knowledge cryptography and was awarded a cash prize of US$550,000.

New technology to improve Plonk's scalability and efficiency

A major challenge for real-world adoption of ZKPs, particularly for applications at scale, is the high computation cost. In addressing this issue, the PolyU team focused on enhancing the efficiency and scalability of Plonk, a popular ZKP system. The team delivered this achievement by leveraging GPU acceleration to achieve computation speedup and distributing the workload evenly across multiple servers to improve scalability.

Professor Au said, "This is crucial because generating these proofs can be computationally intensive, and so a faster and more efficient method could enable the use of zero-knowledge cryptography in a wider range of applications."

This new implementation can generate a proof in less than one hour for a circuit of size 2^{28} gates, which is the largest circuit with reported successful plonk proof generation. The research team's solution has achieved a significant computation speedup of over 40% on a single machine. With the new distribution approach, the team was able to improve the overall proof generation process by a factor of ten compared with existing method.

Dr Lu added, "Our submission will become open-source libraries for the benefit of the community. We hope this new technology can support the next generation of decentralised protocols and applications to enable secure, interoperable and scalable applications for the next-generation web."

The Plonk-DIZK GPU Acceleration Prize falls under the open division category of the ZPrize for general public interests. ZPrize is a collaborative effort across the blockchain industry that involves over 32 global partners and sponsors who contribute time, effort and resources to this industry-wide competition, with the aim of increasing the practicality and awareness of this technology.

In memory of Dr Peter Lewis, founding Dean of FHSS

PolyU was deeply saddened by the passing of Dr William Henry Peter Lewis, founding Dean of Faculty of Health and Social Sciences (FHSS), formerly Institute of Medical and Health Care (IMHC).

Dr Lewis served as the first leader of IMHC and later FHSS for almost two decades since its establishment in 1977. Under his visionary leadership, he introduced the part-time day release programme and evening classes to IMHC, offering a more flexible mode of learning and meeting the community's needs at that time. After IMHC took over the training of social work and healthcare professionals from the government, Dr Lewis diligently upgraded the programmes at certificate, diploma, and professional diploma levels.

In 1987, IMHC was transformed into the Division of Health and Social Studies, where Dr Lewis oversaw four departments as the divisional chairman and took up the headship of the Department of Health Sciences under the Division. Concurrently, Dr Lewis was appointed as Chairman of the Medical Laboratory Technologists Board from 1 May 1981 to 30 September 1992 by the government. In 1993, the division was upgraded to be the Faculty of Health and Social Studies, where Dr Lewis remained its Dean until his retirement from PolyU in 1995.

Dr Lewis, as the founding Dean of the Faculty, made exceptional contributions that have firmly established the University's endeavours in addressing the health and social needs of the community. He will be dearly missed by the PolyU community and beyond.

Development of Faculty of Health and Social Sciences

1977/78
Institute of Medical and Health Care

1986/87
Division of Health and Social Studies

1993/94
Faculty of Health and Social Studies

2000/01
Faculty of Health and Social Sciences

- *Today's FHSS has more than 5,800 students and over 1,500 staff.*

Senior staff appointments and promotions

(between 1 April and 30 June 2023)

Congratulations to the following PolyU members who have recently taken up a new capacity at the University (Listed in alphabetical order):

Appointments

Professor Chau Kwok-tong
as Chair Professor of Electrical Energy Engineering
Department of Electrical and Electronic Engineering
on 1 Jun 2023

Professor Dong Cheng
as Associate Vice President (Mainland Research Advancement)
and Chair Professor of Cell Engineering and ImmunoMedicine
Department of Biomedical Engineering
on 15 May 2023

Professor Chen Sheng
as Head
Department Food Science and Nutrition
on 1 Jun 2023

Professor Gary Wong Ka-leung
as Chair Professor of Chemistry
Department of Applied Biology and Chemical Technology
on 16 Jun 2023

Professor Andy Cheng
as Associate Director
Mental Health Research Centre
on 15 Jun 2023

Mr Kelvin Wong Ka-tat
as Director
Knowledge Transfer and Entrepreneurship Office
on 1 Apr 2023

Major external appointments and awards of PolyU members

From April to June 2023, the following PolyU members were either appointed significant duties to share their scholarly expertise to benefit the wider community or had their academic efforts duly recognised. (Listed in alphabetical order)

Ir Professor Christopher Chao Yu-hang
Vice President (Research and Innovation)
Director of Policy Research Centre for Innovation and Technology
Chair Professor of Thermal and Environmental Engineering,
Department of Building Environment and Energy Engineering and Department of Mechanical Engineering

Appointment
- Member of Research Strategy Expert Group, Chief Executive's Policy Unit (CEPU) Expert Group

Dr Andrew Lam
Associate Head and Associate Professor,
School of Optometry

Award
- Honourable mention, *Optometry and Vision Science*, American Academy of Optometry

Professor Mingguang He
Chair Professor of Experimental Ophthalmology,
School of Optometry

Award
- Top 100 most influential and inspirational individuals who have demonstrated "*Ten Years of Excellence and Impact in Ophthalmology*", Ophthalmologist Power List 2023

Dr Kathy Leng Kai
Assistant Professor,
Department of Applied Physics

Award
- Croucher Tak Wah Mak Innovation Award 2023

Dr Shanica Hon
Optometrist,
School of Optometry

Award
- Honourable mention, *Optometry and Vision Science*, American Academy of Optometry

Professor Wang Tao
Associate Director, University Research Facility in Chemical and Environmental Analysis
Chair Professor of Atmospheric Environment,
Department of Civil and Environmental Engineering

Award
- Second-Class Award in Natural Science, Higher Education Outstanding Scientific Research Output Award (Science and Technology) 2022, Ministry of Education, China

Professor Wu Bo
Associate Head (Research) and Professor, Department of Land Surveying and Geo-Informatics

Award
- Outstanding Award (Individual) for China's First Mars Exploration Mission, China National Space Administration, Ministry of Industry and Information Technology and four other Ministries

Dr Zhang Shuowen
Assistant Professor,
Department of Electrical and Electronic Engineering

Award
- IEEE Communications Society Best Tutorial Paper Award 2023

Dr Yang Dong
Associate Professor and Associate Head, Department of Logistics and Maritime Studies

Appointment
- Council Member, International Associate of Maritime Economist

Professor Zhao Xiaolin
Chair Professor of Civil Infrastructure,
Department of Civil and Environmental Engineering

Appointment
- Member, European Academy of Sciences and Arts

Award
- Humboldt Research Award 2023

Professor Yang Tong
Chair Professor of Mathematical Science,
Department of Applied Mathematics

Award
- First-Class Award in Natural Science, Higher Education Outstanding Scientific Research Output Award (Science and Technology) 2022, Ministry of Education, China

Professor Zheng Zijian
Associate Director, Research Institute for Intelligent Wearable Systems
Associate Director, University Research Facility in Materials Characterization and Device Fabrication
Chair Professor of Soft Materials and Devices,
Department of Applied Biology and Chemical Technology

Award
- Hong Kong Engineering Science and Technology Award 2022, Hong Kong Academy of Engineering Sciences

Ir Professor Yung Kai-leung
Director of Research Centre for Deep Space Explorations
Sir Sze-yuen Chung Professor in Precision Engineering
Chair Professor of Precision Engineering and Associate Head,
Department of Industrial and Systems Engineering

Appointment
- Academic committee member of China's deep space exploration laboratory (China's Mars sample return mission Space Science and ground application group)
- Expert panel member (Mars Sample Return Mission) of Lunar Exploration and Space Engineering Center, China National Space Administration

*** Please refer to the stories on p.8, 26, 41, 43 and 44 for further information on the accolades received by other PolyU staff members.**

PolyU honours exceptional RESEARCH POSTGRADUATE ALUMNI

In recognition of the remarkable achievements of its PhD/MPhil alumni, PolyU is proud to announce the Outstanding Research Postgraduate Alumni Award 2023 winners. Capitalising on their research strengths and visions, the awardees manifest their innovative research aspirations, engage in the PolyU community, and contribute to societal development.

The award is organised by the Graduate School of PolyU as part of its commitment to promoting excellence in research postgraduate education. There are two award categories: the Outstanding Research Postgraduate Alumni Award and the Outstanding Research Postgraduate Early Career Alumni Award. The latter recognises those exemplary alumni who graduated from PolyU within ten years.

With rigorous selection criteria, the winners demonstrated distinctive accomplishments in academia, profession, industry, and community, and their strong leadership skills, innovative minds, and staunch support to the University. Congratulations to the awardees!

Outstanding Research Postgraduate Alumni Award

Currently serving as the Head of the Department of Real Estate and Construction at The University of Hong Kong, Professor Lu is the leader of research grants worth HK$60+ million from various prestigious funding regimes. His research interests focus on two areas:

1. Construction informatics: building information modelling, smart construction, big data, and blockchain; and
2. Circular construction: management, economics, and public policies.

As the author of two books and more than 200 book chapters and journal papers, Professor Lu has been ranked as one of the Top 1% Scholar by Clarivate Analytics since 2017. He is also the Director of iLab@hku, which has made significant breakthroughs in modernising the construction industry in Hong Kong and beyond.

Professor Wilson Lu Weisheng
Doctor of Philosophy, Department of Building and Real Estate (2006)

Outstanding Research Postgraduate Alumni Award

Dr Poon is the Head of Innovative Technology and CEO Advisor of Applied R&D in the Hong Kong Applied Science and Technology Research Institute (ASTRI). He leads the overall planning and development of ASTRI's new initiatives in Smart City, Smart Mobility and PropTech R&D.

Before joining ASTRI, Dr Poon served in the Hong Kong Productivity Council (HKPC) and Automotive Platforms and Application Systems (APAS) R&D Centre for over 17 years. To steer the applied research activities and commercialisation of R&D results, Dr Poon contributed to the establishment of Smart City Division of HKPC and APAS in Hong Kong and Greater Bay Area markets with a focus on Artificial Intelligence, Robotics, Smart Mobility, Electric Vehicles, Autonomous Driving, GeronTech and Metaverse. He has garnered numerous international awards and owns more than ten patents covering a wide range of smart city applications. Under his strong leadership, the R&D team grew from 9 staff members to 140+ scientists and researchers.

Dr Lawrence Poon Chi-kin
Doctor of Philosophy, Department of Mechanical Engineering (2004)

Outstanding Research Postgraduate Early Career Alumni Award

Dr Wang is a "Hundred-Talent Program" Research Fellow, Doctoral Supervisor, National Excellent Young Scholar (Overseas), and Humboldt Fellow in the College of Energy Engineering, Zhejiang University. His research interests include sustainable waste-to-energy technologies, recycling waste into construction materials, CO_2 sequestration and mineral utilisation.

Applying research to solve real-world problems has always been Dr Wang's priority. He developed the carbon-negative climate-smart biochar partition block, which won the Silver Medal at the 47th International Exhibition of Inventions of Geneva. He has been selected as the World's Top 2% Scientist.

Dr Wang has published over 80 SCI journal papers in total (with 48 first author or corresponding author papers), including over 70 papers in the Top 10% journals, 5 Hot Papers and 20 Highly Cited Papers, and co-edited 2 books (over 5,400 citations with an H-index of 47, Scopus). He has served as an Associate Editor for Soil Use and Manag., Editorial Board for 4 SCI journals, e.g., J. Hazard. Mater., and Guest Editor for 10 SCI journals, e.g., Bioresour. Technol.

Dr Leo Wang Lei
Doctor of Philosophy, Department of Civil and Environmental Engineering (2018)

RISING POLYU FASHION DESIGNERS

wow audience with creativity and imagination

As a world-class fashion and textiles education institution, PolyU's School of Fashion and Textiles (SFT) is dedicated to fostering students' development as independent designers, thinkers, leaders and entrepreneurs through a vibrant community. A long-standing tradition of SFT is to host a series of highly-anticipated fashion shows in town to showcase the innovative creations of its graduating students, providing them with a perfect platform to demonstrate their flair and talent to the fashion community.

PolyU Fashion Show 2023 - Bachelor of Arts (BA) (Honours) Scheme in Fashion and Textiles

Ms Shirley Chan Suk-ling, SFT Advisory Committee Chairlady and PolyU Council Member (fifth from right); Prof. Erin Cho, Dean of SFT (third from left); Mr Benny Wong Wai-yue, Chairman of Nameson Group Limited (fourth from left) and Mr Benson Yau, Chairman of the Hong Kong Intimate Apparel Industries' Association (HKIAIA) (fourth from right) congratulated the awardees at the PolyU Fashion Show 2023.

The PolyU Fashion Show was held at the Hong Kong Convention and Exhibition Centre in June 2023. A total of 30 collections from BA graduating students made their debut, covering three major areas including fashion design, knitwear design, as well as intimate apparel and activewear design.

The Show was well-received, attracting an attendance of over 1,400 distinguished guests, renowned fashion designers, alumni and fashionistas. At the same time, a global audience of nearly 40,000 watched the Show through live stream.

"Gentle Transitions: Impressions of Nature's Fleeting Embrace" by **Hana Li Yuxian**
Winner of the Overall Grand Award sponsored by Nameson Group Limited

"Art Tour" by **Wingo Chong Wing-wa**
Winner of the HKIAIA Overall Grand Award

Video

Dean of SFT, Professor Erin Cho said, "The annual PolyU Fashion Show is a testament to the hard work, dedication and passion of our wonderfully gifted students. We were particularly proud to see so many amazing designs on stage and the way the work defined new aesthetics and pushed the boundaries of what fashion is and what fashion can contribute to society."

PolyU MA Graduation Fashion Show 2023 – Master of Arts (MA) in Fashion and Textile Design

Seventeen MA graduating students showcased their design collections under the theme of "I = x, y, z, w".

The MA Graduation Fashion Show was held in July 2023 at PMQ, a Grade 3 Historic Hong Kong Building, with 17 MA graduating students presenting a diverse collection of works. The theme of this year's Show was "I = x, y, z, w", implying a gateway for the audience to experience the designer's complex inner psyche (x, y, z, w).

The Show attracted over 300 distinguished guests, including home-grown designer Ms Lu Lu Cheung, as well as a global audience of nearly 24,000 through live stream.

Mr Ryan Scott Houlton, programme leader, hoped that talented and ambitious young designers could fully demonstrate their creative potential through this practical one-year course. He remarked, "This programme aims to nurture future industry mavericks, who are innovative and free-thinking. We also equip them with comprehensive skillsets. I look forward to seeing our graduates shine in the field, and become a new driving force and potential disrupters in the global fashion industry."

Dr Lawrence Li Kwok-chang, Deputy Council Chairman (first from right); Dr Miranda Lou, Executive Vice President (centre); Prof. Christopher Chao, Vice President (Research and Innovation) (second from left); Mr Simon Wong, Vice President (Campus Development and Facilities) (first from left) and Prof. Erin Cho, Dean of SFT (second from right) attended the PolyU MA Graduation Fashion Show 2023.

Cash Sheng Zhichao's collection

Kina Yin Hao's collection

Shirley He Yitong's collection

Video

DESIGN INFINITY:

unfolding creative universes at PolyU Design Show 2023

Dr Lawrence Li, Deputy Council Chairman (seventh from left); Prof. Eric Yim, Court Member and Advisory Committee Chairman of School of Design (sixth from left); Dr Miranda Lou, Executive Vice President (second from left); Prof. Kwok-yin Wong, Vice President (Education) (first from left); Mr Simon Wong, Vice President (Campus Development and Facilities) (second from right); Prof. K. P. Lee, Dean of School of Design (seventh from right) and other guests showed their ardent support for the PolyU Design Show 2023.

Read More about PolyU Design Show 2023:

The PolyU Design Show 2023, organised by PolyU's School of Design, runs from 10 July to 25 October 2023. Themed "Grow to Discover. Expand to Show", this year's Design Show presents to the public more than 160 design projects created by individual students and co-presented by students across disciplines.

The annual Design Show has been a highlight for the creative and innovation industries in Hong Kong since 1970. It features the creative works of students from the School of Design's undergraduate programmes in Advertising Design, Communication Design, Digital Media, Environment and Interior Design, Interactive Media, Product Design and Social Design, and the postgraduate programmes in Innovative Business Design, Intelligent Systems Design, Multimedia and Entertainment Technology, Smart Service Design and Transitional Environments Design. Cross-disciplinary and cooperative client projects are also on display.

Addressing social needs with creativity

The exhibits address pressing issues that impact our day-to-day lives and reflect an amalgamation of innovative ideas and thorough user research. The projects demonstrate the students' proficient application of design disciplines and technologies and an understanding of social responsibility.

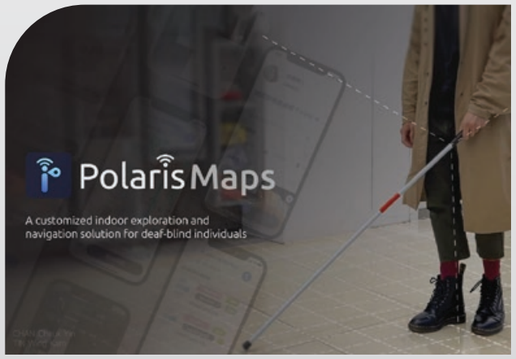
Professor K. P. Lee, Dean of School of Design, said, "As one of the world's top 20 tertiary institutions in art and design, PolyU's School of Design will mark its diamond anniversary next year. The School has been an important hub of design education and research in Hong Kong since 1964. PolyU's School of Design has long been nurturing designers who are not only innovative but also keep up with the trends in finding solutions to everyday problems."

Exhibits of PolyU Design Show 2023

Quexa by Foster Choi Wing-sing, BA (Hons) in Product Design — Tutor: Scott Chin

Quexa is a multifunctional short-range public mobility system for future microcities in Hong Kong's New Territories. The design intends to tackle the rising mobility needs in a newly contained city structure. Designed as an intuitive four-user mode convertible mobility, Quexa includes a dynamic steering system to suit every user, storage space for deliveries and other features to fit different age groups. Quexa's system utilises microcities' green energy as a power source while providing docking and battery-switching stations for users on the streets.

PolarisMaps by Chan Cheuk-yin and Tivona Tin Wing-kam, BA (Hons) in Interactive Media — Tutor: Jeffrey Ho



PolarisMaps aims to help individuals with deaf-blindness travel independently through the provision of indoor navigation apps with customisable visual and auditory features. By offering a three-step solution consisting of planning, virtual exploration, and actual exploration, the project enables individuals with varying levels of deaf-blindness to navigate shopping malls comfortably. The vision of the project is to empower deaf-blind individuals to explore indoor environments confidently and safely, thereby enhancing their motivation to engage with the world actively.

eSee Mart by Daisy Lau Sin-yu, BA (Hons) in Communication Design — Tutor: Brian Kwok

eSee Mart is a possible design concept in collaboration with a local supermarket primarily designed for people with visual impairment (PVI). This project aims to empower PVI by creating an inclusive shopping experience while letting them accomplish everyday tasks independently and comfortably. The main design features include portable tactile map, visual-impaired-friendly wayfinding signages, near-field communication smart shelves and supermarket configuration. This design concept could be widely used in the future enabling PVI to live more independently than before.

PolyU Sports Teams win GRAND SLAM FOR FIFTH CONSECUTIVE YEAR

For the fifth time in a row, PolyU Sports Teams snatched the Grand Slam and won both the Yearly Men's and Women's Overall Championships in the 2022/23 Inter-collegiate Competition, organised by the University Sports Federation of Hong Kong, China (USFHK).

The University's Sports Teams achieved another sweeping victory during the year, bringing home 16 championships, ten 1st runners-up and three 2nd runners-up places in the 33 sports events they participated in. The student-athletes beat fierce competition from other local tertiary institutions and won the Overall Champion in several events, including athletics, fencing, swimming, taekwondo, and woodball.

In addition, 16 PolyU students were named "Most Valuable Player" or "Individual Champion", recognising their impressive performances in their respective events.

16 championships

10 1st runners-up

3 2nd runners-up

33 sports events

The University held the PolyU Sports Team Annual Prize Presentation Ceremony to recognise the efforts of the student-athletes and celebrate their remarkable achievements. Dr Lam Tai-fai, Council Chairman and Prof. Jin-Guang Teng, President of PolyU attended the event.

Men's Teams	Events	Women's Teams
1st runner-up	Athletics	1st runner-up
1st runner-up	Badminton	1st runner-up
Champion	Basketball	Champion
1st runner-up	Cross-country	4th
1st runner-up	Fencing	1st runner-up
Champion	Handball	Champion
Champion	Karatedo	2nd runner-up
1st runner-up	Rugby	5th
1st runner-up	Soccer	1st runner-up
Champion	Squash	Champion
Champion	Swimming	Champion
Champion	Table Tennis	5th
Champion	Taekwondo	2nd runner-up
4th	Tennis	Champion
Champion	Volleyball	Champion
Champion	Water Polo	/
2nd runner-up	Woodball	Champion

Most Valuable Player (MVP) / Individual Champion

Chan Ho-kim
Basketball

Chan Tsz-long
Handball

Chan Yik-chung
Karatedo

To Wai-lok
Squash

Tsui Wai-chi
Swimming

Chan Yee-shun
Table Tennis

Leung Ming-yau
Taekwondo

Lo Yik-cheung
Volleyball

Lau Hok-yue
Water Polo

Chan Wing-yan
Basketball

Tsang Yuen-lam
Handball

Wong Po-yui Kirstie
Squash

Tam Hoi-lam
Swimming

Wan Skylar
Tennis

Ng Wing-laam
Volleyball

Leung Ching-yee
Woodball

PolyU held the Asian Universities Water Polo Invitational Tournament

PolyU water polo team won the 1st runner-up in the Asian Universities Water Polo Invitational Tournament held at PolyU.

PolyU organised the first Asian Universities Water Polo Invitational Tournament in July, sponsored by the Shun Hing Education and Charity Fund. Six participating teams from Hong Kong, Mainland China, Japan, and South Korea competed for the championship in the four-day competition held at PolyU's Michael Clinton Swimming Pool. After fierce rounds of competition, the PolyU water polo team secured the 1st runner-up position.

The six teams played a preliminary round-robin in two groups on the first three days. The last day was the Gold Medal Match between the top team of each group, PolyU and Korea National Sport University. The public attended the Gold Medal Match which was featured live through PolyU's video channel. The competition was friendly but fierce in the summer heat. Korea National Sport University eventually won the championship, and PolyU the second place. The other four participating teams were The Chinese University of Hong Kong, South China Agricultural University from China, Juntendo University, and Niigata Sangyo University from Japan.

Mr Ronald Po Yue-kai, coach of PolyU's water polo team, concluded that the team had learnt a valuable lesson. "The players know their physical limitations through the matches, and we will have more intense strength training in the future."

Professor Ben Young, Vice President (Student and Global Affairs) of PolyU, expressed his gratitude to all parties for their staunch support, "It is our privilege to host the tournament, which provides a wonderful opportunity to foster the spirit of camaraderie and sportsmanship among our young people."

Prof. Ben Young (centre) presented scholarships to the six participating teams. Korea National Sport University players received the Top Scorer and Most Valuable Player individual prizes.

The opening ceremony was officiated by Dr Lam Tai-fai, Council Chairman of PolyU, Professor Ben Young, Vice President (Student and Global Affairs) of PolyU, and Mr Justin Mong of the Shun Hing Group and the Shun Hing Education and Charity Fund.

New book to promote exercise for public health

The PolyU Press has recently published a new book titled *Comprehensive Exercise Guide for All*, written by experts from the University's Department of Rehabilitation Sciences (RS) to provide exercise advice for people with different health needs.

Sponsored by Shun Hing Education and Charity Fund, the book was co-edited by Professor Amy Fu, Peter Hung Professor in Pain Management, Associate Head and Professor of RS, and Professor Gabriel Ng, former Head and Chair Professor of RS.

RS has been designing exercise solutions with targeted curative effects based on its professional knowledge in medical and sports sciences. The publication is meant to transfer and popularise the University's research efforts to advocate target-oriented exercises for public health.

Exercising safely helps optimise health benefits: Professor Amy Fu hopes the book can help readers enhance exercise performance and health through proper sports training and changes in personal habits.

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