



香港大學
THE UNIVERSITY OF HONG KONG

ANNUAL REPORT 2023/24

Recurrent Funding for Knowledge Transfer
for the 2022/23 to 2024/25 Triennium

submitted to
University Grants Committee

July 2024

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EXECUTIVE SUMMARY

The University of Hong Kong (HKU) has demonstrated exemplary leadership in deepening its institutional capacity for realising and corroborating impactful research for 2023/24. This commitment is attuned to the following key initiatives:

- 1) strengthening efforts to promote impactful projects in strategic areas;
- 2) pioneering active engagement with industry and implementing intellectual property (IP) policies that support the effective commercialisation of research, and
- 3) expanding HKU's innovation and entrepreneurship ecosystem through coordinated initiatives and new measures.

On knowledge exchange, the social media initiatives launched in 2023 were positively met with encouraging analytics. **Seven significant video mini-series** based on research excellence were produced and well-received. In particular, the **webisode featuring Mui Tzi Lam and Kop Tong**, a unique feature on abandoned villages in Hong Kong, captured remarkable attention and exceeded our previous viewership records. This solidly demonstrates that our visual presentation of genuine narratives profoundly connects with our communities. Our monthly electronic newsletter, *HKU Impact* went through a revamp and was launched in January 2024, reaching a vast audience of stakeholders. **Expanding five social media outlets** is also a strategic move to ensure awareness is sustained with new and existing followers keen on HKU's research impact. The *Hong Kong Impact: Social Media Competition* encouraged HKU research students to showcase their discoveries and build their digital skills to communicate complex research to a general audience effectively. The continuity of the **Strategic Impact Funding Scheme** launched last year oversaw the emergence of 14 new projects with potential for significant impact in seven strategic areas. Each project will receive up to HK\$500,000. The existing Impact Project Funding Scheme, which offers up to HK\$150,000, granted approvals to six projects in 2023/24.

On industry engagement and commercialisation, HKU signed **Memoranda of Understanding (MoUs)** with the **China Mobile Hong Kong Innovation Institute; Hongdu Aviation and Hong Kong-Shenzhen Innovation & Technology Park (HKSITP)** to advance collaborative research, nurture R&D talents, and expand impactful commercialisation beyond Hong Kong. Following the **IP policy changes** that increased the profit-sharing portion for inventors to 80% and introduced the start-up-friendly fee model, the number of licenses to university spin-offs has surged by over 80%.

Inaugurated in June 2023, the **Techno-Entrepreneurship Core (TEC)** embodies HKU's vision to enhance its ascendancy in unwavering commitment to entrepreneurial education and research commercialisation. The 2023/24 academic year saw a significant increase in student participation in diverse events and competitions, further strengthening our mission and bolstering stakeholder confidence.

New initiatives, such as the **Start-up Connector programme** and the enhanced **HKU DeepTech100 programme**, have been launched to transition research technologies into the marketplace. Additionally, five university faculties joined hands to launch the **HKU MedTech Hackathon**.

At the **Asia Summit on Global Health**, the top 10 finalists from 35 teams presented their projects, highlighting the University's significant expertise and potential for advancing impactful healthcare innovations.

The first nationwide **HKU Innovation & Entrepreneurship Challenge**, broadening its scope to include international entries, concluded successfully in December 2023. In 2024, the competition

evolved into the **HKU Techno-Entrepreneurship Challenge**, which expanded to include international entries. By June 2024, a record number of applications had been received, setting the stage for another spectacular showcase of innovations on the HKU campus.

Finally, the University continued to recognise, and welcome recognition of, the groundbreaking achievements of our innovators. The **HKU Innovator Award** went to Professor Sun Hongzhe, who has dedicated over 20 years to exploring the role of metal ions in biology and medicine. Their kinfectious diseases like COVID-19 and widespread antimicrobial-resistant superbug infections. The **KE Excellence Award** went to Professor Ren Chao and Professor Li Yuguo for their outstanding research and advocacy in urban ventilation and wind corridor planning. This work, now integrated into national urban planning standards, has made and will continue to make a lasting impact on enhancing urban sustainability across numerous Chinese cities.

HKU researchers also received 42 awards for 40 inventions at the **49th International Exhibition of Inventions of Geneva**, including two special grand prizes, two Gold Medals with the Congratulations of the Jury, and 15 Gold Medals, among many others.

Moving forward, the University is firmly dedicated to harnessing its status as the region's top institution to revolutionise its research excellence and establish a dynamic innovation and entrepreneurship ecosystem within and beyond the HKU community. Embracing **interdisciplinary, industry-inspired, and internationalised innovations**, HKU is resolutely advancing toward becoming a global leader in nurturing future innovators and translating scientific discoveries into societal impacts in Hong Kong and the world.

1. DEEPENING INSTITUTIONAL CAPACITY FOR REALISING AND CORROBORATING IMPACTFUL RESEARCH

1.1 [Amplifying Brand Trust and Stakeholders' Engagement](#)

1.1.1 Strengthening Digital Media Literacy for Better Engagement

Active engagement on social media will undeniably increase the visibility and exposure of impactful research projects at The University of Hong Kong (HKU). The Knowledge Exchange Office (KEO) is resolute in its objective to support diverse faculties in promoting their research articles, presentations, or scholarly work through social media channels, thus contributing significantly to the advancement and exchange of knowledge.

1.1.2 Unveiling the Spectacular Research Impact Video Mini-Series

Amid the popularity of video content in social media, the KEO rode on this trend by creating a captivating six-part video mini-series. This series featured compelling, succinct, and visually stunning content showcasing some of HKU's most groundbreaking research impact in 2023/24. Each webisode highlighted a distinct focus area, such as the migration of Hong Kong's Danaid butterflies, the impact of thermal extremes on the city's tidal waves, HKU's oyster hatchery to tackle quality and faster harvesting, the use of Artificial Intelligence (AI) in dentistry to engage with communities, and the transformative power of smart logistics in modular integrated construction through a blockchain-based e-inspection platform.

The mini-series has garnered significant acclaim, with some webisodes racking thousands of views since its launch. This widespread online traction fortifies HKU's standing through its research excellence. It forges an emotional connection with the audience, underscoring the relevance and societal benefits of the research to diverse stakeholders.

1.1.2.1 Migratory Secrets of Danaid Butterflies



In the bustling city of Hong Kong, 40% of the land is adorned with lush green public spaces hosting a rich variety of plant and animal life, including an impressive 260 butterfly species. At HKU's School of Biological Sciences, a dedicated team led by Professor Tim Bonebrake, is embarking on a mission to uncover the migratory secrets of danaid butterflies. Their goal is to understand the migration patterns of these magnificent creatures and engage the public in this noble cause. By working together, they aim to protect

and conserve these butterflies and the diverse array of species that journey alongside them, all while preserving the precious forests and natural habitats of Hong Kong (<https://www.ke.hku.hk/story/video/Butterflies>).

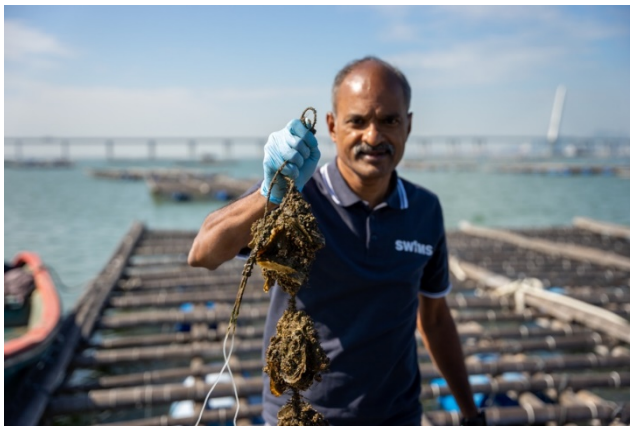
1.1.2.2 Dental AI to Engage the Community

Older adults are one of the most vulnerable patient groups when it comes to oral health issues. They may encounter various obstacles when seeking regular dental check-ups. To improve dental services for them, an HKU dentistry team led by Dr Walter Lam is working on a groundbreaking dental AI project. This project can potentially revolutionise the early detection of oral diseases and regularly monitor their dental conditions. The technology has already been applied to the outreach service of several elderly centres, bringing hope and



optimism to the community

1.1.2.3 HKU Hatchery to Supply Quality Oysters to Farmers



Hong Kong's 700-year-old oyster industry has faced many challenges, from red tides, heavy metal pollution and acidification to outdated growing methods, a lack of new, young farmers and an irregular supply of poor-quality seeds. Dr Thiyagarajan Vengatesen, Associate Professor in the School of Biological Sciences believes that the local growers need a seed that is resilient to disease, and that can grow faster. At the heart of Dr Vengatesen's plan is a hatchery inside the University's main campus that can produce six million seeds

annually from a sub-strain of the Hong Kong Oyster (*Crassostrea hongkongensis*) that he has named the HKU strain (<https://www.ke.hku.hk/story/video/oysters>).

1.1.2.4 Thermal Extremes Threaten Hong Kong's Tidal Zone

The marine environment faces a significant threat from rising temperatures, as evidenced by the increasing rock temperatures over the past year. Under the guidance of Professor Gray A. Williams from the School of Biological Sciences at HKU, a team is conducting essential research on the effects of temperature changes on intertidal organisms, particularly small snails called periwinkles. The periwinkles in Hong Kong have evolved to thrive in the intense summer heat by regulating their temperatures through resilient physiologies and simple behaviours. This makes Hong Kong an excellent location for important biological research due to its unique marine environment and biodiversity that warrant conservation (<https://www.ke.hku.hk/story/video/tidalzone>).



1.1.2.5 Revitalising Hong Kong's Abandoned Villages – Mui Tsz Lam & Kop Tong



What makes a good rural stewardship? The Forest Village Programme is an action research project initiated by the Centre for Civil Society and Governance at HKU, to bring Mui Tsz Lam and Kop Tong back to life. Adopting the revitalisation cluster as the scaling-up strategy, the HKU team expands its effort from the multi-faceted and inclusive revitalisation model of the Lai Chi Wo programme. It has now also taken on the Mui Tsz Lam and Kop Tong project with funding from the Countryside Conservation Office

(CCO). The collaborative efforts of the University, government, and community are another big step toward our sustainable development goals (<https://www.ke.hku.hk/story/video/revitalising>).

1.1.2.6 Revolutionising the Approach of Modular Integrated Construction with Smart Logistics

A research team led by the Faculty of Architecture at HKU has developed a blockchain-based e-inspection platform that allows all units to be checked and tracked from construction to delivery and final installation without crossing the border. The e-Inspection system - including i-Core, e-InStar and e-TranStar apps - is now being applied in the recent construction of the Wong Chuk Hang Student Residence, HKU and is supported by the HKU Estates Office, Paul Y. Engineering, Logistics and Supply Chain MultiTech R&D Centre with funding from HKSAR Innovation and Technology Fund



(<https://www.ke.hku.hk/story/video/smart-logistics>).

1.1.3 Presenting an Exquisite Visual Odyssey: Revitalising Hong Kong's Abandoned Villages Outperformed Past Social Media Viewership

KEO unveiled a captivating video highlighting HKU's Centre for Civil Society and Governance's "Forest Village Programme", partnered with the Association for Sha Tau Kok Culture and Ecology, Outdoor Wildlife Learning Hong Kong, and the Hong Kong Tree Society in 2023, dedicated to breathing new life into neglected villages such as Mui Tsz Lam and Kop Tong. The video has gained 841,000 views on Instagram, highlighting the programme's viral success and impact on village revitalisation. The efforts have extended beyond the Lai Chi Wo programme to revive Hakka villages in the Hing Chun Alliance, where Mui Tsz Lam (literally translated as 'Plum Grove') and Kop Tong are part of this cluster. These authentic stories, documented in the video, have deeply resonated with stakeholders, fostering a sense of shared purpose (<https://www.ke.hku.hk/story/video/revitalising>).

1.1.4 Inaugural Electronic Newsletter, *HKU IMPACT*

HKU IMPACT with its sleek digital makeover and inaugural release in January 2024! This dynamic monthly publication is a collaborative effort among the KEO, Technology Transfer Office (TTO), and Techno-Entrepreneurship Core (TEC). These offices play distinct yet complementary roles in promoting and amplifying research impact within HKU. Our mission is crystal clear: to showcase our collective efforts among KEO, TTO and TEC, as well as HKU research impact success stories (from KEO), offer expert advice on intellectual property (IP)

protection and commercialisation (from TTO), and nurture entrepreneurial endeavours (from TEC) through monthly updates on new launches, initiatives, achievements, groundbreaking research, and entrepreneurial success (<https://www.ke.hku.hk/about-ke/hku-impact>).



A Joint Publication of Knowledge Exchange Office, Technology Transfer Office and Techno-Entrepreneurship Core, The University of Hong Kong



Greetings!

Here's the inaugural issue of our eNews for the HKU community

Welcome to the brand-new edition of "HKU IMPACT", a collaborative effort brought to you by the Knowledge Exchange Office (KEO), Technology Transfer Office (TTO), and Techno-Entrepreneurship Core (TEC), HKU.

The three offices shoulder different yet complementary roles in promoting and amplifying research impact of HKU. KEO for showcasing HKU impact stories. TTO for intellectual property protection and commercialization. TEC for fostering venture building.

The monthly e-newsletter will bring you exciting stories and updates about the new happenings, initiatives and achievements, from groundbreaking research impact to entrepreneurial ventures. All the efforts will reflect our unflinching commitment to transcending research to bring about amplified research impact and knowledge exchange, nurturing of innovation, collaboration with the industry and the community, and grooming of new generations of entrepreneurs.

I hope you would find the newsletter informative, inspiring, and a channel for further collaboration. We welcome you to share your views with us and to join us in the ventures for knowledge exchange, impactful projects, innovation, entrepreneurship, and beyond.

Professor Max Shen
Vice-President and Pro-Vice-Chancellor (Research)

1.1.5 Exponential Expansion of Social Media Channels: Empowering the Showcasing of HKU's Profound Research Impact

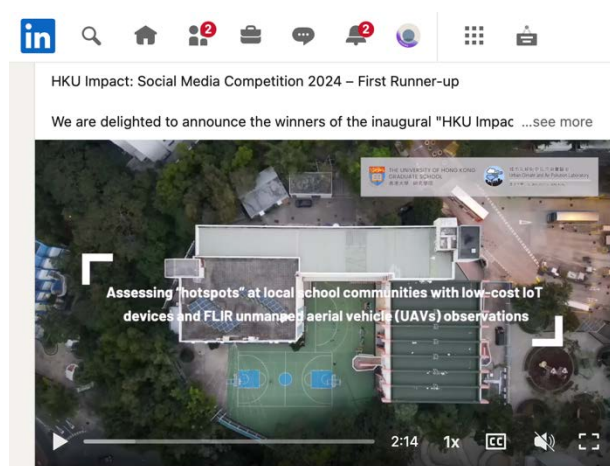
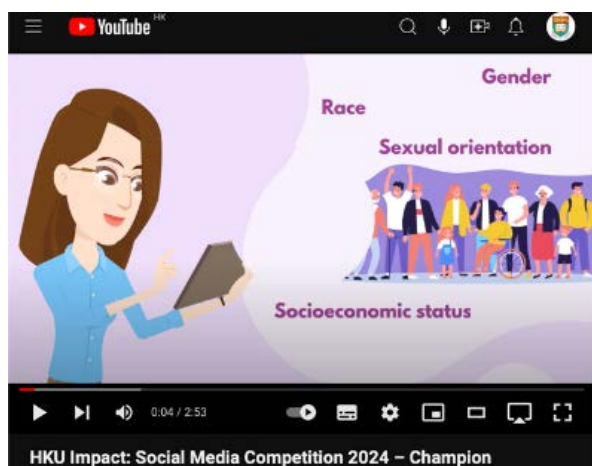
Social media, a powerful tool for communication, information dissemination, event announcements, updates, and community building, is at the core of our strategic expansion. The KEO aims to significantly enhance its online presence by launching five new accounts on popular platforms like Facebook, Instagram, YouTube, LinkedIn, and Twitter. The substantial engagement we've seen through 'Likes', 'Follows', 'Subscribes', and 'Comments' underscores our stakeholders' proactive support and keen interest in staying engaged. This digital media expansion will keep our stakeholders updated on our research advancements while extending the digital space for interactive debates and discussions.



1.1.6 Debut of *HKU Impact: Social Media Competition*

The ability to effectively convey scientific findings to stakeholders is potentially just as crucial as making the actual breakthrough in research. Nevertheless, transforming comprehensive research into a compelling narrative and impactful presentation is no easy task. This is one of the reasons behind the launch of the "*HKU Impact: Social Media Competition*," which aimed to inspire and empower postgraduate students at HKU to showcase the significance of their theses and research discoveries to a diverse and general audience. Participants utilised various social media platforms to engage with the community.

Participants unleashed their creativity by producing original entries that could be uploaded and disseminated on any of our existing social media channels. By harnessing the power of these platforms, our goal is to engage a broader community and elevate the visibility of our students' impactful research. Miss Li Zixu, a PhD student, was awarded the winning entry for her exploration of "Suicidality at the intersection of sex/gender, sexual orientation, and gender expression among secondary school students in Hong Kong" (<https://youtu.be/Efl4KPdLTi8?feature=shared>). The first runner-up title was given to Mr Jeffrey Chang Man Hei, a PhD student, for his project, "Incorporating citizen science and high-resolution regional climate models in urban heat and pollution island diagnostics" (<https://www.linkedin.com/feed/update/urn:li:activity:7209102875258425344>).



1.2 University-Level Awards: Bringing about Societal Impacts

KE Excellence Award 2023: Professor Ren Chao and Professor Li Yuguo

The university-level KE Excellence Award is given to one project yearly that has had significant economic, social, environmental or cultural impacts that have benefited society. The ninth round of the KE Excellence Award in 2023/24 was awarded to Professor Ren Chao (Department of Architecture) and Professor Li Yuguo (Department of Mechanical Engineering).



Urbanisation in China has caused problems like poor air quality and reduced visibility. Decision-makers and planners in China now want scientific evidence to support their urban planning and design. Since 2006, Professor Ren and her team have been researching urban ventilation and wind corridor planning. They have developed methods to assess wind dynamics and detect wind corridors using remote sensing and geographic information systems. These findings have been used in master city plans and urban designs in over 40 Chinese cities and adopted into local urban design guidelines, technical notes, and legal documents. A national technical guide on urban ventilation has been endorsed by the Ministry of Natural Resources of

China and implemented in city master planning exercises since 2019. Internationally, the research has led to projects in cities across Asia and Europe and has influenced city planning and climate change adaptation policies. The findings have been included in a report by the Intergovernmental

Panel on Climate Change and in guides issued by the World Meteorological Organisation (<https://www.ke.hku.hk/story/video/urban-ventilation-assessment-and-wind-corridor-plan-for-chinese-cities>).

HKU Innovator Award 2023: Professor Sun Hongzhe

The HKU Innovator Award is given to Faculty members whose innovations have exceptionally high potential impact (legacy or projected legacy) for transformative results. The 2023 contender goes to Professor Sun Hongzhe from the Department of Chemistry. Professor Sun and his research team have dedicated over 20 years to exploring the role of metal ions in biology and medicine. Their innovative work led to developing novel metallodrugs, which they repurposed to combat emerging infectious diseases like COVID-19 and widespread antimicrobial-resistant superbug infections. Amid the pandemic, they successfully formulated a cocktail therapy that effectively suppresses the replication of the SARS-CoV-2 virus, presenting a promising new approach to treatment. Their groundbreaking research has not only garnered attention from local pharmaceutical companies and media outlets but has also facilitated collaboration among government, university, and industry stakeholders (<https://www.ke.hku.hk/story/video/professor-hongzhe-sun-from-the-department-of-chemistry-wins-the-hku-innovator-award>).



1.3 Faculty KE Awards: Pioneering New Possibilities

The Faculty KE Awards Scheme recognises significant KE impact by HKU academic staff at the Faculty level. The 13th round, held in 2023/24, received nine entries, illustrating the strong interest in KE among faculties. Two examples are described below.

Big-data Pharmacovigilance of COVID-19 Vaccines Shapes Public Health Policies

Led by Professor Ian Wong and his team from the LKS Faculty of Medicine, efforts include linking up population-based clinical and vaccination records in Hong Kong to identify associations between COVID-19 vaccination and potential adverse events. We were among the first team in the world to provide analytic evidence on the risk of Bell's palsy and carditis following vaccination. Direct measurable impacts include the subsequent amendment of the product insert of CoronaVac to include Bell's palsy as a very rare side effect and the suspension of the second dose of BNT162b2 for minors to lower the risk of carditis. As an intangible impact, our partnership with the Government significantly enhanced public trust in the safety and effectiveness of the vaccines.

'Ink Art and New Music' Creative Exchange Project of Composing for Mixed Ensemble



'Ink Art & New Music' is a captivating and immersive series designed to foster connections between creative, knowledgeable, and inquisitive individuals while sparking thought-provoking discussions. This visionary project led by Professor Chan Hing Yan in the Faculty of Arts unfolded in three distinct phases, delving into the shared aesthetics and pioneering possibilities of new music with a mixed ensemble featuring a unique combination of both Chinese and Western instruments that responds explicitly to specific ink paintings. Drawing inspiration from the remarkable 20th and 21st-century ink paintings housed in the M+ collection, the project gave rise to seven exquisite musical compositions. These

extraordinary compositions were premiered at HKU and Bard College in New York, captivating audiences with their fusion of tradition and innovation. More details are at Annex I-B.

1.4 [KE Funding Scheme: Nurturing Interdisciplinary Collaboration](#)

The annual **KE Funding Scheme for Impact Projects** supports projects that create social, economic, environmental, or cultural impacts and gather evidence for assessment. It encourages interdisciplinary collaboration and engagement among Faculties, non-Faculty-based units and external partners. The maximum funding for a proposal under the Impact Projects scheme remains at HK\$150,000.

The launch of the **KE Funding Scheme for Strategic Impact** in 2022 aims to enhance project funding support. The maximum funding is capped at HK\$500,000.

Both schemes supported proposals under the following seven strategic themes:

- (a) Green and Sustainable Energy
- (b) Health and Medical Technologies
- (c) Industry 4.0
- (d) Smart Cities
- (e) Food Security and Nutrition
- (f) Use of IT in Education
- (g) Community Engagement for Governance and Law



In total, 14 proposals were approved under the Strategic Impact Funding Scheme, while six proposals benefitted from the Impact Project Funding Scheme in 2023/24.

SUPPORT+: A Web-based and Mobile App for Cancer Patients in the Community



The SUPPORT+ project involves a mobile app, website and social media (Facebook, Instagram) for the public to use free of charge. The mobile app can be downloaded worldwide from AppStore, Google Play and Huawei. It is the first app developed for monitoring symptoms and providing self-management advice for patients with advanced cancer. In collaboration with colleagues in the Department of Clinical Oncology, various departments in the LKS Faculty of Medicine, Social Science and Biological Science, and NGOs, SUPPORT+ provides up-to-date

information about cancer management and palliative care, research findings in HKU, caring and nutritional tips in an easy-to-read format in three languages.

Exploring Forms of Legal Redress Available to Persons with Disabilities Subjected to Conditional Discharge Orders in Hong Kong

This project, to be conducted collectively with the Disability Rights Clinic, aims at materialising and disseminating research output and resources relating to disability rights, as defined in the Convention on the Rights of Persons with Disabilities (CRPD), to the wider community as well as community stakeholders in Hong Kong and internationally. With a focus on the intersection on mental health and mandatory outpatient treatment schemes, this project will serve to promote capacity-building and training for NGOs and professionals about disability rights as well as legally assist Persons with Disabilities (PWD) in relation to their mandatory outpatient treatment schemes.

2. TECHNOLOGY TRANSFER AND INDUSTRY ENGAGEMENT

2.1 Fortifying Existing and New Partnerships as Part of Outreach

HKU scholars and the Technology Transfer Office (TTO) are proactively establishing strong connections and collaborations with industry stakeholders in the region. By engaging with companies and investors, they are successfully increasing awareness about our innovative advancements.

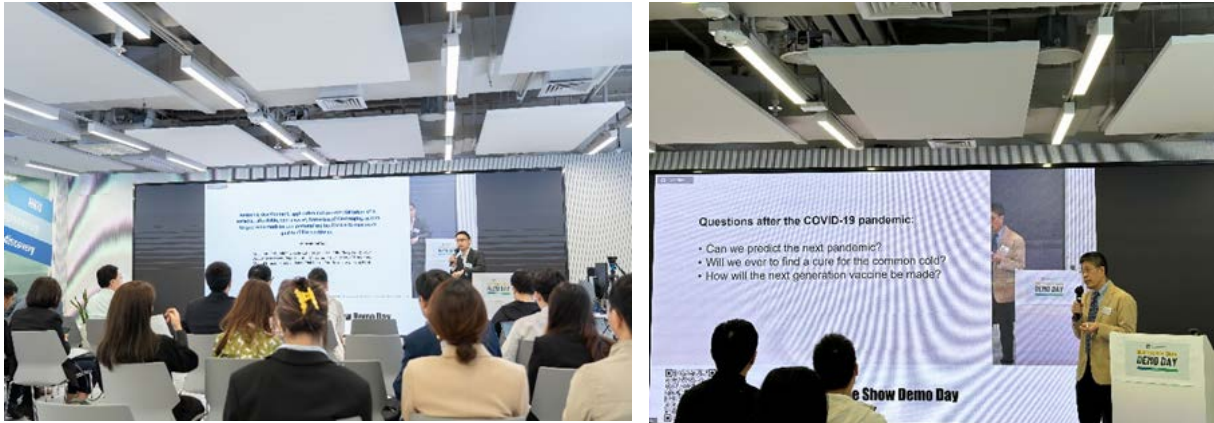
HKU Industry Forum on New Energy & New Materials

The recent HKU Industry Forum on New Energy & New Materials was a resounding success, uniting over 100 distinguished thought leaders and attendees from local and mainland China. The forum provided a platform to showcase HKU pioneering research capabilities tailored to industry needs.



It facilitated an invaluable exchange of insights among industry pioneers, government representatives, and academic experts from HKU. Discussions drilled in on the effective commercialisation of innovative new materials, latest advancements in battery technology, and practical applications of new energy vehicles (<https://www.tto.hku.hk/event/hku-industry-forum-2023-new-energy-and-new-materials>).

Demo Day



The Demo Day celebrates the creative energy of up-and-coming startups from HKU. It provides a valuable opportunity for these startups to showcase their innovative ideas and business plans to potential investors. This event encourages discussion and cooperation between researchers and investors, sparking the exchange of groundbreaking ideas. Notably, two Demo Days have been effectively hosted, with over 40 startups and research teams connecting with venture capitalists to explore investment and assistance opportunities.

Engaging New Leading Enterprise – China Mobile Group

China Mobile Group has signed a Memorandum of Understanding (MoU) with the China Mobile HK Innovation Institute to collaborate on fostering innovation in communication technology and intelligent science. Their partnership aims to advance research and applications in fields such as Artificial Intelligence, 5G/6G, and Web 3.0 to enhance market competitiveness.

Exploring Technology Expert in Aeronautical Area – Hongdu Aviation



The signing of the MoU between HKU and Jiangxi Hongdu represents a pivotal stride towards establishing a robust aviation industry and education system centred around general aviation. While Hong Kong's aviation sector currently revolves around airport transportation and aircraft maintenance, the collaboration between HKU and Jiangxi Hongdu aspires to propel Hong Kong into a global leader in technological innovation.

Jiangxi Hongdu is set to expedite the development of both manned and unmanned aircraft through collaborative efforts with HKU, encompassing the optimisation of existing technologies, exploration of new power sources, and attainment of aviation certifications in China and beyond. Notably, Jiangxi Hongdu is dedicated to carving out a significant market presence and driving swift advancements.

On the other hand, HKU is poised to leverage its research expertise in engineering and business for pioneering aviation technology projects through this partnership. Additionally, HKU strategically plans to introduce new, specialised courses and harness industry and technical

resources offered by Jiangxi Hongdu, supplemented by financial backing from the general aviation manufacturing sector.

Engaging Industry Partners to Explore Collaborations

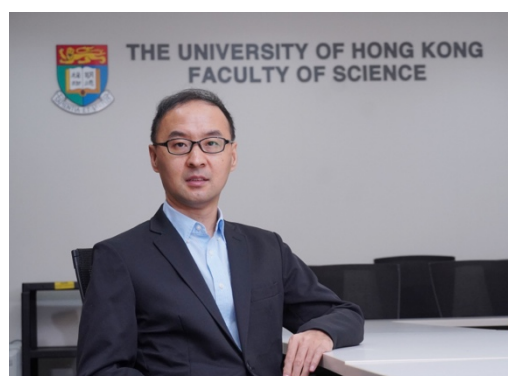
We have proactively connected with various industries throughout the academic year, showcasing our engagement with sectors such as healthcare, aviation, marine, AI chips, sensors, materials, semiconductors, and display devices. Additionally, we have confidently pursued and explored numerous domestically and internationally opportunities, illustrating our proactive approach to industry engagement and networking.



2.2 Transferring HKU Technology

HKU has long brought its inventions to the community through patenting and licensing. There are 121 newly granted patents and the income generated from IP is HK\$8.65M in 2023/24.

New Antibiotic Drug Developed by HKU Chemistry Research Team Approved for Clinical Trials in Humans



Professor Li Xuechen and his team at the Department of Chemistry have created a groundbreaking antibiotic called Kynomycin. This novel drug targets complex skin and soft tissue infections caused by bacteria. The patent has been licensed to a pharmaceutical company in Mainland China, and Kynomycin has received approval for drug clinical trials from the National Medical Products Administration of China in October 2023, allowing it to undergo testing on human subjects (<https://www.hku.hk/press/press-releases/detail/26108.html#:~:text=Clarification-Professor%20Xuechen%20LI%20receives%20prestigious%20Contribution%20Award,Chemistry%20from%20Chinese%20Chemical%20Society&text=Professor%20Xuechen%20LI%20of%20the,Chinese%20Chemical%20Society%20>).

Revolutionising Building Management and Sustainability with Innovative 3D Technology by Professor Llewellyn Tang's Team

Professor Llewellyn Tang and his team have developed SuperApp-AutoCDE, a technology aimed at revolutionising information management within buildings. The technology digitises and standardises data, transforming it into immersive 3D environments and empowering clients to save time, reduce costs, and optimise energy consumption. Licensed to Professor Tang's spinoff company, "LPC," it has gained the trust of over 100 clients and secured HK\$25 million in Series A funding, with a valuation of HK\$424 million. The team is dedicated to expanding the application's capabilities, including enhancing firefighting features in existing buildings and creating tailored 3D visualisations for special education needs in schools (<https://www.hku.hk/press/press-releases/detail/26830.html>).



2.3 Sustaining Innovative Research Projects with Industry Sponsorship

HKU has secured funding for three groundbreaking research projects as part of the ITC's RAISE+ initiative. Launched in October 2023, RAISE+ aims to foster collaboration between academia, industry, and research sectors. The ultimate goal is to leverage the expertise of local universities to transform and commercialise research and development outcomes.

The first project, spearheaded by Professor Zhiwei Chen, is centred around developing the $\Delta 42PD1$ antibody drug for immunotherapy targeting cancers and infections. Building on a novel drug target discovered by the HKU team in 2013, the project has led to the establishment of Orimmune BioTech Limited. This startup seeks to advance the commercialisation of $\Delta 42PD1$ -targeting drugs. It is determined to bring the lead $\Delta 42PD1$ -blocking antibody drug to clinical trials for treating liver cancer and other associated conditions.

The second project, helmed by Professor Chi Ming Che, is dedicated to pioneering molecular emitters that enhance practical OLEDs and wearable devices. The research endeavours to address pertinent challenges in the OLED industry, including developing high-efficiency blue and near-infrared (NIR) OLEDs, cost reduction of emitters, and creating wearable biomedical devices with flexible OLED displays. Furthermore, the research team is exploring the application of OLED technology in wearable display devices designed for phototherapeutic or biomedical purposes.

The third project, led by Professor Vivian Yam, is focused on developing proprietary gold(III) luminescent materials for various innovative applications. By tapping into the country's natural resources and leveraging the research team's competitive edge, the project aims to uncover gold(III) luminescent materials for use in OLED applications. The ultimate objective is to generate a pioneering series of high-performance gold(III) luminescent materials for OLED applications and to create compact, affordable, non-invasive healthcare devices.

With the backing of the ITC and industrial partners, these projects aim to make significant contributions to innovative healthcare applications and the development of the National Space Science and Technology Mission (https://www.hku.hk/press/news_detail_27386.html).

2.4 Startup Showcase at TechInnovation 2023: Showcase of Six New Inventions by HKU Startups

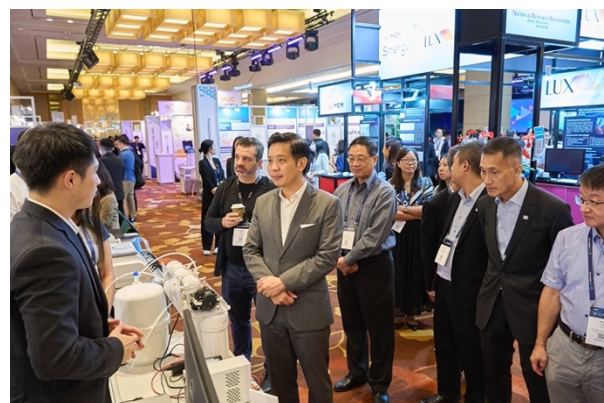
TechInnovation 2023 is a cutting-edge event organised by IPI Singapore, serving as a robust



platform for technology providers to connect with potential technology seekers from leading industries, paving the way for potential commercialisation opportunities.

The event features six groundbreaking projects presented by HKU startup companies, showcasing their latest inventions. These projects encompass three engineering innovations, two pioneering medical advancements, and one remarkable scientific breakthrough. During the event, these dynamic startup companies established meaningful connections. They conducted high-impact meetings with prominent industry players, including a prominent Chinese phone manufacturer, a renowned French rail transport manufacturer, and influential Singaporean NGOs. This strategic engagement represents a pivotal advancement for these startups as they seek to expand their market reach from China and Hong Kong to the broader APAC region and overseas.

2.5 Stellar Performance at the 49th International Exhibition of Inventions of Geneva



HKU celebrated major successes at the 49th International Exhibition of Inventions of Geneva, bagging 42 awards, including two special grand prizes. The results were announced on 19 April 2024.

The event is a highly esteemed yearly occasion focusing solely on groundbreaking inventions and innovations. At this year's event, HKU proudly presented 40 research inventions designed to tackle critical human issues. These inventions spanned various fields, including biomedicine, transportation safety, AI integration in architecture, animal wellness, advanced materials, construction automation, environmental solutions, fluid dynamics, and smart healthcare devices.

Professor Max Shen, Vice-President and Pro-Vice-Chancellor (Research) expressed his delight in the researchers' achievements. He stated, "This year marks the largest number of awards the University has received, so we are certainly gratified with the outcome and very proud of our

researchers. The University has also shown a deep commitment to transferring our research findings into tangible applications in the market. Through our collaborations with global research and industry partners, we will continue transforming our pioneering research innovations into products that bring a positive and sustainable impact to humanity.”

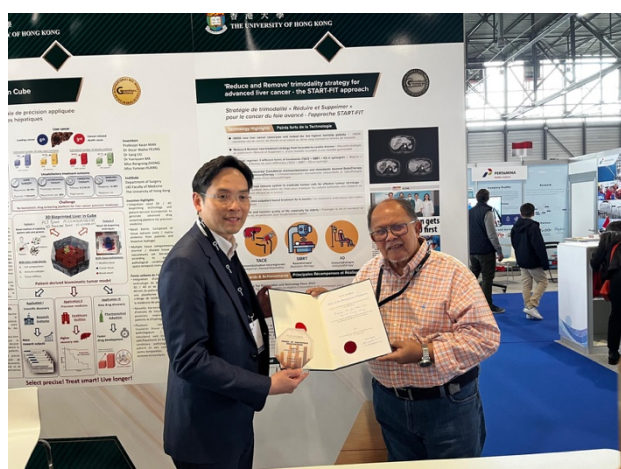
The participating research teams include the Faculty of Architecture; Faculty of Dentistry; Faculty of Engineering; Faculty of Science; LKS Faculty of Medicine, and seven HKU Inno Laboratories established under the Hong Kong Government's InnoHK programme, namely: Advanced Biomedical Instrumentation Centre; Centre for Virology, Vaccinology and Therapeutics; Centre for Transformative Garment Production; Centre for Immunology & Infection; Centre for Oncology and Immunology; Centre for Translational Stem Cell Biology and Laboratory of Data Discovery for Health. From this 49th edition, HKU earned two special grand prizes, two Gold Medals with Congratulations of the Jury, 15 Gold Medals, 19 Silver Medals, and four Bronze Medals with their innovative contributions (<https://www.hku.hk/press/press-releases/detail/27236.html>).

Here are some of the winning projects:

Bionic Liver-in-Cube: Comprehensive Precise Theranostics for Liver Cancer and Diseases, developed by the research team led by Professor Man Kwan from the Department of Surgery, was the winner of the Special Grand Prize – Prize of the China Invention Association and was awarded a Gold Medal. The invention introduces a novel 3D bioprinted platform designed to assess the efficacy and potential side effects of various traditional and emerging drugs, thereby aiding clinicians in making precise treatment decisions.

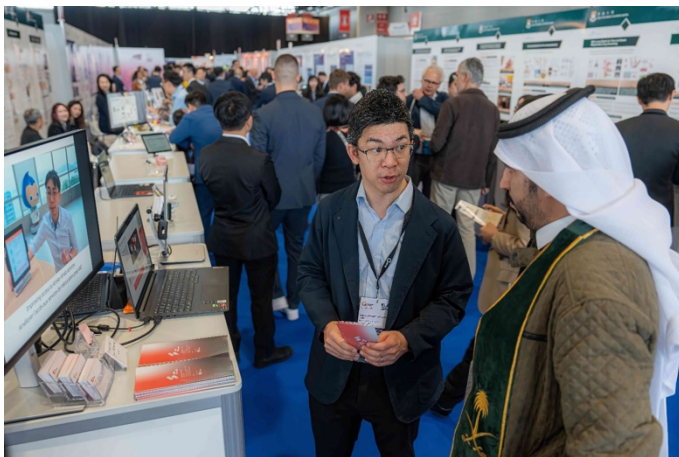
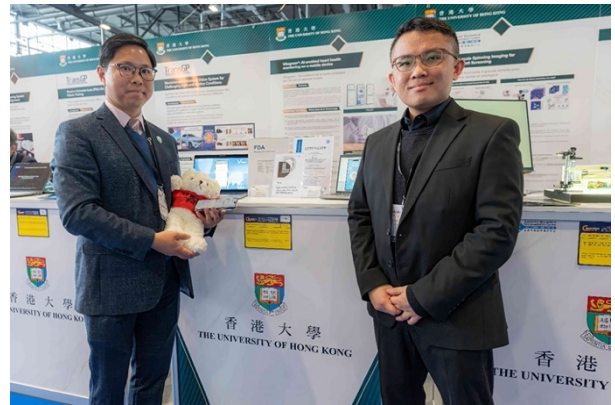


'Reduce and Remove' Trimodality Strategy for Advanced Liver Cancer: the START-FIT approach,



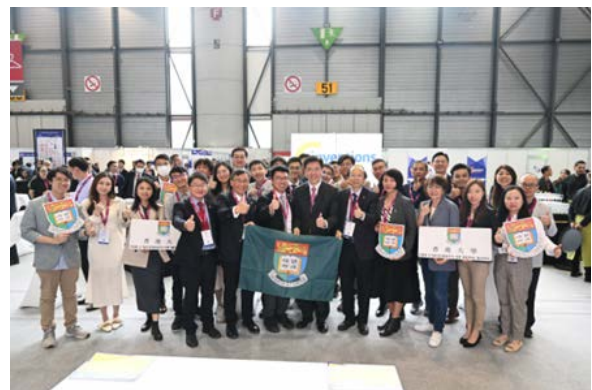
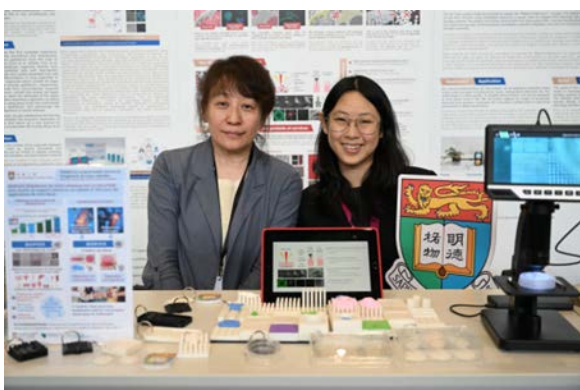
co-developed by Professor Chan Chi-yan Albert from the Department of Surgery and Dr Chiang Chi Leung from the Department of Clinical Oncology, was the winner of Special Grand Prize – Prize of the Delegation of Malaysia and was awarded a Silver Medal. This innovative invention introduces a novel 'cocktail' strategy that synergistically combines three distinct modalities: locoregional transarterial chemoembolisation, stereotactic radiotherapy, and systemic immunotherapy, for treating liver cancer.

Vitogram®: AI-enabled Heart Health Monitoring on a Mobile Device, developed by Professor Joshua Ho from the School of Biomedical Science, won a Gold Medal with the Congratulations of the Jury. The device uses Artificial Intelligence (AI) to transform ordinary consumer-grade smartphones into digital stethoscopes, bridging a critical gap in healthcare accessibility. Through an intuitive mobile app interface, users can effortlessly digitise and analyse their heart sounds by placing their mobile device on their chest.



SmartRehab: An Automated Telerehabilitation Solution, developed by ReMobility Limited, a startup company founded by members from HKU Stroke, Department of Medicine, HKU Med and Sport AI Laboratory of the Department of Electrical and Electronic Engineering, in collaboration with The Hong Kong Society for Rehabilitation, also won a Gold Medal with the Congratulations of the Jury. This innovative digital platform transforms

the fields of physiotherapy and occupational therapy by integrating cutting-edge AI and computer vision technology. It provides personalised therapy sessions in the comfort of your own home, offering step-by-step guidance and AI-assisted feedback to improve the effectiveness of exercises.



3. GLOBAL COLLABORATION THROUGH INNOHK CENTRES

InnoHK, led by the Hong Kong SAR Government, is establishing top research clusters at the Hong Kong Science Park in collaboration with local universities. The initiative includes nine HKU-led R&D Centres, each focusing on specific areas of research and development, facilitating global cooperation, and working closely with international partners. The centres aim to create an innovation-friendly environment, promote commercialisation, and effectively translate research outcomes into impactful products for industries, operating under the Health@InnoHK and AIR@InnoHK clusters for healthcare-related technologies and Artificial Intelligence and Robotics technologies, respectively.

3.1 [AIR@InnoHK – Development of Artificial Intelligence \(AI\) and Robotics Technologies](#)

AIR@InnoHK concentrates on the development of Artificial Intelligence (AI) and Robotics technologies with R&D Centres such as:

- the Laboratory of Data Discovery for Health (D²4H);
- the Centre for Transformative Garment Production (TransGP), and
- the Hong Kong Quantum AI Lab (HKQAI).

Laboratory of Data Discovery for Health Wins Gold Medal with Congratulations of the Jury at the 49th International Exhibition of Inventions of Geneva



A pioneering invention developed by the Laboratory of Data Discovery for Health (D²4H), Vitogram[®], has been honoured with one of the top awards – ‘Gold Medal with Congratulations of the Jury’ – at the 49th International Exhibition of Inventions of Geneva on 19 April 2024. Among the awardees from HKU, D²4H stands out as the sole InnoHK Centre established with HKU to receive this exceptional recognition.

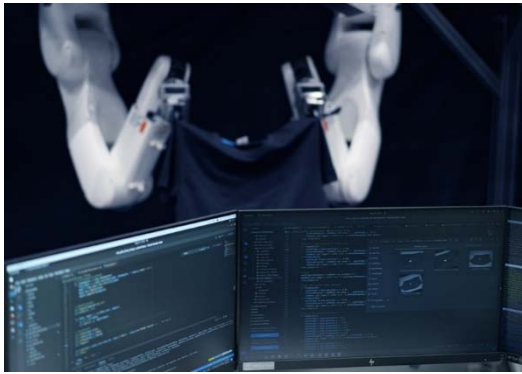
Developed by D²4H’s Lead Scientist, Professor Joshua Ho, this digital health solution offers an integrated AI-enabled platform for collecting and analysing heart health data using smartphones, facilitating telemedicine and self-monitoring. Through Vitogram[®]’s intuitive mobile app interface, users can effortlessly digitalise and analyse their heart sounds by placing their mobile device on their chest.



The 49th International Exhibition of Inventions of Geneva, held in Switzerland between 17 – 21 April 2024, brought together inventors from around the globe. The Exhibiton, featuring an array of 1,035 inventions, has drawn interest from more than 24,000 participants over five days.

For more information about D²4H, please visit <https://www.d24h.hk>.

TransGP Develops Robotic Manipulation and Sewing of Fabrics and Garments



Centre for Transformative Garment Production (TransGP) is developing robotic grippers and AI-powered solutions for handling deformable materials in automation. Deformable materials present significant challenges for automation across various industries, such as apparel, laundry, recycling, and more.

TransGP is thrilled to have participated in the 49th International Exhibition of Inventions of Geneva. Its cutting-edge fixture-free 2D Sewing System, Passive Actuator-Less Gripper and Neuromorphic Enhanced Vision System were recognised with three Silver Medals!

TransGP is also honoured to have contributed to the InnoHK Summit 2023. Managing Director, Professor Norman Tien, and Deputy Managing Director, Professor Kazuhiro Kosuge, highlighted the groundbreaking research achievements of TransGP in robotic manipulation and sewing of fabrics and garments, along with a suite of AI-driven technologies to understand human motions and vision for industrial applications (<https://www.transgp.hk/copy-of-air-seminar-2023>).



Hong Kong Quantum AI Lab (HKQAI) Signs MoU with Shanghai to Establish "Battery Digitalisation Platform"



HKQAI, Shanghai Lingang Special Area Management Committee, and the Lingang Group signed a strategic MoU at the Central Government Offices in Shanghai during the 6th plenary session of Hong Kong/Shanghai co-operation conference on 26 April 2024 . The signing was witnessed by Mr John KC Lee, Chief Executive of Hong Kong SAR, and Mr Zheng Gong, Mayor of Shanghai, marking the official commencement of their collaboration in the field of new energy digitalisation. According to the MoU, the total collaboration amount for the project is RMB 111 million over a period of three years (<https://news.mingpao.com/ins/港聞/article/20240426/s00001/1714140025673/innohk>).

3.2 [Health@InnoHK -- Focus on Healthcare-Related Technologies](#)

Health@InnoHK focuses on healthcare-related technologies, with R&D centres such as:

- the Advanced Biomedical Instrumentation Centre (ABIC),
- the Centre for Immunology & Infection (C2i),
- the Centre for Oncology and Immunology (COI),
- the Centre for Translational Stem Cell Biology (CTSCB),
- the Laboratory for Synthetic Chemistry and Chemical Biology (LSCCB), and
- the Centre for Virology, Vaccinology, and Therapeutics

Advanced Biomedical Instrumentation Centre (ABIC) Bags Nine Awards at the 49th International Exhibition of Inventions of Geneva



ABIC's accolades at the 49th International Exhibition of Inventions of Geneva totalled nine awards, including two gold and seven silver medals. These accomplishments of ABIC's research groups in Geneva symbolised a substantial growth in global recognition of its pioneering innovations.

ABIC also inked MOUs with some 60 partners from nine economies as part of its inaugural partnership with Hong Kong-Shenzhen Innovation and Technology Park (HSITP), the most strategic and influential I&T platform. This officially marked a significant milestone for ABIC. The ceremony was witnessed by the Chief Executive, Mr John Lee; the Acting Financial Secretary, Mr Michael Wong; and the Secretary for Innovation, Technology and Industry, Professor Sun Dong, together with representatives of some 60 enterprises with the Chief Executive Officer of the HSITP, Mr Vincent Ma (<https://abic.hk/>).

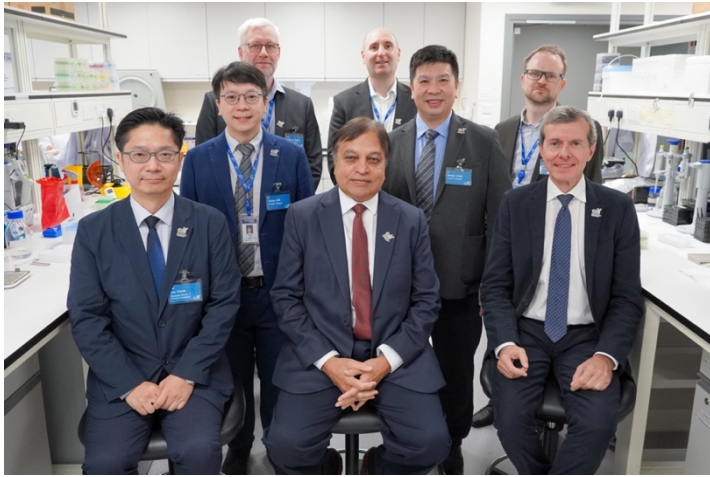


C2i & Hitachi To Collaborate on Automation of Organoid Cell Culture & Mass Production of Exosomes

The Centre for Immunology & Infection Limited (C2i), Hitachi East Asia Limited and collaboration companies have signed two MoUs on 15 November 2023 to promote sustainable long-term cooperation and partnership in joint research for the automation of organoids cell culture and mass production of exosomes in Hong Kong and Mainland China. This signing also recognises the importance of international collaboration, where



new automation facilities with latest technologies of the highest standards will be developed.



Signed by Professor Leo Poon, Managing Director, Centre for Immunology & Infection Limited (C2i), Ms. Naoko Tsuzuki, Managing Director, Hitachi East Asia Limited, Professor Malik Peiris, Co-Director, C2i, Dr. Michael Chan, Principal Investigator, C2i, this collaboration aims at improving the treatment of acute lung injury by producing innovative, physiologically relevant, disease platforms for screening therapeutic candidates and developing molecules for treating acute

lung injury and providing the highest quality services to help the general public tackle the challenges that come with these illnesses (<https://www.c2i.hk/post/c2i-hitachi-to-collaborate-on-automation-of-organoids-cell-culture-mass-production-of-exosomes>).

Centre for Oncology and Immunology (COI) Tackles Cancer with Innovative Immunotherapies



COI is internationally competitive, taking on critical problems in cancer and excelling in producing innovative solutions in collaboration with overseas and local collaborators. COI has completed numerous successful projects in high-value areas of immunotherapy, gene editing, and “druggable” targets and is establishing platforms of discovery to address unmet needs of patients with liver cancer, gastric cancer, colorectal cancers, acute myeloid leukaemia, and many other Asian and global solid tumours. The quality of the

research outputs, mentorship, and leadership of senior leaders in fostering and promoting the development of mid and early-career scientists at COI has led to several high-impact publications in Science, Nature Cancer, Nature Genetics, Gut, Nature Communications, and Nature Biomedical Engineering, among others (<http://www.coinno.hk/>).

Centre for Translational Stem Cell Biology (CTSCB) won the Gold Medal at the 49th International Exhibition of Inventions of Geneva



The Centre for Translational Stem Cell Biology (CTSCB) in Hong Kong is dedicated to developing cutting-edge stem cell technologies and applying them to regenerative medicine, autoimmunity, and genomic medicine. By uniting top scientists and clinicians from HKU, the University of Cambridge and worldwide, CTSCB is committed to translating their discoveries into groundbreaking advancements for both commercial success and healthcare benefits.

CTSCB has recently achieved a major milestone by creating the first stem cell platform to rapidly simulate the aging of human cells, paving the way for the development of anti-aging drugs. This breakthrough also sheds light on the mechanisms of aging-related diseases such as cell aging molecules and Alzheimer's disease, and allows for the testing of the efficacy of anti-aging drugs or products. It's no wonder that this research earned a gold medal at the 49th International Exhibition of Inventions in Geneva (<https://www.med.hku.hk/en/news/press/20240627-HKUMed-develops-a-novel-and-rapid-normal-human-cell-ageing-system>).

LSCCB Aims to Integrate Chemical and Biomedical Sciences for the Treatment and Analysis of Human Diseases



The Laboratory for Synthetic Chemistry and Chemical Biology (LSCCB), established in 2020, operated with a tripartite collaboration of HKU, Imperial College London and Peking University. LSCCB aims to integrate chemical and biomedical sciences to develop new molecular medicines and diagnostic tools for the treatment and analysis of human diseases, in particular, cancer.

LSCCB currently assembles more than 20 principal investigators for four major research programmes including (a) Synthetic Chemistry; (b) Chemical Biology of Natural Products and Chinese Medicine; (c) Metal Anticancer Medicine, Diagnostics and Theranostics; and (d) Multi-Omics and Innovative Analytical Technologies for InnoHealth (<https://www.innovationhub.hk/articles/lscbb>).

CVVT Sets Out to Provide Effective Management and Control of Emerging Infectious Diseases



The Centre for Virology, Vaccinology, and Therapeutics (CVVT) is dedicated to translating impactful basic research into technological applications that directly contribute to the management and control of prevalent and emerging infectious diseases, particularly in the Guangdong-Hong Kong-

Macao Greater Bay Area of China. Our comprehensive approach encompasses surveillance and control measures, including a comprehensive understanding of circulating viruses, accurate prediction of interspecies transmission potential, multiplex diagnostic tests, broad-spectrum antivirals, and a safe and universal effective vaccine platform. Our research efforts aim to significantly enhance the management and control of infectious diseases by minimising the impact of these diseases in terms of morbidity, mortality, and socioeconomic consequences. We have achieved a significant milestone through our startup company, Hong Kong Universal Biologicals Company (HKUBio), by securing a sublicense agreement for the development of the DelNS1 live attenuated influenza vaccine (<https://www.cvt.hk/news>).

4. ENTREPRENEURSHIP DEVELOPMENT

The HKU Techno-Entrepreneurship Core (TEC) was established as HKU's one-stop entrepreneurship resource centre in June 2023. It swiftly forged connections among innovators, facilitators, and advocates both within and outside the HKU community, directing resources to strategic areas and coordinating efforts to foster a dynamic ecosystem. The 2023/24 academic year showcased a flourishing innovation ecosystem with activities across faculties and units.

4.1 [Nurturing the Next-Generation Innovators](#)

4.1.1 Entrepreneurship Academy: Fostering Fearless Entrepreneurs



The HKU Entrepreneurship Academy, established in 2017, has been fostering the entrepreneurial spirit of students and recent graduates through public lectures. The 2023 series set a new attendance record with over 900 participants.



Engaging discussions featured prominent investors, successful alumni entrepreneurs, social innovators, startup incubators, an IP specialist, and a legislator (<https://tec.hku.hk/event/entrepreneurship-academy-2023/>).

4.1.2 Innovation Wings and Innovation Academy: Student-centred Maker Spaces

HKU established the Tam Wing Fan Innovation Wings (<https://innowings.engg.hku.hk>) and Innovation Academy (<https://innoacademy.engg.hku.hk/>) within the Faculty of Engineering in 2020 to promote innovation and interdisciplinary collaboration. These facilities include a state-of-the-art maker space and provide a collaborative environment for researchers. The Innovation Academy supports future innovators' growth and inspiration through various programmes and events. The 2023/24 academic year featured approximately 200 activities and events, drawing an impressive 10,000 participants, with highlights including:

- o *InnoInduction tours*: Showcase of facilities, projects, and student communities
- o *Sharing by innovators*: Guest speakers sharing insights and success stories
- o *Hands-on workshops*: Opportunities for active exchange and learning for the advanced technologies
- o *Idea pitching*: Students presenting innovative ideas, recruiting teammates, and securing academic advisors for project development
- o *The Engineering Inno Show*: Students presenting work and exchanging knowledge





- o *Student-initiated courses*: Courses on topics beyond the engineering curriculum
- o *Study tour*: Visits to renowned universities and cutting-edge companies
- o *Research exhibition*: Showcasing cutting-edge research projects and InnoHK projects with the theme “Technology for the Future”.

4.1.3 Centre for Innovation & Entrepreneurship (CIE): Cultivating Innovators through Global Experiential Learning (<https://cie.hkubs.hku.hk/>)

The HKU Business School has implemented extensive strategies and programmes to promote innovation and entrepreneurship among students. These initiatives aim to equip students with the skills and creativity needed for innovation and entrepreneurship, with a strong emphasis on industry collaboration. Business planning enables engineers and scientists to create market-ready businesses confidently. Notable examples from 2023/24 include:

Global Entrepreneurial Experience in Beijing, Shenzhen, Tel Aviv and Ho Chi Minh City

Events at our centres and offices have enhanced students' understanding of regional innovation and entrepreneurship across academic levels, promoting global connections.

“Creativity, Innovation & Entrepreneurship in China” Summer Programme

The 10-day summer programme in 2023 connected global students with industry leaders through online interactions and a physical event, with over 50 participants in each session (<https://www.hkubs.hku.hk/media/school-news/creativity-innovation-and-entrepreneurship-in-china-summer-virtual-programme-2024-marks-another-successful-year-with-an-alumni-gathering-at-shenzhen-campus/>).

“Innovation and Entrepreneurship Internship”

In 2023/24, 10 students undertook credit-bearing internships at TEC, engaging in project analysis and development across sectors such as banking, web3, finance, and marketing.

Embracing GBA Opportunities

The HKU Business School's Shenzhen Campus hosts the HKU Yuan Valley, providing incubation and workspace for high-tech startups in Futian District. Over 15 teams have joined since October 2022. An inaugural Innovation & Entrepreneurship Summit on 27 August 2023 attracted over 70 participants



(https://jres2023.xhby.net/sy/wh/202309/t20230907_8077241.shtml) .

Credit-Bearing Cloud Computing and Entrepreneurship Course with Industry-recognised Qualification

Alibaba Cloud Academy and HKU Business School launched a cloud computing course for undergraduates globally in 2023/24. Over 50 students enrolled, with nearly 90% earning the Alibaba Cloud Associate Certification and securing job placements in the field (<https://www.hkubs.hku.hk/media/school-news/alibaba-cloud-academy-launched-the-first-undergraduate-course-in-cloud-computing/>).

4.1.4 HKU-SCF FinTech Academy: Pioneering Global Innovations in Financial Technology

The HKU-SCF FinTech Academy (<https://fintechacademy.cs.hku.hk/>) was established in 2020 with a HK\$60 million donation from the Standard Chartered Hong Kong 150th Anniversary Community Foundation. It is a multidisciplinary hub within the Department of Computer Science, supported by the Faculties of Law, Business, and Economics.

In 2023/24, Academy affiliates, including postdocs and PhD students, launched successful startups such as TESE, a sustainable FinTech platform, and Digital Education Council, an AI-driven EdTech platform. Another PhD student spearheaded SuperCharger Ventures | Malta Accelerator, an EdTech initiative. Professor Douglas Arner has been pivotal as an advisor to these ventures.

The Academy also expanded its influence by launching an Arabic version of its popular edX FinTech course, which has drawn over 100,000 learners globally. For more information, please visit Introduction to FinTech—Arabic (<https://www.hkufintech.com/>).

4.1.5 Law, Innovation, Technology & Entrepreneurship (LITE) Lab: Fusing Law and Technology for Hong Kong's Innovation & Technology Ecosystem



Since 2019, HKU's Faculty of Law LITE Lab has supported tech startups, social entrepreneurs, and government agencies with legal, regulatory and policy research. In 2023/24, students focused on Web 3, AI, and ESG/climate issues, while also collaborating with legal

departments and law firms on automation and generative AI projects. LITE Lab partnered with the Hong Kong government's Green and Sustainable Finance Cross-Agency Steering Group to develop the prototype Green Fintech Map (<https://www.sustainablefinance.org.hk/en/data-technology/prototype-hong-kong-green-fintech-map-2024>) and hosted the Powering Green Finance seminar, launching the Asia-Pacific Climate Conscious Law Students and Young Lawyers Network (<https://www.hkufintech.com/greenfinance>). Led by founding executive director Brian Tang, their innovative student-industry collaboration earned them the Edtech Heroes Award for Stakeholder Engagement in 2023/24 (https://www.hku.hk/press/news_detail_26786.html).

4.1.6 Entrepreneurial Internship Programme: Applying Entrepreneurship to Real-World Technologies



The Entrepreneurial Internship Programme (EIP) provides entrepreneurial training in IP rights, business modeling, and customer discovery, along with practical experience in patent analysis and other initiatives led by professionals from TTO and TEC. Eligible interns can earn credits through the HKU Business School course IIMT2628. The 2023/24 pilot received over 100 applications from students across disciplines, and some of the first batch of 14 selected interns successfully completed their required hours by June

2024 ([Entrepreneurial Internship Programme - HKU TEC | Techno-Entrepreneurship Core](#)).

4.1.7 HKU SEED Programme: Cultivating Changemakers

The HKU SEED Programme is a pre-incubation initiative for students and young graduates to turn their ideas into startups through a three-week training. In 2023/24, over 80 applications were received, a 20% increase from the previous year, leading to 36 new technology startups ([SEED - HKU TEC | Techno-Entrepreneurship Core](#)).



4.1.8 HKU Students Excel in Innovation Competitions

With enhanced support from the University, more HKU students are participating in various innovation competitions and achieving outstanding results.

Hult Prize 2024 challenges young people to solve pressing issues through social entrepreneurship. "QualiFly," an HKU AI EdTech start-up, reached the final pitching stage in Nairobi, representing Hong Kong among eight finalists out of 10,000 teams (<https://www.qualifyhk.com/copy-of-weilun-primary-school-ai-wri>).



The 10th University Innovation & Entrepreneurship Competition in Hong Kong saw a record number of applications, with HKU securing eight awards, including the Grand Prize in the Innovation track (<https://tec.hku.hk/event/the-10th-hong-kong-university-student-innovation-and-entrepreneurship-competition/>).



Hong Kong Techathon+ 2024, organised by HKSTP, marked its 8th anniversary. The event included three categories (Hong Kong Student, Hong Kong Open, and International), with participation from various universities. HKU had 267 participants and performed competitively, with the iDendron membership team "Six Sense" winning an award in the ESG category (<https://www.hktechathon.com/pastevent.php>).

4.2 [Navigating Deep Tech Innovations from Lab to Market](#)

4.2.1 Start-up Connector: Bridging Academic Entrepreneurs with Essential Resources

The Start-up Connector is Hong Kong's first initiative to support academic entrepreneurs by connecting them with talent, customers, professionals, incubators, accelerators, investors, and other vital resources for team formation and growth.



Since its launch in September 2023, the Start-up Connector has facilitated over 100 start-up projects and matched a dozen start-ups with talent. In partnership with Google Cloud, the

programme has provided \$1,000 in Google Cloud Credits to 10 AI startups from HKU, with another 10 in the approval process, totaling USD 5 million ([Google Cloud x HKU Startup Connector - HKU TEC | Techno-Entrepreneurship Core](#)).

4.2.2 DeepTech 100: Building Research-based Start-ups

The HKU DeepTech100 is a programme with HKSTP to support 100 research-based startups over three years. It offers up to HK\$1.39 million in funding, entrepreneurship training, co-working space, fast-track access to TSSSU, and



extensive networking and publicity opportunities. The core of the programme is the six-week "Lean Launcher" training, aimed at market validation and customer discovery. By June 2024, four cohorts had been admitted, resulting in 81 deep tech start-ups, with over 50 completing the "Lean Launcher" training ([DeepTech100 - HKU TEC | Techno-Entrepreneurship Core](#)).

4.2.3 TSSSU@HKU: Enhancing Support for Innovators

In 2023/24, the Technology Start-up Support Scheme for Universities (TSSSU) celebrated its 10th year. HK\$8m under TSSSU-O@HKU FY2024/25 was given to 16 teams to support their tech businesses and R&D commercialisation. ([TSSSU@HKU - Technology Start-up Support Scheme for Universities at HKU](#)).

4.2.4 Techno-Entrepreneurship Camp: Empowering Academic

TEC co-organised customised training programmes with top investment institutions, including Zhen Fund, Redhill Capital, Lighthouse Capital, China Prosperous Capital, and Sinovation Ventures. Over 200 researchers attended, gaining valuable insights and expertise for their entrepreneurial journeys.



(<https://tec.hku.hk/event/techno-entrepreneurship-camp-2023/>).

4.2.5 Outreach Beyond Hong Kong

Gear Up Programme: Expanding to GBA and beyond



Under the "Funding Scheme for Youth Entrepreneurship in the Guangdong-Hong Kong-Macao Greater Bay Area" of Youth Development Commission (YDC), the "Gear Up Startup Seed Fund & Incubation Programme" provides support to 14 HKU startup teams from 2022 to 2024. After a GBA Delegation Visit in October 2023, the startups went on a five-day trip to Vietnam and attended the Saigon

Summit. The Gear Up Graduation Ceremony on June 27, 2024 celebrated the startups' milestone with the presence of government officials, supporters, and mentors (<https://tec.hku.hk/event/gcd/>).

BICI x HKU Collaborative Innovation Centre (CIC): Advancing Disruptive Technology

The CIC and BICI collaborate to recommend projects for grants of up to 10M RMB to the Ministry of Science and Technology. The Collaborative Innovation Forum 2023 introduced funding opportunities through BICI to over 50 researchers and featured insights from three scientist CEOs on research commercialisation and science-based entrepreneurship

(<https://tec.hku.hk/event/hkucicforum2023/>). As of July 2024, several HKU projects have been recommended for the grant, with more approvals expected in the coming year.



HKU Techno-Entrepreneurship Academy

The University of Hong Kong (HKU) and the Qianhai Authority announced the establishment of the HKU Techno-Entrepreneurship Academy in Shenzhen Qianhai. It will commence operations in late August 2024 in the Qianhai Shenzhen-Hong Kong Youth Innovation and Entrepreneurship Hub (E-Hub). The academy aims to create an innovation and entrepreneurship base focused on education and practice, offering services for young technology talent and scientists in areas

such as artificial intelligence, life and health, new energy, and new materials. Its goal is to set a new innovation-integration standard in the Guangdong-Hong Kong-Macao Greater Bay Area (<https://www.hku.hk/press/press-releases/detail/27311.html>).



4.3 Fueling Innovations through Catalysing External Resources

4.3.1 Entrepreneurship Engine Fund (EEF): Venture Capital Attraction

In June 2023, HKU announced the plan to establish the Entrepreneurship Engine Fund (EEF) to amass HK\$400 million or more to invest in HKU start-ups. The initiative received fervent interest from the venture capital community, resulting in many proposals from top VC firms. HKU has also cultivated a broad investor network, with three quarterly Demo Days attracting over 500 investors from both local and international spheres.

(<https://tec.hku.hk/event/5538/>)



4.3.2 HKU Super Angel Symposium: A Network of Entrepreneurial Supporters

The HKU Super Angel Symposium held on March 16, 2024, as part of the HKU Alumni Day celebrations, attracted over 300 participants, including more than 200 attendees. The event featured speeches from esteemed alumni entrepreneurs and lively panel discussions, with 30% of the attendees being HKU alumni, affirming the university's strong entrepreneurial connections (<https://tec.hku.hk/event/hku-super-angel-symposium-raise-demo-day/>).

4.3.3 InnoValley: 2023 HKU Innovation and Entrepreneurship Challenge



The inaugural nationwide 2023 HKU entrepreneurship challenge concluded successfully, with 19 finalists competing at HKU. The 2024 HKU International Techno-Entrepreneurship Challenge has received a record-breaking 259 submissions and some are from top institutions globally. Regional competitions will select promising projects for the grand finals in January 2025 (<https://tec.hku.hk/event/5735/>).

4.4 [Unlocking the Potential of Healthcare Innovation](#)

4.4.1 HKU MED Technology Transfer Unit: Bench-to-Bed Support

In September 2023, HKU MED established a Technology Transfer Unit to drive entrepreneurship, commercialisation, and technology transfer within the faculty. The unit collaborates with HKU TEC and TTO to cultivate relationships with international pharmaceutical companies and facilitate roadshow pitching sessions with key stakeholders in China's biopharmaceutical sector (<https://covid19.med.hku.hk/en/Med-Fac/media/mfn/V29i1/activities-events/past/09>).



HKUMed Techno-Entrepreneur Mixer Day in Mar 2024

4.4.2 MedTech Hackathon 2024: Transforming Medical Breakthroughs into Life-saving Ventures



The HKU MedTech Hackathon 2024 is a six-month programme that accelerates medical technology commercialisation and involves three phases:


- 1) Team Building: Starts with the MedTech Talent Connect event on 8 March 2024
- 2) Training & Consultations: Includes various March to April 2024 events
- 3) Commercialisation Pitch & Finale: Concludes at the Asia Summit on Global Health on 16 May 2024

This initiative has strong support from HKU faculties and external partners, culminating in a well-attended finale. (<https://tec.hku.hk/medtech-co-innovation-conference-and-hackathon/>)

4.5 Start-up Successes

In 2023/24, numerous HKU-supported startups reached major milestones, securing significant investments and accolades from local and international investors. Key highlights follow.

4.5.1 Awards and Recognitions:

- Agilis Robotics, **Maker in China 2023** (Merit Award & TOP 10 of Surgical Robots Award at China Future Healthcare Awards 2024) <https://makerinchina.hk/en/contest2023/>
- Vidi Labs, **Jumpstarter 2023** (Top 30 & Diversity & Inclusivity Award) <https://2023.jumpstarter.hk/en/top30/24>
- Archireef, **Make it in the Emirates 2024** (First Place) https://www.linkedin.com/posts/archireef_archireef-makeitintheemirates-startupawards-activity-7201233070044143616-iDgm?utm_source=share&utm_medium=member_desktop
- Utkarsh Goel, Sidhant Gupata, Asia Industry Manufacturing & Energy, **Forbes 30 Under 30** 
<https://www.forbes.com/profile/clearbot/?list=30under30-asia-industry-manufacturing-energy/>
- MediConCen, **Hong Kong Digital Finance Awards 2024** <https://multimetro.hk/finance/%e9%a6%99%e6%b8%af%e6%95%b8%e5%ad%97%e9%87%91%e8%9e%8d%e5%a4%a7%e7%8d%8e2024/%e5%be%97%e5%a5%ac%e5%90%8d%e5%96%ae/>

4.5.2 Rising Start-ups:

a. ImmunoCure



Immune Cure ("醫克生物"), a biotechnology company located in the Hong Kong Science Park, specialises in the research and development of innovative immunotherapies for infectious diseases such as HIV/AIDS, cancers, and inflammatory conditions. Its patented "PD-1-Enhanced DNA Vaccine Platform" has produced two promising clinical-trial-stage DNA vaccine candidates. Recently, the company, together with Prof Zhiwei Chen from the HKU

AIDS Institute, has been awarded funding from the HKSAR Government's RAISe+ Scheme for its antibody project under its patented "Anti-Δ42PD1 Antibody Platform". Furthermore, in a collaboration with HKU and CUHK led by Prof Chen again, significant funding has also been secured for research on HIV/AIDS and our DNA vaccine candidate for the second 5-year term under the RGC TRS scheme. The company has raised US\$12 million in the first tranche of its US\$27 million Series A fundraising round in 2023 and has been successfully admitted into the HKSTP Elite Programme in April 2024. These accomplishments highlight Immuno Cure's commitment to pioneering novel immunotherapies for complex and challenging diseases. (More information: <https://immunocure.hk>).

b. Fano Labs

Fano Labs was established in 2015 as a spin-off from HKU with support from the Hong Kong Science and Technology Parks Corporation, Horizons Ventures, AEF GBA Fund and Gobi Partners GBA. The company specialises in AI-driven speech and natural language processing technologies that assist businesses with customer service, compliance, and other operations. Recently, Fano Labs announced the successful closure of its Series B funding round, led by Openspace Ventures, a prominent venture capital firm in Southeast Asia.



(<https://www.fano.ai/resource/announcing-our-series-b-funding-round>)

c. Kodify



Kodify is a cutting-edge infrastructure tech firm that specialises in lidar and camera fusion technology. Combined with advanced deep learning algorithms, it delivers highly accurate and colour-rich 3D models in real-time that enable users to easily detect, analyse, and interpret changes in infrastructure and the environment. It has raised \$750k from the investment arm of the philanthropic education fund Laidlaw Foundation.

(<https://kodify.com/kodify-raises-us-750k-from-laidlaw-scholars-ventures-to-advance-ai-driven-safety-and-operations-of-the-transport-infrastructure>)

d. Llewellyn & Partners Co. Ltd. (LPC)



Llewellyn & Partners Co. Ltd. (LPC), the first potential unicorn incubated by HKU MetaBIM Research Laboratory. SuperApp, a product of LPC, aspires to cultivate smarter and more sustainable cities by streamlining data processing and integrating ISO knowledge to generate data-driven insights. LPC has recently finalised its series A funding, successfully securing HK\$25 million with a valuation reaching HK\$424 million.

(<https://www.hku.hk/press/press-releases/detail/26830.html>)

5. QUANTITATIVE INDICATORS

HKU's performance indicators is at Annex II.

6. LOOKING AHEAD

With emerging technologies like AI reshaping the landscape and accelerating technological advancements in the knowledge economy, we stand on the brink of a technological revolution. We believe the future of humanity rests with forward-thinking change-makers. Our strategic focus on world-class research, future-ready education, and impact-driven knowledge exchange underscores our commitment to nurturing the next generation of innovators.

In recent years, HKU has made substantial strides in innovation and entrepreneurship, guided by a three-pronged approach: **Dream Big** to foster ambition, **Innovate Deep** in cutting-edge technologies, and **Stay Resilient** to build adaptability in innovators.

In 2023/24, substantial changes to our IP policy aimed at incentivising research commercialisation led to a marked increase in research-based startups. Establishing the Techno-Entrepreneurship Core (TEC) as a central coordinating office has effectively linked faculties and units, creating strong momentum and high engagement from students and faculty. Meanwhile, Versitech Limited, HKU's commercial arm, has shifted its focus towards proactive engagement with industry partners to foster co-innovation through collaborative or sponsored research projects. It has also actively supported joint research initiatives like RAISE+ projects. The Technology Transfer Office (TTO) also provides comprehensive IP, compliance, and legal services to support these efforts.

Looking forward, HKU is determined to embrace interdisciplinary, industry-inspired and internationalised innovations. The University is launching new interdisciplinary subjects, programmes, and innovative institutions to enhance cross-disciplinary education, cutting-edge research, and entrepreneurial initiatives. TEC will continue integrating entrepreneurial efforts across various faculties and units, enhancing the vibrant ecosystem on and off campus. Meanwhile, Versitech is poised to strengthen ties with technology leaders across key industry sectors and to improve industry-academia collaboration, aiming to drive innovations that meet industry needs through joint research initiatives and RAISE+ deep-tech projects. HKU is also expanding its global reach, following successes in Tel Aviv, Ho Chi Minh City, Beijing, Shanghai, and Shenzhen, to further engage with global innovation ecosystems. Several new institutions are expected to significantly boost HKU's innovation capacity with latest facilities and programmes within and outside Hong Kong. This strategic expansion underscores HKU's steadfast dedication to fostering a global impact through innovative academic and entrepreneurial pursuits.

In the coming years, the University will strengthen its knowledge exchange capacity by refining the incentive system to actively encourage faculty engagement with external communities, rewarding those who excel in knowledge exchange through awards and career development. HKU will also escalate efforts to promote impact-driven innovation and entrepreneurship in underserved areas such as social innovations, the humanities, and the arts. By integrating these fields with science and technology, we aim to rejuvenate neglected areas of innovation and cultivate a new wave of cutting-edge innovators.

As we forge ahead, HKU remains dedicated to creating a future where technology and innovation are seamlessly woven into the fabric of society, driving progress and improving lives. Our unwavering commitment to excellence and collaboration will continue to position us at the forefront of global innovation, ensuring that we adapt to and shape the future.

The University of Hong Kong

July 31, 2024

University: The University of Hong Kong (HKU)
Faculty: Medicine
<p>Title of case study:</p> <p>Big-data pharmacovigilance of COVID-19 vaccines shapes public health policies</p> <p>以大數據對新冠疫苗效用及安全性的監察幫助制訂公共衛生政策</p>
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>Our team linked up population-based clinical and vaccination records in Hong Kong to identify associations of COVID-19 vaccination with potential adverse events. We were among the first teams in the world to provide analytic evidence on the risk of Bell's palsy and carditis following vaccination. Direct measurable impacts include the subsequent amendment of the product insert of CoronaVac to include Bell's palsy as a very rare side effect and the suspension of the second dose of BNT162b2 for minors to lower the risk of carditis. As an intangible impact, our partnership with the Government significantly enhanced public trust in the safety and effectiveness of the vaccines.</p>
<p>2. Underpinning research (indicative maximum 500 words)</p> <p>The COVID-19 Vaccines Adverse Events Response and Evaluation (CARE) Programme commissioned by the Hong Kong Government is a comprehensive surveillance programme. It aims to ascertain details of adverse events and inform the public in a timely manner. Using the territory-wide public healthcare database (Hospital Authority) anonymously linked with population-based vaccination records (Department of Health) which essentially covers the entire population of Hong Kong, we conducted a series of epidemiologic research studies to investigate the safety of the vaccines. We highlight the following works which have been demonstrated to be directly impactful to public health policies.</p> <ol style="list-style-type: none"> <u>Bell's palsy following CoronaVac</u> We estimated that the incidence of clinically confirmed Bell's palsy was 3.61 (95% confidence interval [CI]: 2.40-5.21) for CoronaVac per 100,000 doses administered. The age-standardised incidence rate of clinically confirmed Bell's palsy was 66.9 cases per 100,000 person-years (95% CI: 37.2-96.6) following CoronaVac vaccination. The age-standardised difference for the incidence compared with the background population was 41.5 (95% CI: 11.7-71.4) for CoronaVac, equivalent to an additional 4.8 cases per 100,000 people vaccinated for CoronaVac. In a nested case-control analysis, 298 cases were matched to 1,181 controls, and the adjusted odd ratio (OR) was 2.4 (95% CI:1.4-4.0) for CoronaVac. <u>Elevated risk of carditis following BNT162b2</u> A total of 160 case patients and 1533 control participants were included in this analysis. Multivariable analyses showed that recipients of the BNT162b2 vaccine had higher odds of carditis (adjusted OR, 3.57 [CI, 1.93 to 6.60]) than unvaccinated persons. The risk was mainly seen after the second dose of BNT162b2 rather than the first. No association between CoronaVac and carditis with a magnitude similar to that for BNT162b2 was seen. <u>Incidence of myocarditis/ pericarditis following BNT162b2 in adolescents</u> Between 14 June 2021 and 4 September 2021, 33 Chinese adolescents who developed acute myocarditis/pericarditis following BNT162b2 vaccination were identified. In total, 29 (87.88%) were male and 4 (12.12%) were female, with a median age of 15.25 years. And 27 (81.82%) and 6 (18.18%) cases developed acute myocarditis/pericarditis after receiving the second and first dose, respectively. All cases are mild and required only conservative management. The overall incidence of acute myocarditis/pericarditis was 18.52 (95% confidence interval [CI], 11.67–29.01) per 100 000 persons vaccinated. The incidence after the first and second doses were 3.37 (95% CI, 1.12–9.51) and 21.22 (95% CI, 13.78–32.28 per 100 000 persons vaccinated, respectively. <u>Overall safety of and risk of myocarditis following BNT162b2 in adolescents</u> The first-dose cohort comprised 274,881 adolescents (50.25% received the first dose) and the second-dose cohort 237,964 (50.29% received the second dose). Ninety-four (34.2 per 100,000 persons) adolescents in the first-dose cohort and 130 (54.6 per 100,000 persons) in the second-dose cohort experienced ≥ 1 AESIs. There were no statistically significant differences in the risk of any AESI associated with BNT162b2 except myocarditis [first-dose cohort: incidence rate ratio (IRR) = 9.15, 95% confidence interval (CI) 1.14-73.16; second-dose cohort: IRR = 29.61, 95% CI 4.04-217.07] and sleeping disturbances/disorders after the second dose (IRR = 2.06, 95% CI 1.01-4.24). <u>Milder prognosis of myocarditis after BNT162b2 compared with pre-pandemic cases</u> A total of 866 patients were included for analysis. Over the follow-up period, 1 death (1.0%) of 104 patients with postvaccination myocarditis and 84 deaths (11.0%) of 762 patients with viral infection–related myocarditis were identified. One case (1.0%) of dilated cardiomyopathy and 2 cases (1.9%) of heart failure were identified in the postvaccination group, compared with 28 (3.7%) and 93 (12.2%) in the viral infection–related myocarditis group, respectively. Adjusted analysis showed that the postvaccination myocarditis group had a 92% lower mortality risk (adjusted hazard ratio: 0.08; 95% CI: 0.01-0.57). No significant differences in other prognostic outcomes were seen.

6. Enhanced effectiveness of BNT162b2 with extended dosing intervals in adolescents and children
We conducted a population-based nested case-control study of children and adolescents aged 5–17 years who had received two doses of BNT162b2 in Hong Kong. From January 1 to August 15, 2022, 5396 COVID-19 cases and 202 COVID-19 related hospitalizations were identified and matched with 21,577 and 808 controls, respectively. For vaccine recipients with extended intervals [≥ 28 days, adjusted OR 0.718, 95% CI: 0.619, 0.833] there was a 29.2%-reduced risk of COVID-19 infection compared to those with regular intervals (21–27 days). If the threshold was set at eight weeks, the risk reduction was estimated at 43.5% (adjusted OR 0.565, 95% CI: 0.456, 0.700).

3. References to the research (indicative maximum of six references)

Wan EYF, Chui CSL, Lai FTT, Chan EWY, Li X, Yan VKC, Gao L, Yu Q, Lam ICH, Chun RKC, Cowling BJ, Fong WC, Lau AYL, Mok VCT, Chan FLF, Lee CK, Chan LST, Lo D, Lau KK, Hung IFN, Leung GM, Wong ICK. Bell's palsy following vaccination with mRNA (BNT162b2) and inactivated (CoronaVac) SARS-CoV-2 vaccines: a case series and nested case-control study. *Lancet Infect Dis*. 2022 Jan;22(1):64-72. doi: 10.1016/S1473-3099(21)00451-5. Epub 2021 Aug 16. PMID: 34411532; PMCID: PMC8367195.

1. **Lai FTT, Li X, Peng K, Huang L, Ip P, Tong X, Chui CSL, Wan EYF, Wong CKH, Chan EWY, Siu DCW, Wong ICK.** Carditis After COVID-19 Vaccination With a Messenger RNA Vaccine and an Inactivated Virus Vaccine : A Case-Control Study. *Ann Intern Med*. 2022 Mar;175(3):362-370. doi: 10.7326/M21-3700. Epub 2022 Jan 25. PMID: 35073155; PMCID: PMC8814917.
2. Chua GT, Kwan MYW, **Chui CSL**, Smith RD, Cheung ECL, Ma T, Leung MTY, Tsao SSL, Kan E, Ng WKC, Chan VCM, Tai SM, Yu TC, Lee KP, Wong JSC, Lin YK, Shek CC, Leung ASY, Chow CK, Li KW, Ma J, Fung WY, Lee D, Ng MY, Wong WHS, Tsang HW, Kwok J, Leung D, Chung KL, Chow CB, Chan GCF, Leung WH, To KKW, Yuen KY, Lau YL, **Wong ICK**, Ip P. Epidemiology of Acute Myocarditis/Pericarditis in Hong Kong Adolescents Following Comirnaty Vaccination. *Clin Infect Dis*. 2022 Sep 10;75(4):673-681. doi: 10.1093/cid/ciab989. PMID: 34849657; PMCID: PMC8767823.
3. **Lai FTT**, Chua GT, Chan EWW, Huang L, Kwan MYW, Ma T, Qin X, **Chui CSL, Li X, Wan EYF, Wong CKH, Chan EWY, Wong ICK**, Ip P. Adverse events of special interest following the use of BNT162b2 in adolescents: a population-based retrospective cohort study. *Emerg Microbes Infect*. 2022 Dec;11(1):885-893. doi: 10.1080/22221751.2022.2050952. PMID: 35254219; PMCID: PMC8942549.
4. **Lai FTT**, Chan EWW, Huang L, Cheung CL, **Chui CSL, Li X, Wan EYF, Wong CKH, Chan EWY, Yiu KH, Wong ICK.** Prognosis of Myocarditis Developing After mRNA COVID-19 Vaccination Compared With Viral Myocarditis. *J Am Coll Cardiol*. 2022 Dec 13;80(24):2255-2265. doi: 10.1016/j.jacc.2022.09.049. PMID: 36480967; PMCID: PMC9721305.
5. **Lai FTT**, Fan M, Huang C, **Chui CSL, Wan EYF, Li X, Wong CKH, Cheung CL, Wong ICK, Chan EWY.** Effectiveness of BNT162b2 after extending the primary series dosing interval in children and adolescents aged 5-17. *Nat Commun*. 2023 Apr 3;14(1):1845. doi: 10.1038/s41467-023-37556-z. PMID: 37012238; PMCID: PMC10068718.

4. Details of the impact (indicative maximum 750 words)

Mechanisms through which our research findings exert real-world impacts mainly include direct reports of the findings to the Department of Health and our press conferences on the findings. The former is mainly aimed at informing the relevant public health policies and clinical recommendations, while the latter is aimed at sending reassurance to the public that our team is independently monitoring the safety of the vaccines and provides the best possible information. We highlight the following impacts from our research series.

Scientific support for the credibility of public health policies and decisions

The Government's partnership with our team in this COVID-19 vaccine regulatory exercise is highly important in terms of credibility because it lends scientific support to the decisions made by the Department of Health which oversees all public health policies in Hong Kong, affecting a population of 7.5 million. Our role in this exercise is an independent research agency continuously investigating every possible safety signal arising from the use of the COVID-19 vaccines used in Hong Kong, i.e., BNT162b2 and CoronaVac, to ensure the safety profile of the vaccines and the public's trust in them. This intangible impact is demonstrated in the fact that numerous Government press releases include this statement: "the DH partners with the University of Hong Kong (HKU) to conduct an active surveillance programme for Adverse Events of Special Interest (AESI) under the COVID-19 Vaccines Adverse Events Response and Evaluation Programme (CARE Programme)." Those press releases also showed that numerous cases of potential adverse events have been assigned to us for our investigation.

Bell's palsy following CoronaVac and subsequent product insert update

Following Study #1 as described above, we demonstrate good evidence that Bell's palsy is one of the very rare side effects of CoronaVac. Through our regular reports to the Department of Health, we informed the Government of this potential risk and alerted the Advisory Panel to review this new information which had not been available before we conducted the study. In fact, as of the time the findings were reported by our team, the product insert of CoronaVac did not include Bell's palsy as one of the potential side effects. On July 7, 2021, in accordance with the new data our study provided, Sinovac Biotech Limited, the manufacturer of CoronaVac, submitted an amendment to the product information to the Department of Health to include Bell's palsy as one of the very rare side effects. As such, people having Bell's palsy after CoronaVac vaccination, upon assessment, would be compensated by the Indemnity Fund for Adverse Events Following Immunization with Coronavirus Disease-2019 Vaccines (AEFI Fund). As of February 28, 2023, a total of 301 people had benefited from this research finding

https://www.drugoffice.gov.hk/eps/do/tc/doc/Safety_Monitoring_of_COVID-19_Vaccines_in_Hong_Kong.pdf).

Carditis following BNT162b2 and subsequent change of official recommendation

Our research on the association of BNT162b2 with myocarditis, which showed a higher risk of myocarditis after the second dose, has provided local contextual real-world evidence for the Government's suspension of the second dose as a necessary condition for adolescents to be considered fully vaccinated on September 30, 2021, and later extended the recommended dosing interval between the first and second doses from 3 to 8 weeks. This policy change has prevented a significant number of illnesses in Hong Kong children and adolescents, which include newly eligible children in the years to come. Our more recent work on the reduced risk of infection associated with the extended dosing intervals of BNT162b2 in children and adolescents lends further scientific support for the Government's decision, that the policy change was timely and effective in reducing the risk of myocarditis, yet without sacrificing the good effectiveness of the vaccine. In fact, the effectiveness has likely been strengthened after this extension. We are hopeful that this finding will inform further updates of the product insert of BNT162b2 in the near future.

University: The University of Hong Kong (HKU)
Faculty: Arts
Title of case study: 'Ink Art and New Music' Creative Exchange Project of Composing for Mixed Ensemble 《水墨藝術與新音樂》中西混合室內樂創作交流項目
<p>1. Summary of the impact (indicative maximum 100 words) 'Hear the art, see the music' – the project provided a one-of-a-kind cross-cultural, cross-disciplinary, cross-generational platform for artistic and educational exchanges. Through lectures, mentorships, commissions, forums, and performances, it explored the aesthetic commonality and discovered the innovative potential of <i>Ink Art and New Music</i>. Responding to ink paintings from M+, aspiring composers and musicians broke new grounds by composing and premiering works for mixed ensemble of Chinese/Western instruments. Led by Bard College, Tianjin Juilliard, SCNU, M+, HKU Music, and HKU MUSE, the project promoted creativity and communication, fostered exchanges across art forms and cultures, and provided inspiration for discovery and innovation.</p>
<p>2. Underpinning research (indicative maximum 500 words) 'Ink Art & New Music' is a multi-phase series that aimed to connect creative, knowledgeable, and curious minds and encourage meaningful conversations. Presented in three phases, the project explored the aesthetic commonality and discovered the innovative potential of <i>Ink Art and New Music</i>. Inspired by the 20th and 21st century ink paintings from the M+ collection, seven new musical works for mixed ensemble of Chinese and Western instruments were composed and premiered at HKU and New York's Bard College.</p> <p>In Phase I, leading composers and scholars shared their expertise as mentors or moderators, through four virtual lectures, in a master-class style, on composing for mixed ensembles inspired by ink art. Firstly, Dr. Lesley Ma from M+ and her curatorial team selected paintings from the museum's ink art collection. She led the first lecture on the relationship between ink art and new music and provides interpretive information on the selected artworks. The remaining three lectures are led by three faculty composers, Dr. Yeung-Ping Chen (South China Normal University, SCNU), Prof. Chan Hing-yan (HKU), and Dr. Yiwen Shen (Tianjin Juilliard School), on the history and development of mixed ensembles, composition skills for writing for mixed ensembles, and ensembleship and collaboration, respectively. These lectures were later released on HKU MUSE Youtube Channel, with transcriptions (English) and carefully prepared translations (Chinese). Four composition students were selected from Bard Conservatory of Music and HKU as mentees. They participated in all the virtual lectures, which were also open to the public, and took part in the discussion sessions. The lectures and the discussions were moderated by Dr. Jindong Cai (Director of Bard's US-China Music Institute) and Dr. Robert Martin (Emeritus Professor of Music and Philosophy, Bard College).</p> <p>In Phase II, the three faculty composers and their four mentees worked on new commissions inspired by individually chosen works from the M+ collection. Through the mentorship and exchanges, seven new compositions were created. A two-day conference was held at Bard College, titled 'Ink and Sound: A Conference on Chinese Music and Visual Arts', with a series of scholarly, interactive, and musical events exploring the interactions between Chinese music, calligraphy, art, and poetry. These seven new works received their World Premiere by Bard's music students in two concerts, which were livestreamed and viewable from Hong Kong and around the world.</p> <p>Phase III and the finale featured the grand Asian Premiere of the new works at the HKU Grand Hall, performed by Hong Kong's professional musicians, Ensemble Traversée. Images of the select artworks were digitally projected to enhance the audience's understanding and to create a multi-dimensional experience with ink and sound.</p>
<p>3. References to the research (indicative maximum of six references)</p> <ul style="list-style-type: none"> • <i>Heart of Coral</i> – a work re-orchestrated and recreated for dance opera by Professor Chan Hing-yan, commissioned and presented by the 51st Hong Kong Arts Festival in March 2023. • <i>Ghost Love</i> – a chamber opera in two acts for singers and a mixed ensemble by Professor Chan Hing-yan, after Xu Xu's novelette of the same title. Presented by the Hong Kong government's Leisure and Cultural Services Department and premiered in January 2018 in Hong Kong. The opera was also toured to Taiwan as a programme of Hong Kong Week 2019, as well as the festival-opening programme of National Taiwan University of Arts's 2019 DAGUAN International Performing Arts Festival – Towards. • <i>Hong Kong Odyssey</i> – a staged cantata in Cantonese by Professor Chan Hing-yan, commissioned and

presented by the Hong Kong Arts Festival Society and premiered in Hong Kong in March 2017.

- *Thus Flows the Watery Muse* – a work for sheng, violin, amplified qin, and piano. Received its world premiere in April 2009, Cornell University, USA.
- Tong Yang-Tze, *The movement of heaven is powerful*, 360 x 194 cm; *At the auspicious moment, act without delay*, 360 x 194 cm; *Delight in the existence of heaven and understand its order*, 360 x 194 cm; *Renew oneself daily*, 360 x 194 cm; *Embracing the way of heaven brings progress*, 360 x 1037 cm. 2020. Ink on paper. Commissioned by M+, 2020.
- Lui Shou-kwan, *Autumn 1964*, 1964. Ink and colour on paper, 58.4 x 84.6 cm. M+, Hong Kong, and *Winter 1968*, 1968. Ink on paper, 95.2 x 45.3 cm. M+, Hong Kong.

4. Details of the impact (indicative maximum 750 words)

Fostered communication between Asian and Western cultures

The project celebrated an East Asian aesthetic that continues to inspire: Ink Art and Chinese musical instruments are part of Chinese culture with a long history; both need to find a contemporary voice. In fact, how visual artists negotiate between aesthetics from traditional art and material and external influences in their ink art pieces are echoed in the way composers work with musical instruments and influences from various cultures. During the research and creative process, faculty composers and student composers explored ways to compose effectively for unique combination of instruments (e.g. *zheng* and cello, *pipa* and flute). In the new compositions, musical notes from the Chinese and Western instruments resounded to the stroke, dots, blank spaces, and dark washes from the ink paintings – the creative output are both engaging and inspiring.

International exposure with KE partners

Our collaborators brought the project under the international spotlight. In the United States, Bard College's two divisions were engaged: Bard Conservatory of Music and its US-China Music Institute, which is famed for exploring music from contemporary China and for musical exchanges between the United States and China. In China, music professors from Tianjin Juilliard and SCNU guided mentees, shared their expertise, and created new works. In Hong Kong, the M+ Museum's outstanding ink art collection drew considerable international attention to the project. All partners provided publicity support, audience outreach and engagement, and on-site coordination. The events taking place at HKU were supported by Music Department and presented and managed by the Cultural Management Office, under its MUSE series. As one of the leading university presenting series, the team ensured professional execution throughout the project, with dedicated publicity and outreach campaigns.

Reaching new audience and sharing knowledge with the public

The project succeeded in attracting a large group of people outside of HKU to experience knowledge exchange spearheaded by leading scholars and educators. In Phase I and II, four virtual lectures, masterclasses, conferences, and several concerts were presented online during the pandemic. With the help of technology, we were able to reach out to audiences around the world. In Phase III, at the finale concert, curator of M+'s Hong Kong Visual Culture Ms. Tina Pang and HKU Music's Prof. Chan Hing-yan gave introductory remarks on the background of the selected ink paintings, how the composers used those paintings as a point of departure for inspirations, and how the music reflected critical elements of the paintings. Images of the artworks were digitally projected to enhance audience experience and to provide multi-dimensional perspectives in understanding the artistic exchanges between the two art forms.

Breaking new grounds with strong output

The project promoted creativity and inspiration and provided opportunities for discovering and exploring ideas. Young composers and aspiring musicians broke new ground by learning, composing, and premiering for mixed Chinese and Western instruments ensembles. All musical works responded to selected ink paintings from M+'s prestigious collection. The project's integrated mentorship provided a key to two-way learning between mentors and mentees. Likewise, connections between composers and performers were also established in creating and shaping new works, providing a rare platform for direct communication and opportunities to understand diverse artistic and practical demands. Musical scores, interpretive notes, recorded workshops, and audio and visual documentation of the premieres were developed into effective teaching and learning tools.

5. Sources to corroborate the impact (indicative maximum of 10 references)

Virtual Lectures with Bilingual Subtitles:

- <https://youtube.com/playlist?list=PLt6djfzNAglyOqPJ5R8aBXFeFWu7V4kBT>

Seven New Compositions Inspired by Ink Art (with musical scores):

- https://www.dropbox.com/sh/82wpgneunuyeuji/AABv3iyLaeald3m_6k-UrMia?dl=0

All Events in the Project:

- <https://muse.hku.hk/highlights/inkart/>

SCMP Feature Story:

- <https://www.scmp.com/presented/news/topics/ink-art-new-music-new-works/article/3191821/feast-your-senses-novel-ink-art>

Composers' Notes and House Programmes:

- <https://www.dropbox.com/s/tx9vd2sxhim7slz/BARD%20House%20Programme.pdf?dl=0>
- <https://issuu.com/cmtteam/docs/inkart-hsepro-a-singlep>

Select E-Newsletters:

- <http://news.muse.hku.hk/newsletterweb/4142594B7347445F4A74464259/43405C45784743514276484A5843>
- <http://news.muse.hku.hk/newsletterweb/414351447142415E4579414659/474B5A4072404A504579464259>
- <http://news.muse.hku.hk/newsletterweb/4142594A7946425E4077494659/43445A477548475D427145455D43>

Select Social Media Exposure:

- <https://www.facebook.com/303891409745896/posts/2417230548411961/>
- <https://www.instagram.com/p/CjYFtsxvOh2/?igshid=YmMyMTA2M2Y=>
- https://www.instagram.com/p/CTMW-Idn7V2/?utm_medium=copy_link
- <https://www.facebook.com/100063979175899/posts/pfbid02gDStfRWpGbGezVnymPikMukbDQGdHPngBhpjNr88jmS8QTcs8s9LVJmk31PQv4fv/?d=n>

Feedback from Participants:

- <https://www.dropbox.com/sh/1wq0x4lw68taps4/AABblrR9j5CXefepVxLFVwS8a?dl=0>

Concert Photos:

- <https://muse.hku.hk/photos/inkart-hk/>

Audio and Video Recordings of the Full-Length Concert:

- <https://www.dropbox.com/sh/akvtnwfrjpkkbtj/AAACORXEqbW3DHFki17wUBmKa?dl=0>

Quantitative Indicators**Table 1**

Performance Indicators Laid Down by UGC	2023/24
Number of patents filed in the year (with breakdown by country and type) ^{Note 1}	484 ^{Note 2}
Number of patents granted in the year (with breakdown by country and type) ^{Note 1}	121 ^{Note 3}
Number of active licenses (with breakdown by type) ^{Note 1}	161
Number of economically active companies with knowledge transfer and other related companies ^{Notes 1 & 4}	310
Number of collaborative researches ^{Note 5}	59
Number of contract researches (other than those included in "collaborative researches" above) ^{Note 6}	1026
Number of consultancies ^{Note 7}	854
Total number of collaborative researches, contract researches and consultancies ^{Note 8}	1939
Number of student contact hours in short courses or e-learning programmes specially tailored to meet business or continuing professional development (CPD) needs	7,562,052
Number of equipment and facilities service agreements	87
Number of public lectures/symposiums and speeches to a community audience ^{Note 9}	1,805
Number of performances and exhibitions of creative works by staff or students ^{Note 9}	92
Total of public lectures/symposiums/speeches to a community audience and performances and exhibitions	1,897
Number of staff engaged as members of external advisory bodies including professional, industry, government, statutory or non-statutory bodies	478
Total income generated from Knowledge Transfer ^{Note 10}	\$2,716.20M

(Data as of 10 October, 2024)

Notes:

1. The number of patents granted is unrelated to the number of applications in a particular year.
2. The number of inventions involved is 321 (this is the updated 2023-24 figure).
3. The number of inventions involved is 92 (this is the updated 2023-24 figure).
4. The reported figure adopts the definition of the latest UGC Common Data Collection Format (CDCF) Guidance Notes 2021-22 to include the number of all economically active startups that have been established by staff, graduates or students and are now operationally independent of the university. They were either supported by the University's entrepreneurship programmes or other resources (including HKU DreamCatchers, iDendron, TSSSU@HKU, InnoWing, etc.), or obtained technology licenses from the University.
5. ITF projects with industrial sponsorship and other collaborative projects with at least two partners (one of which being a government or public body) were included.
6. Contract research projects commissioned by external organizations, and projects supported by funding schemes that allow non-higher education institutions to apply, including ITF projects without industrial sponsorship, Public Policy Research projects, and projects funded by the Food and Health Bureau, the SK Yee Foundation, Construction Industry Council, and Standing Committee on Language Education and Research (SCOLAR), were included. NIH projects have been classified as Contract Research since 2016/17.
7. Consultancy and service projects for KE commissioned by external organizations to the University or Versitech, and consultancies undertaken by individual staff as outside practice (excluding clinical service and teaching in other tertiary education institutes) were included.
8. It is considered more appropriate to group collaborative researches, contract researches and consultancies together because it is sometimes not easy to classify projects into these categories.
9. Community, cultural and KE-related events organised by the University and those delivered by academic staff at the invitation of external organisations were included.
10. The total income generated from Knowledge Transfer includes income from (i) collaborative researches; (ii) contract researches; (iii) consultancies; (iv) intellectual property rights; (v) CPD courses; and (vi) the equipment and facilities service agreements.