香港浸會大學
HONG KONG BAPTIST UNIVERSITY

2023-24
Knowledge Transfer Annual Report

CONTENTS

1 EXECUTIVE SUMMARY

Hong Kong Baptist University (HKBU) is committed to leveraging the power of knowledge transfer to not only generate thrust for the University to enhance its competitiveness and establish its leadership but also to bring about socio-economic benefits to the community and businesses. Toward that end, the University continues to provide significant knowledge transfer impacts to society in the four strategic areas of **(1) creative media / practice; (2) health and drug discovery; (3) data analytics and artificial intelligence (AI); and (4) humanities and cultures**. This Annual Report summarises the University's key achievements during the academic year July 2023 – June 2024, highlighting our contributions in developing knowledge transfer (KT) strategies and infrastructure; promoting commercialisation and industrial collaborations; fostering mainland and international collaborations; advancing social impact and community engagement; and promoting entrepreneurship, all while spotlighting multiple impact cases.

To strengthen KT strategic and infrastructure development, the Knowledge Transfer Office (KTO) and the Institute of Innovation, Translation, and Policy Research (ITPR) at HKBU continue their mission of translating innovation and creativity into impactful solutions by supporting researchers to bring their ideas to fruition and scale the impact of their work by coordinating various funding opportunities from a wide range of stakeholders, such as the Research, Academic, and Industry Sectors One-plus (RAISe+) Scheme by the HKSAR Government. Furthermore, the two departments forge tightly-knit alliances and collaborations with the Government, industry partners, and key stakeholders to support our researchers with the latest cutting-edge infrastructure, just to name a few, Hong Kong's first Chinese Medicine Hospital, the Wu Jieh Yee Institute of Translational Chinese Medicine Research, and a joint laboratory with Agilent Technologies Co. Ltd. to further support evidence-based public health policy formulation.

Meanwhile, the University has cultivated a wide range of strategic collaborations in different fields with a view to accelerating the translation of innovative research outcomes into commercially available products. In the field of Chinese Medicine, the University has partnered with **China Resources Enterprise, the UMP HealthCare Group**, and **Beijing Increasepharm Corporation Limited** to advance the standardisation and internationalisation of Chinese Medicine. Additionally, the University is collaborating with its partners to establish a HK$90 million seed fund for scientific research particularly in the fields of data science, AI and interdisciplinary applications.

Furthermore, the University is an avid believer in the equal importance of the arts and technology in positively impacting society. From harnessing the power of AI that empower the deaf community to creating art murals that inspire hope and healing, the University continues to encourage active engagement between academia and society to drive practical and meaningful innovation. This commitment is further underscored by the promotion of entrepreneurship, with the University organising various awards, collaborative events, and funding schemes to bring the contributions of our researchers into the limelight while providing the necessary support to further develop them to create long-lasting impact.

The five impact cases, including **(1) hosting the inaugural FoodMed Conference**; **(2) developing Hong Kong's first botanical drug granted orphan designation by the FDA**; **(3) opening the Life Science Imaging Centre**; **(4) hosting the HKBU Art Tech Symposium to explore the future of arts**; and **(5) showcasing art tech projects at FILMART**, are exemplary cases which represent the culmination of the University's efforts and contributions in the above four areas.

It is hoped that this report not only provides a comprehensive overview of the University's continuing efforts in fostering knowledge transfer but also serves as a celebration of the important milestones achieved within this academic year.

Overview 2023-24

$260,185,308

Knowledge Transfer Income

$2,357,687

Intellectual Property Income

43

New Filed Patents

247

Entrepreneurship Activities

12,288

Participating Students

612

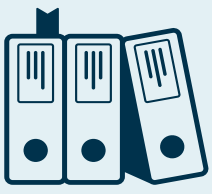
Public Speeches

60

Performances and Exhibitions

Data in Motion: Insights Leading up to 2024

152



Active Licenses

66

Start-up Companies

2 KT STRATEGIC AND INFRASTRUCTURE DEVELOPMENT

2.1 Strategic Advancements in Intellectual Property Management

Information session on the new "Policy of Intellectual Property Management" held on 6 October 2023.

Since the inception of the "Administrative Guidelines for the Protection of Intellectual Property Rights" in 2014, the landscape of intellectual property (IP) at Hong Kong Baptist University (HKBU) has transformed significantly, witnessing a remarkable upsurge in patent applications and grants. To foster a more resilient and efficient IP management system, HKBU has instituted a new "Policy on Intellectual Property Management" that includes clearer and more accurate guidance, effective from 1 October 2023.

A key goal of this new Policy is to develop a more sustainable IP management framework, so as to encourage and facilitate a better knowledge transfer (KT) environment at the University. The new Policy has established a thorough vetting process whereby the Knowledge Transfer Office, or a committee appointed by this office, is tasked with evaluating and advising on the most effective strategies for the protection, commercialisation, and exploitation of intellectual property, submitting their recommendations to the University for final decisions.

In a strategic move to further incentivise research and development initiatives, the new Policy also significantly enhances the net revenue distribution from IP commercialisation for original creators, increasing their share from 50% to not less than 85%.

These policy enhancements are a concerted effort to stimulate influential KT activities across the University and to catalyse broader innovation within the community. The process involved a meticulous benchmarking exercise against peer institutions and an extensive consultation with IP stakeholders to ensure the recommendations were well-founded and in harmony with the best practices, leading to their adoption by the University.

2.2 RAISe+ Funding to Strengthen the Development of HKBU Translational Research Projects

Launched in October 2023 by the Innovation and Technology Commission of the HKSAR Government, the Research, Academic, and Industry Sectors One-plus (RAISe+) Scheme provides a maximum funding of HK$100 million per project to unleash the potential of local universities in the transformation and commercialisation of research and development outcomes while fostering collaboration among the Government, industries, universities, and research sectors. In 2024, with support from the Institute for Innovation, Translation, and Policy Research (ITPR) of Hong Kong Baptist University (HKBU), two translational research projects of HKBU were awarded funding under the Scheme.

Professor Alex WAI, President and Vice-Chancellor (centre), together with Professor Terence LAU (left), and Professor BIAN Zhaoxiang (right), who lead the two projects which have been awarded funding from the RAISe+ Scheme.

The first awarded project, **Advanced Point-of-care Molecular Systems for Clinical and Non-Clinical Applications**, is an innovative and comprehensive diagnostic system that identifies disease-causing pathogens in an hour. Led by Professor Terence LAU, Interim Chief Innovation Officer, the fully automated system aims to transform current diagnostic services, where efficient testing would further protect people from infectious diseases and safeguard public health.

The second awarded project, **New Chinese Herbal Medicine for Treating Functional Constipation in the Elderly**, focuses on combining a traditional Chinese herbal formulation with advanced technologies to create a new medicine called CDD-2101. Led by Professor BIAN Zhaoxiang, Associate Vice-President (Clinical Chinese Medicine) and Director of the Centre for Chinese Herbal Medicine Drug Development Limited, the project has progressed smoothly, with the medicine being granted permission for phase 1 clinical trials in the United States – a critical step towards widespread availability.

2.3 The Opening of the Wu Jieh Yee Institute of Translational Chinese Medicine Research to Foster Commercialisation of Chinese Medicine Research

The Wu Jieh Yee Institute of Translational Chinese Medicine Research, founded by the generous donation of **HK$230 million** from the Wu Jieh Yee Charitable Foundation, was opened in April 2024. As HKBU's pivotal research translation platform aimed at promoting innovation in Chinese medicine, the Institute aspires to become a globally recognised innovative research centre in Chinese medicine.

Located in the Hong Kong Science Park, the Institute is equipped with advanced facilities, which enable research teams to conduct high-quality Chinese medicine translational research, with the goal of transferring research outcomes into clinical applications and fostering commercialisation. Notably, the Institute actively drives cutting-edge collaborations across disciplines and provides resources and professional support in the following four specialised research areas. It promotes interdisciplinary collaborations in phenomics, smart medical devices, herb-drug interactions, and clinical data science. The Institute's constant strive for innovation in Chinese medicine, such as new diagnostic technologies, equipment and novel therapeutic drugs, paves the way for further breakthroughs for the benefit of society.

2.4 Establishment of a Joint Laboratory between HKBU and Agilent Technologies Co. Ltd (China) to Enhance Research Outcomes

Opened in May 2024, the SKLEBA (HKBU) – Agilent Joint Laboratory, jointly established by the State Key Laboratory of Environmental and Biological Analysis (SKLEBA) at HKBU and Agilent Technologies Co. Ltd (China), fosters innovative research and development in the field of environmental new pollutants analysis and toxicology, with a view to providing scientific evidence to aid authorities in formulating scientifically underpinned public health policies.

Drawing on SKLEBA's expertise in cutting-edge research on persistent organic pollutants on the one hand, while also leveraging Agilent Technologies Co. Ltd (China)'s state-of-the-art instruments and robust engineering know-how on the other, the Laboratory is an advanced research and analysis platform that simultaneously contributes to the advancement of academic inquiries and development of practical real-world solutions in the fields of environmental safety, food safety, and human health.

Representatives from HKBU, Agilent Technologies Co. Ltd (China) and the HKSAR Government unveil the plaque of the Joint Laboratory.

3 COMMERCIALISATION AND INDUSTRIAL COLLABORATION

3.1 Fostering Technological Advancement in Smart Chinese Medicine through a Joint Innovation Centre between HKBU and China Resources Enterprise

HKBU and China Resources Research Institute of Science and Technology Co. Limited (CRRIST), a subsidiary of China Resources Enterprise Limited (CR Enterprise), have signed a research and development collaboration agreement to establish the CR-BU Joint Innovation Centre on Smart Chinese Medicine in December 2023. The Centre's inaugural project involves the development of an innovative Chronic Disease Management system.

3.2 Enhanced Collaboration with the Chinese Manufacturers' Association of Hong Kong through the Signing of an MOU

Signing a Memorandum of Understanding in November 2023, HKBU and the Chinese Manufacturers' Association of Hong Kong have formed a unique university-industry partnership that aims to drive innovation and technological development in the areas of green finance, carbon neutrality, biotechnology, property technology, and sustainability.

The close partnership between academia and industry bilaterally fosters technological translation and commercialisation.

3.3 Promoting Enhanced Chinese-Western Medicine Integration through the Signing of an MOU with UMP HealthCare Group

The signing of a Memorandum of Understanding between HKBU and UMP Healthcare Group (UMP) in October 2023 laid the groundwork for launching the "Integrative Chinese-Western Medicine Research Collaboration" initiative, whose objective is to pilot multiple clinical and translational research projects that advance the scientific development of integrative Chinese-Western medicine consultation and treatment plans.

This partnership aims to boost Chinese medicine globally and position Hong Kong as a hub for integrated Chinese-Western medicine.

4 MAINLAND AND INTERNATIONAL COLLABORATION

4.1 HK$90 million Seed Fund for Scientific Research Established Jointly by GDSTC, HKBU and BNU-HKBU UIC

To accelerate the development of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) as an international science and technology innovation centre, the Department of Science and Technology of Guangdong Province (GDSTC), HKBU, and Beijing Normal University–Hong Kong Baptist University United International College (BNU–HKBU UIC) signed a collaboration agreement in May 2024 to establish a seed fund pool of **HK$90 million** to advance novel scientific research, strengthen cross-campus collaborations, and foster talent exchanges.

The agreement introduced the "Work Plan to Jointly Support the Deepening of Collaboration in Science & Technology", with the three parties pledging to implement a "1+1+1" funding programme, where over the three years from 2024 to 2026, GDSTC and BNU–HKBU UIC shall invest RMB10 million per year, respectively, while HKBU shall invest no less than HK$10 million per year. The fund is set to support up to 10 joint research teams each year, with a particular focus on supporting original research and innovations addressing national technological needs and GBA integration.

4.2 Shenzhen Venture Capital Day

Participating in the Shenzhen Venture Capital Day themed "Shenzhen-Hong Kong Cooperation, Future of Venture Capital" in December 2023, the University showcased its achievements in promoting knowledge transfer and innovation and its efforts in bridging academia and industry to accelerate research applications. HKBU start-ups also had the opportunity to showcase their latest projects.

In particular, HKBU's four key research areas were highlighted in the event. For instance, the University's next-generation "Future Cinema System" elevates interactive and immersive technologies, bringing new experiences to culture, entertainment and education. Collaboration plans with local and overseas institutions, including the Airport Authority Hong Kong, Tai Kwun and Cameron Pace Group, are underway to introduce this ground-breaking technology to the commercial sector.

4.3 Joint Development of New Chinese Medicine between CDD and Beijing Increasepharm Corporation Limited

To continue its mission in pursuing innovative Chinese medicine research and development, the Centre for Chinese Herbal Medicine Drug Development Limited (CDD), established by HKBU, has signed a strategic collaboration agreement with Beijing Increasepharm Corporation Limited (Increasepharm) in September 2023 to jointly develop new drugs and health products based on Chinese medicine (CM).

The collaboration establishes a new research and development platform that focuses on four strategic aspects: the development of new CM drug products, secondary development of existing CM, technology transfer of existing products or achievements, and marketing and industrialisation of existing products, aiming to promote the inheritance, innovation, and development of CM.

4.4 International Collaboration on Aphasia Recovery

HKBU actively encourages researchers to engage in international collaboration to integrate diverse perspectives that foster advancements in clinical practices. Since July 2023, Dr LI Ran, Assistant Professor of Department of English Language and Literature, has been engaging in a collaborative research project with peers from the United States and Korea, focusing on the impact of linguistic and cultural differences on aphasia recovery. The research team presented their findings at the 2023 American Speech-Language-Hearing Association (ASHA) convention in Boston, United States on 17 November 2023, and are scheduled to present at the Clinical Aphasiology Conference (CAC) on 1 June 2024. Furthermore, they submitted a manuscript to the American Journal of Speech-Language Pathology in April 2024 awaits minor revisions. The research underscores the importance of considering cultural and linguistic factors in healthcare, advocating tailored rehabilitation for individuals with aphasia to enhance their quality of life and offering a model for future research and practice in the field of speech-language pathology.

4.5 A Service-learning Trip to Empower Schools in the Greater Bay Area with AI

From 13 to 15 May 2024, the HKBU Centre for Innovative Service-Learning, Institute of Creativity, and Language Centre jointly organised an innovative AI-empowered foundational education service-learning trip. Students applied their knowledge and skills in community service, as well as explored new educational approaches empowered by AI during visits to various mainland institutions, including the Shenzhen National Gene Bank, the Shenzhen Astronomical Observatory and the Luofu Mountain Ge Hong Museum.

Visiting local schools in Huizhou and Shenzhen, students also collaborated with local teachers to innovate classroom teaching methods and implement AI in foundational subjects, including English, Science, and Music, fostering a deeper understanding of technology and culture.

5 IMPACT CASE

5.1 Hosting the Inaugural FoodMed Conference

On 28 and 29 May 2024, HKBU hosted the inaugural FoodMed Conference, themed **"Integrating Food and Chinese Medicine: Exploring Science, Technology, and Holistic Approaches for Health"**. Bringing together 300 researchers, practitioners, industry innovators, investors, experts, and regulatory officials, the two-day event facilitated the exchange of professional knowledge on "food as medicine", the exploration of its therapeutic potential, and the discussion of its future developmental trends in supporting primary healthcare in society.

Giving presentations centred around the concept of "food as medicine", thirty-five speakers from the local community, mainland China, and overseas covered a wide variety of topics, including regulatory frameworks, scientific and integrative approaches, translational Chinese medicine and food homology, and more. In particular, the conference featured four keynote speeches by visionary leaders, namely Professor CHEN Junshi, Chief Adviser of the National Centre for Food Safety Risk Assessment; Dr ZHANG Fei, Deputy Director of the Foreign Investment Institute at the Chinese Academy of International Trade and Economic Cooperation, Ministry of Commerce; Mr Tom HEILANDT, Former Secretary of the Codex Alimentarius Commission; and Dr Maura DI MARTINO, Consultant of the Food and Agriculture Organization of the United Nations. They offered their valuable insights on various aspects of food medicine homology, including its transformative potential in promoting health and wellness, the current landscape of regulatory frameworks and investment opportunities, as well as safety issues and challenges.

FOODMED 藥食同源 • 2024

The event brings together 300 researchers, practitioners, industry innovators, investors, experts, and regulatory officials to engage in networking sessions.

(From left) Professor Terence LAU; Professor CHEN Junshi, Chief Adviser of the National Centre for Food Safety Risk Assessment and Member of the Chinese Academy of Engineering; and Mr Tom HEILANDT, Former Secretary, Codex Alimentarius Commission, at the discussion session of the conference.

3 GOOD HEALTH AND WELL-BEING

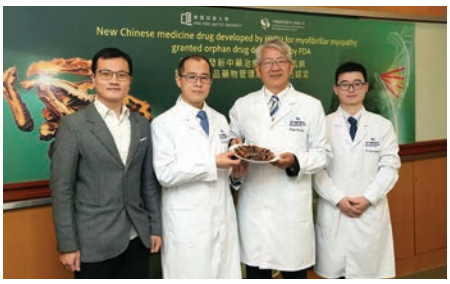
17 PARTNERSHIPS FOR THE GOALS

Several HKBU start-ups are invited to exhibit their technologies at the event.

5.2 HK's First Botanical Drug Granted Orphan Drug Designation by the FDA

HKBU's Centre for Chinese Herbal Medicine Drug Development Limited (CDD) has developed a new drug, **CDD-2107**, that utilises the effective components of Chaenomelis Fructus – a dried mature fruit of Chaenomeles speciosa (Sweet) Nakai used in Chinese herbal medicine – for the treatment of the rare disease – myofibrillar myopathy. The drug's successful acquisition of the orphan drug designation from the US Food and Drug Administration (FDA) will accelerate its development process through additional incentives and support, including research funding, extended patent protection, market exclusivity, and tax credits.

Myofibrillar myopathy, primarily caused by genetic mutations, including the BAG3 gene (Bag3opathy), is a rare hereditary neuromuscular disorder characterised by severe clinical symptoms, including progressive muscle weakness, muscle atrophy, motor impairment, muscle stiffness, respiratory muscle involvement, and cardiomyopathy. Referring to traditional Chinese medicine theory and past Chinese medicine prescriptions that utilised Chaenomelis Fructus for joint and muscle disorders, the research team applied modern Chinese medicine extraction and purification techniques to identify the most important and effective components of Chaenomelis Fructus and uncover their potential treatment mechanism, ultimately culminating in the development of CDD-2107. With a particular focus on Bag3opathy, the drug could significantly relieve clinical symptoms in patients with myofibrillar myopathy by enhancing muscle strength and improving mobility, offering new hope to patients with myofibrillar myopathy for which there is no currently effective treatment. The research team plans to submit an Investigational New Drug application to the FDA in two years to conduct clinical trials.



Professor BIAN Zhaoxiang (2nd right), Dr LIN Chengyuan (2nd left), Dr HOU Mengyang (1st right), and Mr DUAN Zhigang (1st left).

Chaenomelis Fructus.

5.3 Opening of the Life Science Imaging Centre

Opening ceremony of the Life Science Imaging Centre.

In line with HKBU's 10-year Institutional Strategic Plan, the Life Science Imaging Centre was launched in January 2024 to support the University's transdisciplinary research endeavours with a view to nurturing future-ready students and expanding their horizon of knowledge. The newly established Centre aims to be the catalyst that sparks collaborations across disciplines from neuroscience, arts, and social sciences to humanities, science and technology, driving globally impactful research projects that contribute to a better world.

With access to various cutting-edge brain imaging facilities, including a 3T Magnetic Resonance Imaging (MRI) scanner, an Electroencephalogram (EEG), a functional Near-Infrared Spectroscopy (fNIRS), and a Transcranial Magnetic Stimulation (TMS) system, our researchers have been taking advantage of these advanced infrastructures to pioneer numerous innovative research projects, including the study of the neural architecture of leadership; associations of the human gut microbiome with food preferences and consumption and brain activity; collaborative inter-brain behaviours in music ensemble; and brain network strategies for modulating neurocognition and treating neuropsychiatric disorders.

HKBU's friends and guests visit the Life Science Imaging Centre.

Magnetic Resonance Imaging (MRI) scanner.

Professor Alex WAI, President and Vice-Chancellor of HKBU, delivered welcome remarks.

Keynote presentation by Professor DAI Qionghai from Tsinghua University.

Keynote presentation by Professor GUAN Xiaohong from Xi'an Jiaotong University.

5.4 Exploring the Future of Arts at the HKBU Art Tech Symposium

On 7 and 8 December 2023, HKBU hosted a two-day Art Tech Symposium at its Tsang Chan Sik Yue Auditorium. Aimed at advancing art technology development between mainland China and Hong Kong as well as Hong Kong's position as a hub for culture and creativity, the Symposium served as a platform for globally renowned scholars and experts to share their state-of-the-art research and insights, while providing a valuable opportunity for the next generation of art tech enthusiasts and emerging AI artists to keep abreast of the latest discussions and developments in the field.

At the Symposium, several leading academics gave keynote presentations on a wide variety of topics, ranging from "Metaverse Art Transformation" presented by Professor DAI Qionghai, Academician of the Chinese Academy of Engineering and Dean of the School of Information Science and Technology at Tsinghua University and "Quantification and Cognition of Music Computational Intelligence" by Professor GUAN Xiaohong, Academician of the Chinese Academy of Sciences and Chairman of the Faculty of Electronics and Information Engineering at Xi'an Jiaotong University to "When Art Meets AI" by Professor GUO Yike, Provost of the Hong Kong University of Science and Technology. Furthermore, two academic presentation sessions on "The Impact of AI" and "Human-AI Collaboration in Art Creation" were held to allow experts and scholars from various universities in mainland China to share and discuss the current trends in the field of art and technology. The Symposium acted as an important medium that introduced the newest advances in this field to the general public of Hong Kong, enhancing public awareness of the pioneering research conducted here at HKBU.

75 Scholars | **200** Researchers | **1.36M** Online Viewers

5.5 HKBU Art Tech Projects Showcase at FILMART

From 11 to 14 March 2024, HKBU participated in the Hong Kong International Film, and TV Market (FILMART) Exhibition that showcased the plethora of AI and art technology projects at the University, with a view to strengthening industry collaboration that will accelerate the translation of related technologies to create a new outlook on the landscape of film and TV production. For instance, one of the HKBU start-ups has leveraged the power of AI to create a system that generates high-quality visual and motion content from the input of natural language scripts and visual prompts, unlocking new possibilities for immersive storytelling and interactive experiences. Another prominent example is an AI algorithm capable of generating Cantonese songs by referencing Large Language Models, which, with further development, has the potential to revolutionise the Hong Kong music industry.

Another highlight event for HKBU during the exhibition was the "**15 Years of Cinematic Legacy: HKBU Academy of Film**". Celebrating the 15th anniversary of the establishment of the Academy of Film (AF), HKBU hosted two panel discussions themed "Spotlight on New Horizons in Filmmaking and Beyond – a Hong Kong Vision" and "Cross-Generational Cinematic Journeys: Exploring the Future of Film with Art Tech and AI", during which numerous key figures including Mr Gordon CHENG, CEO of Cameron Pace Group China; Dr Johnnie Kei-fung TO, acclaimed filmmaker, Honorary Consultant of AF, and HKBU alumni; film directors and screenwriters Mr Andrew Chih-chiang FUNG, Mr Steve Chi-fat CHAN, and Mr CHAN Tai Lee shared their insights and expertise in inspiring dialogues.

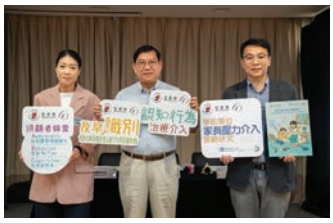
HKBU showcases various advanced AI and art tech projects at FILMART.

Guests visit HKBU's pavilion to learn about the University's art tech research projects and start-ups.

Speakers share their insightful perspective on the development of art tech and the film industry during the panel discussion.

6 SOCIAL IMPACT AND COMMUNITY ENGAGEMENT

6.1 Stepping Up Cognitive-Behavioural Intervention to Ease Parental Stress



In response to the high levels of physical stress and emotional burnout experienced by parental caregivers, especially those with children with Special Education Needs (SEN), the Department of Social Work at HKBU collaborated with Heep Hong Society to launch a joint study – "Project P.S.I. (Parental Stress Intervention): Intervention Strategies for Parental Stress in Preschool Units".

With a view to improving their social functioning and emotional resilience through Cognitive-Behavioural Therapy (CBT), participating parents were given tailored interventions. Positive outcomes empowered both parents and children with improved emotional and cognitive awareness and new techniques to regulate their thought patterns. The study developed a new "Social Ecological Resilience Scale" for social workers and teachers to aid them in readily identifying those in need and enrolling them into a CBT programme.

6.2 Empowering the Deaf Community with AI

To address the current lack of support for the local deaf and hard of hearing (DHoH) group, the School of Communication at HKBU has launched a new academic-industry collaboration initiative, "AI for Social Inclusion: Empowering the Deaf and Hard of Hearing", to explore how AI can improve the lives of people with hearing impairment. The event served as a multidisciplinary platform for academic representatives, the hearing-impaired community, NGOs, and other stakeholders to exchange ideas and insights.

HKBU spearheaded this initiative to promote social inclusion, enhancing public awareness and support for disadvantaged groups. This collaboration aims to develop automated sign language translation through AI technology to improve accuracy, real-timeliness, and rendering quality, thereby bridging communication barriers and promoting a more interconnected and inclusive society in Hong Kong.

6.3 Award-winning STEAM Teaching Kits for Junior Secondary Science Curriculum

To support the launch of the "Science (S1-3) STEAM Learning Module" by the Education Bureau (EDB) in the 2023/24 academic year, the Department of Physics at HKBU has, in collaboration with the EDB, initiated the project "STEAM Education for future: Innovation and technology learning module at junior secondary level". Led by Dr CHAN Mau Hing, Lecturer of the Department of Physics, the research team designed and produced six sets of teaching kits for the "Innovative Technology" learning module, including teaching materials that can be 3D printed and assembled locally in schools, teaching videos, and slides.

Awarded a Silver Medal at the 49th Geneva International Exhibition of Inventions, the kits were successfully piloted in over 15 local schools, receiving positive feedback from teachers for their innovative and practical design.

6.4 Let Art Heal: Inspiring Hope and Healing with Art

The "Let Art Heal" initiative at the Ronald McDonald House (RMCH) in Kwun Tong aims to infuse spaces with vibrant art pieces crafted to inspire hope and healing. Themed "The Gift of Love", the initiative involved collaboration from various parties, including HKBU, where Dr Lisa LAM , Director of Centre for Innovative Service-Learning and Mr Tom O'DEA, Assistant Professor of Academy of Visual Arts from HKBU led a team of students to create two vibrant murals within the House. This service-learning opportunity allowed students to engage in meaningful community service while showcasing their artistic skills acquired at school. They collaborated extensively with RMCH to guarantee the high-quality artwork, showcasing their interdisciplinary skills and transforming RMCH into a welcoming environment for visitors.

7 PROMOTION OF ENTREPRENEURSHIP

7.1 HKBU KT Awards Presented to Outstanding Staff

Established in 2014, the KT Awards, which include the HKBU Innovation Award and HKBU Knowledge Transfer Award, are presented yearly to HKBU staff who have made an exceptionally significant contribution to knowledge transfer.

In 2024, the HKBU Innovation Award was presented to Professor CHEUNG Yiu Ming, Chair Professor of the Department of Computer Science for his "Lip-password for Personal Identity Verification" project. Aiming to enhance privacy protection compared to face recognition, the project spearheaded the development of a promising solution that matches password information with lip motion behaviour simultaneously.

Meanwhile, the HKBU Knowledge Transfer Award was presented to Dr KWONG Chi Man, Associate Professor of the Department of History for his "Revisiting the Wartime History of Hong Kong through GIS-Based Historical Spatial Data Platforms" project. Utilising the Geographical Information System to create interactive maps, the research brings together the work processes of various predecessors to produce a comprehensive and accessible online map of Hong Kong's wartime history, offering innovative historical insights to the public.

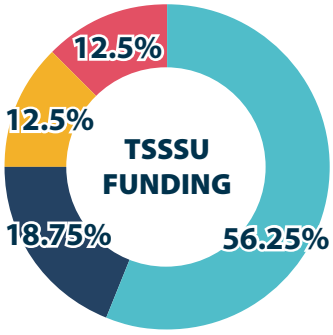
7.2 Technology Start-up Support Scheme (TSSSU) for Universities

In 2023-24, a total of **16 companies** received funding amounting to **HK$12.8 million**. Notably, **75%** of the applications were additionally awarded funding from the Hong Kong Science and Technology Parks Corporation (HKSTP), representing strong recognition and validation from industry partners on the University's research outcomes.

The 16 companies which received funding from HKBU's TSSSU include:

- Booguu Company Limited
- Enter-Link Limited
- Herbap Biotech Limited
- Hong Kong Authentication Centre of Valuable Chinese Medicines Limited
- Immersive Unlimited Limited
- LuminMed Limited
- Minotaur Pictures Limited
- Prime Biosensing Technology Limited
- EC Bot Limited
- Gihon Biotech Limited
- HK-Dtech Limited
- iCounseling International Company Limited
- IntelligenceX Limited
- MicroFlow Innovation Limited
- Online Companion Limited
- TadReamk Limited

All utilising licensed intellectual property from HKBU, the companies focused on various research focuses of the University



7.3 HKBU Inno Realisation Fund

With a view to nurturing an innovative and entrepreneurial culture within the HKBU community and facilitating knowledge transfer and commercialisation of HKBU's innovations and know-how, HKBU has launched a new funding initiative, HKBU Inno Realisation Fund, that offers up to **HK$200,000** funding support for each application. Furthermore, the Fund aims to prepare projects for external support schemes, such as TSSSU and HKSTP incubation programme, with the latter offering up to HK$1.29 million in funding. Projects are offered personalised advice and invitations to mingling events with investors, start-up competitions, and other incubation programmes, alongside a series of workshops designed to translate research outcomes into business plans.

In 2024-25, Cohort#1, 5 applications received a total of **HK$1 million** under this initiative. The funded companies are:

- Constellarts Co-creation (Hong Kong) Culture Technology Limited
- Jelumiere Biotech Limited
- Sheminfu Limited
- Dinno Soundwave Technology Limited
- Motion Expert Hong Kong Limited

Additionally, they have all received conditional offers from the HKSTP Ideation programme, with the potential of accessing an additional HK$0.5 million in funding.

7.4 BUzziness Connect: Connecting HKBU Start-ups with the Industry Field

Aiming to bridge HKBU biotechnology and Chinese medicine-related start-ups and research teams with potential investors and industry partners, the Knowledge Transfer Office (KTO) and the Institute of Innovation, Translation, and Policy Research (ITPR) co-organised the "**BUzziness Connect – BIO for a Better Future**" event that was participated by over 70 industry partners and investors. It served as a collaborative platform for both sides to share their latest breakthroughs and insights, echoing the University's mission to accelerate the translation of research outcomes into commercially viable products and services.

7.5 The Entrepreneurship and Innovation Centre

業及創新中心
Entrepreneurship and Innovation Centre

Established to support the School of Business' entrepreneurship education, the Entrepreneurship and Innovation Centre (EIC) organises various seminars, workshops, and related activities to encourage and cultivate an entrepreneurial culture and atmosphere among students, who are then equipped with the knowledge and know-how to recognise opportunities, solve complex problems, and lead positive social change in the GBA region and beyond. In the reporting year, EIC organised 19 events with 1,673 participants.

In 2024, EIC offered three entrepreneurship seminars by inviting industry leaders from Google Hong Kong, The Hong Kong Jockey Club and Little Bao and Happy Paradise. Moreover, EIC organised various opportunities for students to showcase their creativity and innovative ideas, such as the Dean's Cup of Business Innovation Gymnasium (BIG9.0) and Mini Business Innovation Gymnasium (miniBIG), allowing them to gain first-hand experience in entrepreneurial pitches.

7.6 The HKBU Intellectual Property Forum 2023

The HKBU Intellectual Property Forum 2023, jointly organised by the Knowledge Transfer Office and the University Library of HKBU, was held successfully on 1 December 2023. Under the theme "**Art-Tech and Intellectual Property Rights**", the forum brought together eminent intellectual property experts from the government and private sectors, shedding light on various topics related to Art Tech Incubation Hub, digital humanity, and their implications for intellectual property rights. The forum attracted approximately 140 participants, both online and in-person.

Distinguished speakers from renowned intellectual property firms, including IDEA Intellectual Ltd, Marks & Clerk Hong Kong, and ELLALAN, delivered presentations that underscored the immense value of intellectual property rights in today's world. Their insightful analysis provided a deeper understanding of the subject matter.

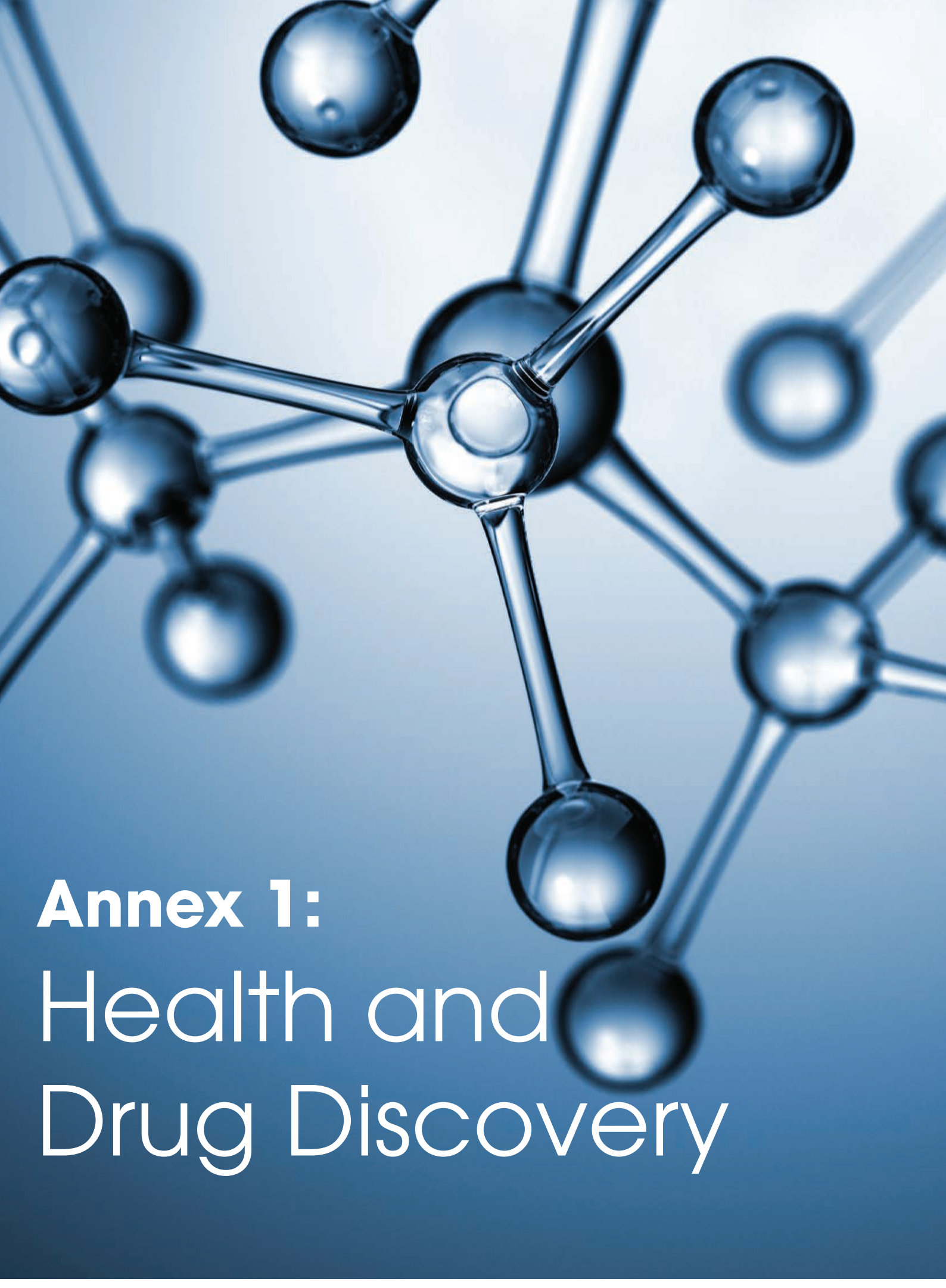
8 LOOKING AHEAD

HKBU is dedicated to its continuous development as a prominent knowledge transfer hub and a significant driving force for spurring economic growth and improving the societal well-being of Hong Kong, mainland China, and the wider world. In the coming years, the establishment of the Hong Kong's first Chinese Medicine Hospital, the Wu Jieh Yee Institute of Translational Chinese Medicine Research, and the HKBU Art Tech Incubation Hub will not only nurture the growth of Chinese medicine and arts at HKBU but also create a pathway for the blossoming and success of future talents.

Furthermore, the University is keen to take advantage of the numerous measures proposed by the Government in the 2024-25 Budget to enhance its competitive edge in the three areas of innovation and technology, life and health technologies, and artificial intelligence. These measures include the HK$10 billion New Industrialisation Acceleration Scheme, the HK$3 billion Frontier Technology Research Infrastructure Support Scheme, and the HK$3 billion AI Subsidy Scheme, to name a few. The University is eager to explore the details of and to capitalise on these new initiatives to further propel existing studies to new heights while nurturing new and ground-breaking research.

With another year of cutting-edge innovation in arts and technology and the establishment of numerous strategic collaborations with industry keyholders, the University is poised to further strengthen and expand these unique advantages to create a more holistic academic and research environment that fosters a problem-centred research system, characterised by early and close engagement with commercial partners to respond to industry challenges in a targeted and timely manner.

HKBU Knowledge Transfer Office 2023-2024



Annex 1:
Health and Drug Discovery

1 New Drug and Healthcare Solutions Showcased at the Asia Summit on Global Health 2024

HKBU participated in the prestigious Asia Summit on Global Health (ASGH) 2024, presenting pioneering life science solutions crafted by our 10 start-ups and research groups. The Summit was an invaluable opportunity for our teams to foster closer connections with healthcare experts and industry stakeholders in order to further contribute our research outcomes to the advancement of the healthcare sector. Participating HKBU start-ups and projects include Advanced Point-of-care Molecular Systems for Clinical and Non-clinical Applications; BioTechnology and Natural Products for Health Development Limited; Booguu Company Limited; EC Bot Limited; GastroEase Biotech Limited; Gihon Biotech Limited; HK-Dtech Limited; Hong Kong Authentication Centre of Valuable Chinese Medicines Limited; MicroFlow Innovation Limited; and MIND and Tech Limited.

At the Summit, Professor BIAN Zhaoxiang, Associate Vice-President (Chinese Medicine Development) and Director of the Centre for Chinese Herbal Medicine Drug Development Limited, led a thematic session on Chinese Medicine in Modern Healthcare. Also, Dr Ashok IYASWAMY, Research Assistant Professor, School of Chinese Medicine - Teaching and Research Division, shared his insights as one of the speakers in another thematic session on "Investing in the Future of Neuroscience". Additionally, three of the exhibited start-ups and projects had the opportunity to present their cutting-edge technological solutions for health and life science development during the project pitching session.

2 China International Food Safety & Quality Conference

To promote Hong Kong's capabilities in safeguarding food safety and quality and to seek out opportunities for network and collaboration, HKBU alongside the Food Safety Consortium (FSC) participated in the China International Food Safety & Quality (CIFSQ) Conference in Beijing on 2 and 3 November 2023. The Conference brought together over 500 global experts to address critical issues and pinpoint recent advancements that hold the potential to markedly improve global food safety, providing HKBU and FSC the opportunity to connect with key stakeholders in the fields of food safety and food as medicine to further expand the impact of our efforts.

At the Conference, Professor Terence LAU, the Interim Chief Innovation Officer at HKBU and Chairman of FSC, delivered a keynote speech on the "Non-targeted detection of food adulteration using AI and big-data enabled collaborative database", highlighting the pivotal role of innovation in enhancing food safety and mitigating food fraud for food commodities. Moreover, Professor ZHU Furong, Associate Dean (Research and Postgraduate Studies) from the Department of Physics, showcased the "Latest Traceable Fruit Quality Detection Solution", which harnesses NIR technology for fruit quality detection and authentication. Additionally, HKBU also promoted its latest commitments to fostering food safety innovation, technology translation, and commercialisation.

3 The 5th International Summit on Innovative Drug Discovery

The 5th International Summit on Innovative Drug Discovery is a significant milestone of HKBU's ongoing mission to advance the boundaries of medical research, bringing together approximately 500 attendees in the drug discovery field to exchange insights on policies concerning research and development of innovative drugs as well as paths and practical experience of innovative drug discovery.

At the Summit, 15 speakers, including officials from the National Medical Products Administration, pharmaceutical entrepreneurs, and esteemed scholars from Hong Kong, Macau, mainland China and Australia, shared the latest developments while offering their views and expertise around three central themes: "New Horizons in Deciphering the Ecological Construction and Investment for New Drug Discovery and Development", "Strategy and Translational Practice of New Drug Discovery and Development in the New Era" and "Innovator Insights into New Drug Discovery and Development". The Summit served as a valuable platform for researchers, scholars, potential investors, industry experts, Chinese medicine practitioners, and members of the School of Chinese Medicine community to establish connections that pave the way for future collaborations, echoing the Government's recent focus on the development of Chinese medicine and its integration with existing Western medicine services, which are underpinned by recent infrastructures enhancement and increased funding support for academia-industry partnerships that aim to commercialise research-and-development outcomes.

Honourable speakers of the Summit.

4 Alternative Cancer Treatment with Ruthenium Compounds

In collaboration with Dr NI Wenxiu at the Medical College of Shantou University, Dr MAN Wai Lun, Assistant Professor of the Department of Chemistry led a research team to investigate the potential effectiveness of ruthenium compounds as an anticancer agent with fewer side effects than the conventional platinum-based chemotherapeutic agent, Cisplatin.

Initial experimental results demonstrated the ruthenium compounds' promising cytotoxicity, i.e. the ability to kill cancer cells in the liver, breast, ovary and lung, and even those that are resistant to Cisplatin. The results were further reinforced by tests with mice, which corroborated the ruthenium compound's unique properties in reducing tumour growth without causing weight loss. The research lays a solid foundation for further preclinical studies and clinical studies to evaluate and ascertain the efficacy of ruthenium-based compounds in cancer treatment, ultimately contributing to meaningful advancements and potential breakthroughs that will significantly improve the quality of life of patients battling with cancer.

Dr MAN Wai Lun, Assistant Professor of the Department of Chemistry.

5 HKBU-led Research Discovers Therapeutic Potential of Hyodeoxycholic Acid for Non-alcoholic Fatty Liver Disease

Published in the renowned scientific journal ***Cell Metabolism***, the research led by Professor JIA Wei, former Acting Dean and Chair Professor in Chinese Medicine and Systems Biology of the School of Chinese Medicine at HKBU, discovered that hyodeoxycholic acid (HDCA), a bile acid generated in human intestine, offers promising potential as a pharmaceutical intervention for non-alcoholic fatty liver disease (NAFLD) by reducing fat accumulation and inflammation in the liver. Phase I and II clinical trials in mainland China were coordinated by HKBU researchers to evaluate the safety and efficacy of HDCA for patients with fatty liver disease and type 2 diabetes.

Testing a cohort consisting of 178 patients with NAFLD and 73 healthy individuals, Professor JIA's team found that individuals with NAFLD have lower levels of HDCA compared to those without NAFLD. This observation informed the team's research direction of exploring HDCA's potential therapeutic role by orally feeding HDCA to mouse models with NAFLD for eight weeks. The results indicated that HDCA markedly reduced excessive lipid droplets, and improved hepatic inflammation, oral glucose tolerance, and insulin sensitivity compared to the control group. Notably, since the HDCA that directly targeted living cells did not exert its therapeutic effects, the researchers hypothesised that HDCA induced gut microbiota alterations, which contributed to the alleviation of NAFLD. This hypothesis was borne out by observations which showed the consumption of HDCA leading to an improved population of beneficial gut bacteria, specifically Parabacteroides distasonis, which regulates fatty acid metabolism as well as the hepatic bile acid synthesis pathways. Professor JIA is hopeful that these research findings as well as the clinical trials will provide more insights into the treatment of fatty liver disease and non-alcoholic steatohepatitis – a common symptom of people with NAFLD.

6 Exploring the Potential of Artemisinin Derivative in Treating Human Obesity

Dr Xavier WONG (left) and Dr Pallavi ASTHANA (right).

The Chinese herb Artemisia annua.

A research team led by scholars at HKBU's School of Chinese Medicine, including Dr Xavier Hoi-leong WONG, Associate Professor; Professor BIAN Zhaoxiang, Associate Vice-President (Clinical Chinese Medicine) and Director of the Centre for Chinese Herbal Medicine Drug Development Limited and Dr Pallavi ASTHANA, Research Assistant Professor, conducted a pioneering study that unveiled the potential of artesunate, a derivative from Qinghaosu (artemisinin), in reducing body weight and improving metabolic profiles without inducing the side effects of nausea and malaise. Published in the international academic journal ***Natural Communications***, the research results lay the groundwork for developing a novel treatment agent that tackles the public health challenge of obesity.

The first stage of the research began with researchers exploring the therapeutic effect of artesunate on obesity by administering the drug daily to mice with diet-induced obesity over 13 days. The results suggested that artesunate was more effective than commercially available drugs in regulating body weight, controlling food intake, improving insulin sensitivity, reducing fat, lowering cholesterol levels in the blood, and alleviating fatty liver disease in obese mice. With these promising results, the researchers further investigated the drug's compatibility with humans by experimenting on macaques, a non-human primate. The outcomes further pointed towards the drug's potential as an anti-obesity agent for humans, with the macaques showing a drop in total food intake, a reduction in body weight, and improved insulin sensitivity as suggested by their lowered insulin and blood glucose levels, all while with no negative effects on the kidneys, nor any signs of nausea and malaise shown. The experiments also unveiled the mechanism of how artesunate controls body weight and appetite, with the drug increasing circulating levels of Growth Differentiation Factor 15 (GDF15), an appetite-regulating hormone that triggers a signal from the hindbrain to reduce food intake when bound to a particular receptor. These three key findings lay the foundation for further investigation on artesunate as a potential anti-obesity agent.

7 Novel Drug Delivery System Unlocks New Possibilities for Alzheimer's Disease Treatment

A research team at HKBU, led by Professor LI Min, Associate Dean (Teaching and Learning) of School of Chinese Medicine, and Dr Ashok IYASWAMY, Research Assistant Professor of the Teaching and Research Division at the School of Chinese Medicine, successfully developed a novel drug delivery system using engineered exosomes, i.e. extracellular vesicles released by cells, to treat Alzheimer's disease (AD). Published in the international academic journal ***Nature-Signal Transduction and Targeted Therapy***, the research findings provide hope for the development of a cure for AD, benefiting the elderly, individuals at high risk of neurodegeneration, and patients suffering from neurodegenerative diseases.

This research, building upon previous research at HKBU which identified Corynoxine-B (a bioactive compound of Gouteng) as an effective compound in treating AD, aims to tackle the problem of low Corynoxine-B uptake levels in the brain due to the blood-brain barrier, developing a novel approach to deliver Corynoxine-B to the brain using engineered exosomes. Initial model experiments showed that the modified exosomes were able to target and interact with neuronal cells with elevated levels of amyloid-beta precursor protein (APP), which plays a crucial role in the development of AD, indicating their effectiveness as carriers for Alzheimer's drugs. Consequently, the researchers injected Corynoxine-B-carrying exosomes into mice with AD to evaluate its potential as a therapeutic agent for the disease. The results showed that the exosomes were able to cross the blood-brain barrier and deliver Corynoxine-B to the brain, resulting in a 30% reduction of accumulated amyloid-beta protein. Furthermore, the mice also showed a 25% recovery in cognitive and locomotor behaviour. The study ascertains exosomes as a promising new way to deliver drugs to the brain, opening new possibilities for treatment options for patients with AD.

Professor LI Min (left) and Dr Ashok IYASWAMY (right).

8 Unveiling the Treatment Potential of Herbal Extract Compound Isoliquiritigenin for Pancreatic Cancer

Scientists of HKBU, led by Dr Joshua Ka-Shun KO, Associate Professor, Teaching and Research Division of the School of Chinese Medicine, conducted groundbreaking research that discovered the potential of isoliquiritigenin (ISL), a flavonoid isolated from the Chinese herbal medicine licorice, to inhibit pancreatic cancer and enhance the effects of conventional chemotherapeutic drugs by reducing levels of chemoresistance. The research findings have been published in the international academic journal ***Phytomedicine*** and recently presented at the Annual Congress of the European Association for Cancer Research 2023 in Torino, Italy.

With a view to developing alternative treatments for pancreatic cancer, the research team conducted a systematic analysis of all the potential pancreatic cancer disease markers and the biological therapeutic activities of phytochemicals from the medicinal plant Glycyrrhiza glabra, leading to the identification of ISL as a potential anticancer agent for the treatment of pancreatic cancer. Subsequently, a series of cell experiments demonstrated that ISL suppressed the growth and induced apoptosis of pancreatic cancer cells, a result which was further supported by a mice tumour model that investigated the compound's efficacy *in vivo*, where ISL was shown to demonstrate treatment effects comparable to traditional chemotherapeutic drugs with fewer side effects, including neutropenia, anaemia, and body weight loss. Furthermore, an additional set of experiments indicated ISL's potential in counteracting chemoresistance often associated with the current first-line chemotherapeutic drugs for pancreatic cancer by blocking autophagy, the process of body cells cleaning out damaged or unnecessary components that favour cancer cell growth, pointing towards the potential of integrating ISL into existing treatment options. Plans are underway to collaborate with other research partners to further evaluate the effectiveness and potential clinical application of ISL in treating pancreatic cancer.

Dr Joshua Ka-Shun KO, Associate Professor, Teaching and Research Division of the School of Chinese Medicine.

Annex 2:
Creative Media / Practice

9 Showcase by the HKBU Symphony Orchestra at the Annual Gala Concert

Ms YAO Jue presents a remarkable performance.

Dance of the Yao People performed by the HKBU Symphony Orchestra.

The Annual Gala Concert of the HKBU Symphony Orchestra, themed "**East West Encounters**", was held on 20 and 21 April 2024, offering a unique and immersive artistic experience to the audience by blending Chinese and Western cultures with art technology. Not only does it resonate with HKBU's goal of promoting Hong Kong as an East-meets-West centre for international cultural exchange, but it also showcases HKBU's bold initiative to create novel and immersive artistic experiences with the use of technology.

The highlight of the concert, ***Dance of the Yao People*** performed by the HKBU Symphony Orchestra, brought together an artistic rendition of the orchestral composition, achieved through weaving together Chinese folk music elements with symphonic arrangements, with a vivid performance of AI-generated virtual Yao dancers, which was developed through a machine learning model loaded with motion data of real-life Yao dancers. The performance was a stunning showcase of the marriage between art and technology, creating a fascinating musical journey to remember. Furthermore, renowned violinist Ms YAO Jue impressed the audience with her masterful performance of ***Butterfly Lovers***, which combines Chinese folk melodies and instrumentation with Western classical music structures and orchestration. It showcased cross-cultural musical collaboration at its finest, capturing the essence of the integration and sublimation of Chinese and Western cultures.

10 Cultural Preservation with Digital Modelling of Old Shops

The virtual property development project "Foreseen Property Agency" is a multimedia exhibition held at the Fringe Club in Central that offers the public the unique experience of viewing numerous old shops in Hong Kong through intricately curated virtual three-dimensional (3D) models, invoking a collective sense of community conservation.

The project is a collaboration between renowned illustrator Ms Pat Wing-shan WONG, Assistant Professor of the Academy of Visual Arts at HKBU, together with Mr Kachi CHAN, Research Assistant Professor of the Academy of Visual Arts at HKBU, utilising 3D scanning technology and AI to create virtual 3D "point cloud models" of the old shops' exterior facades and interior spaces. Documenting ten old shops with decades of history, such as Chu Wing Kee grocery store in Sheung Wan, Shing Hing Tai Rice Shop in Shek Kip Mei and Mido Cafe in Yau Ma Tei, the researchers not only recorded the spaces and stories of these shops with texts, illustrations, and videos, but they also taught the shop owners to use 3D tools to capture every corner of the shop through 360-degree spatial scanning. In essence, the space and its memories within are quantified and transformed into a virtual form consisting of two to four million points, permanently preserving the appearance and nostalgia of these old shops.

A unique element of the exhibition is the property "pre-sale" activity, where participants can "purchase" the point data from each old shop's 3D point cloud model, receiving a "provisional sales and purchase agreement". Upon the unfortunate closure or relocation of the old shops, the buyers will be given a tangible memory in the form of a printed 3D point cloud. This thought-provoking activity highlights the tension between economic interests and cultural preservation, since the "handing over" of the digital property to buyers signifies the shop's disappearance from the real world.

Ms Pat WONG (right) and Mr Kachi CHAN (left).

11
Interactive AR Exhibition for the Central Market

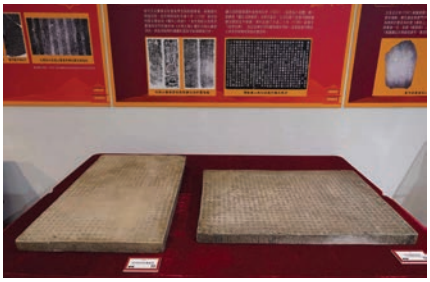
The "Tik-Tac-Tik-Tac: Echoes of Time" exhibition held between 11 May and 16 June 2024 at the Central Market provided visitors with an engaging experience by showcasing the stories of traditional shops through animated and interactive works with the use of Augmented Reality (AR). Specifically, sixteen HKBU students of the course "Location-based Storytelling and Game Design" visited the Market and took inspiration from the shopkeepers of "Yuen's Tailor", "Yan Chim Kee", and "Good Bad Creative" to design specific exhibits.

By visiting the shops and scanning the QR codes on the exhibition guide, visitors experienced the integration of the virtual world and reality, while participating in interactive games. For "Yuen's Tailor", a shop that had provided customised tailoring services and kilts for British troops in Hong Kong, Year 3 student Henry HO and his team created ***Tartan.walk***, utilising AR to display mannequins that illustrate various historical anecdotes of Scottish tartan, while Leyton HA and his team created ***Mystery of the Throne***, an interactive game that tells a fictional story about three families vying for a throne to highlight the uniqueness of tartan patterns. For "Yan Chim Kee", Cora HUANG and Jasmine YU wrote the story ***Candy Remembrance***, inspired by the pair meeting a patron who visited the shop to buy coconut candies for their grandmother living abroad. For "Good Bad Creative", SZE Yan Yan and her teammate created ***Wishes and Whiskers***, gigantic animated maneki-nekos, or lucky cats, that were inspired by the store's vast vintage collection. This opportunity allowed students to garner first-hand experience in collecting heart-touching story ideas from Hong Kong's history and culture, while equipping them with the knowledge of balancing design and user experience and the practical challenges of integrating AR in exhibitions.

12
Thousand-year-old Buddhist Sutra Collections of Yunju Temple Showcase

Co-organised by HKBU, the Good Fortune and Wisdom International Charity Fund, and the Chinese Western Culture Arts Association, "The Miracle of Chinese Culture: Historical and Cultural Exhibition of Yunju Temple in Fangshan, Beijing" showcased 43 precious treasures from "Yunju Temple", the world's largest museum of Buddhist sutras. Taking place at the Koo Ming Kown Exhibition Gallery, Lee Shau Kee Communication and Visual Arts Building at HKBU between 2 and 14 April 2024, the Exhibition featured the debut of the Temple's stone sutras, paper sutras, and wooden sutras – known as the "Three Wonders of Yunju Temple" – in Hong Kong, promoting Chinese culture to the general public and enhancing their understanding of the erudite stone sutra culture to foster the inheritance of the Nation's intangible cultural heritage.

The Exhibition presented the thousand-year history of sutra engraving at Yunju Temple, which spanned across the Sui, Tang, Liao, Jin, Yuan, Ming, Qing dynasties, and modern periods, under four themes: "History of Yunju Temple", "The Great Stone Sutra Inscription", "The National Treasures in Yunju Temple" and "Miraculous Place and its Prominent People". The themes enabled visitors to deepen their understanding of the establishment of Yunju Temple, the history of sutra carving, the collection of precious treasures, as well as the study and conservation of cultural heritage. Furthermore, students from the Department of Chinese Language and Literature acted as docents who provided guided tours in Cantonese and Putonghua, complementing the exhibition panels and interactive experiences to provide visitors with a comprehensive and engaging experience.



13 Exploring Gender Issues through Chinese Ink Painting and Calligraphy

Dr WANG Yizhou (left) and Dr Evelyn KWOK (right).

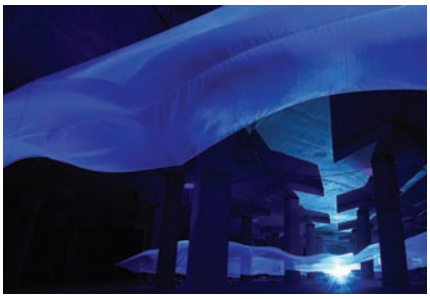
Invited to organise a parallel exhibition for Art Basel Hong Kong 2024, HKBU's Academy of Visual Arts (AVA) under the School of Creative Arts organised the "**Ink Subversion: Through Gender Lenses**" exhibition at the University's Kai Tak Campus in March and April 2024. Organised by Dr WANG Yizhou and Dr Evelyn KWOK, Research Assistant Professors of AVA, the Exhibition aimed to explore questions regarding the possibility of subverting tradition with tradition, the interaction between ink and gender, and the intervention of traditional Chinese art through the lenses of gender. Multi-media artworks of Beijing-based female ink artist PENG Wei; Associate Professors Dr Daniel Chak-kwong LAU, Dr Sunny WANG; alumna Yuki Yee-kei LIU; PhD student LIU Xinyi, and undergraduate students Scarlett Tsz-yung LEUNG and Ella Shun-yu WONG were presented, expressing each artist's response to gender issues through traditional Chinese artforms.

The Exhibition explored a wide range of gender issues, ranging from fluidity and duality in Dr LAU's thought-provoking installation that overlays the silhouette of Hong Kong's first Olympic gold medallist windsurfer Ms LEE Lai Shan, with the calligraphic transcription of the poem ***Rhapsody on the Luo River Goddess***, to fragility and strength in Dr WANG'S ***Fire Ink***, glass installations of Chinese characters suspended from the ceiling that ingeniously result in varying combinations from different perspectives, and Ella WONG's ***826B***, which depicts Ella's paraplegic father in the grey cloth spread of a hydraulic lift. The Exhibition served as an important platform that celebrates women pushing boundaries, and allowing visitors and students to witness and understand the progressive, diverse, and inclusive aspects of artistic creation.

14 Art Beyond Museums and Galleries

Led by Professor LEUNG Mee Ping and Associate Professors Mr Kingsley NG and Ms Annie WAN from the Academy of Visual Arts, a research team at HKBU has been conducting a research project on public art, named "Engaging New Audiences: Art Beyond Museums and Galleries" with a view to increasing and diversifying the audience of artworks and enable greater access to the visual arts. Since 2014, the team has collaborated with local and international stakeholders, such as the Hong Kong Museum of Art (HKMA), the Hong Kong Arts Development Council (HKADC), the Leisure and Cultural Services Department (LCSD), the Art Promotion Office (APO), Art Basel, the Association of Visual Arts in Taiwan, Echigo-Tsumari Art Triennial (Japan) and the Gwangju Biennale (South Korea), with the art creations receiving positive reviews from various international professional media outlets, including *Art in America, ArtAsiaPacific, and The New York Times*.

Between 2017 and 2019, the research team created six diverse artistic collaborations and exhibitions to enhance public interest and participation in contemporary art. One example is "Twenty-Five Minutes Older", where two trams were transformed into moving camera obscuras to allow the audience to become passengers and experience the overlapping of the past and present. The trams were showcased at Art Basel Hong Kong, events organised by the Hong Kong Arts Development Council, Milan Design Week in Italy, and the Echigo-Tsumari Art Triennale in Japan. Another example is the interactive exhibition "After the Deluge" at Tai Hang Tung Stormwater Storage Tank, in which the concepts and functions of the tank were demonstrated by art and the classic mythology of "Dayu Tames the Water". In collaboration with the Drainage Services Department, the exhibition attracted nearly 10,000 visitors.



15
Benefiting the Elderly with Dementia with "Hong Kong Crafts"

As a collaboration between the Academy of Visual Arts (AVA) and the HKSKH Li Ka Shing Care and Attention Home for the Elderly, students from the "Hong Kong Crafts" course, led by Ms Anna Lai-yin QIN, Assistant Professor of AVA, had the opportunity to design functional and therapeutic crafts tailored to the specific needs of the elderly at the care home, with a view to improving the residents' quality of life and overall well-being. Run from 15 January to 22 April 2024, the project not only imparted students with the knowledge of applying theoretical learning in practical and impactful ways but also contributed to the enhancement of elderly care and social awareness of dementia.

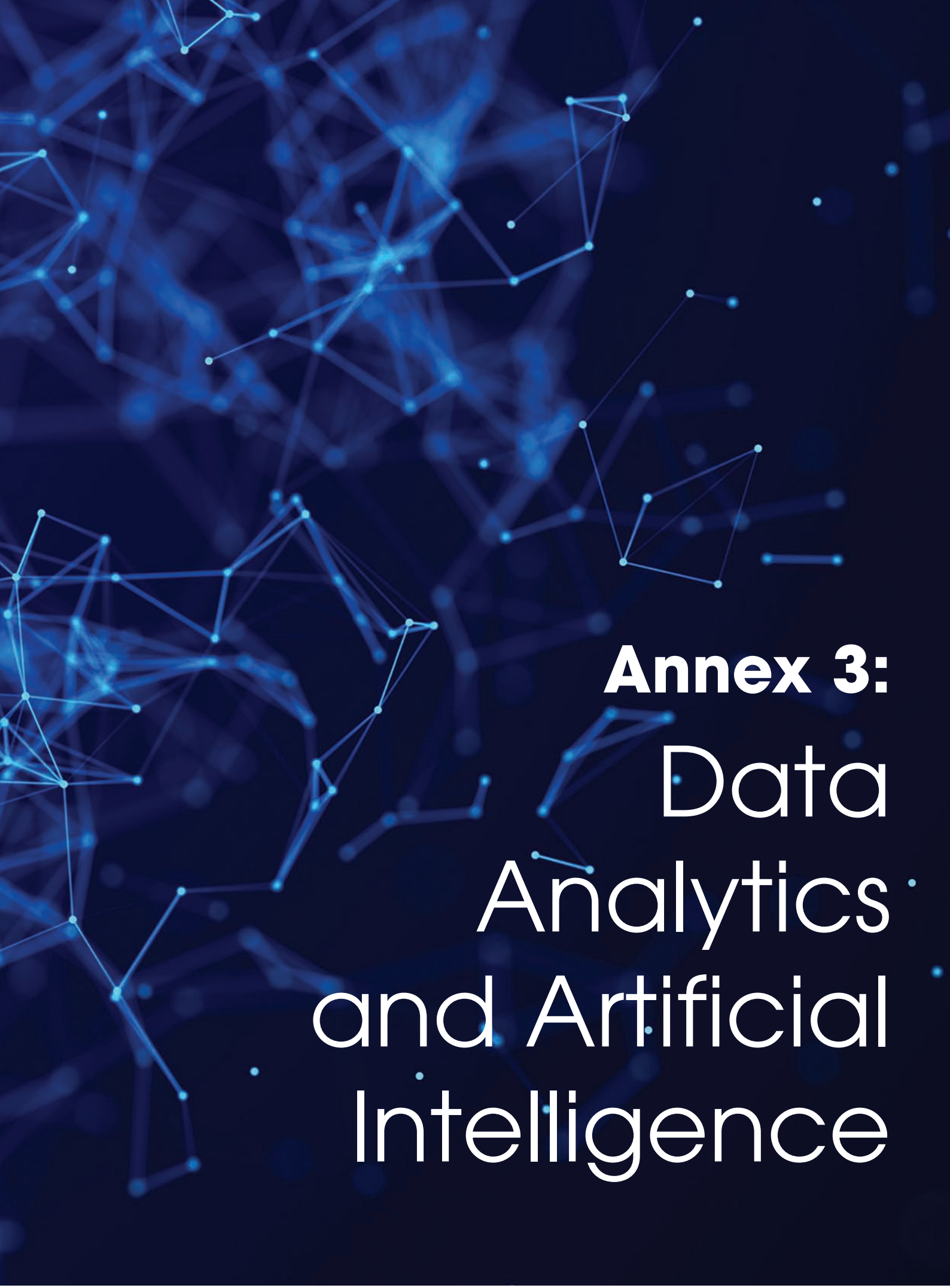
In this collaboration, students applied their classroom knowledge, such as human-centred design principles, traditional Hong Kong craft techniques, space-saving principles, and empathetic thinking, *inter alia*, to design real-world products with therapeutic benefits through sensory and cognitive stimulation. These products included sensory boards equipped with a variety of tactile, visual, and auditory elements to stimulate the senses and support cognitive training for the elderly, and portable play kits that promoted social interaction and mental engagement among the elderly, all while being crafted to fit well within the limited space of elderly care facilities. This unique experience allowed our students to develop essential life skills, including empathy, teamwork, and problem-solving in real-world situations, equipping them for professional roles that demand technical expertise and, equally, a profound understanding of human needs.




16
Art Futures Awards Celebrates Emerging Young Artists in Asia

Organised by the Academy of Visual Arts, the inaugural "Art Futures Awards" ceremony was held on 20 December to celebrate the exceptional works of recent graduates in the field of visual arts and associated art practices. Welcoming nominations from over 70 colleges and institutions across Asia which can nominate up to two 2022 or 2023 graduates, the pioneering Award champions the achievements of outstanding emerging artists, with the first prize winner being awarded a cash prize of USD10,000 and granted a one-month residency in Hong Kong for art exchange. Furthermore, a selection of art pieces was presented at HKBU's Kai Tak Campus from 21 December 2023 to 14 January 2024 to allow public appreciation of the young artists' exemplary works.

Garnering overwhelming support from industry peers, the Award was judged by six internationally renowned artists, including Dr Zoe BUTT, Vietnam-based curator and writer from Australia; Mr Yoshitomo NARA, internationally acclaimed Japanese artist; Ms Tina PANG, Curator at M+ Museum; Dr Michael WHITTLE, Japan-based artist and scholar; Professor Kurt CHAN, Museum Expert Adviser of the Leisure and Cultural Services Department, artist and educator; and Mr HOU Hanru, former Artistic Director of MAXXI, National Museum of the 21st Century Arts in Rome. At the ceremony, the top prize was presented to Miss Erina YOSHIMURA, who represented Kyoto City University of Arts, Japan, while the "Simon Suen Foundation/ Sun Museum" Art Futures — Hong Kong Prize 2023 and "Chan Kwan Biu Memorial Foundation" Art Futures — Hong Kong Prize 2023 were awarded to Miss He CHEN from HKBU and Miss LAU Jin Ki from the Hong Kong Art School, respectively. In the future, the Award is dedicated to continually serving as a platform where students from different schools and the international art community can participate in the exchange of ideas, strengthening Hong Kong's position as an arts and cultural hub of Asia.



Annex 3: Data Analytics and Artificial Intelligence

17

Using Text to Generate Motion Animations to Assist in Filming and Communication

Dr CHEN Jie demonstrates the transformative power of AI through the start-up project, BuVatar.

Actively engaging in research and technology transfer in the field of cinematic arts and creative media, HKBU showcased its latest cutting-edge interdisciplinary translational projects at the industry event FILMART 2024, held at the Hong Kong Convention and Exhibition Centre from 11 to 14 March 2024. Among the five key research projects, "MotionGPT", a comprehensive AI motion generation solution, alongside "BuVatar", an AI-driven digital avatar customisation solution, highlight the University's efforts in integrating art technology and AI into film production to promote innovative development for the industry.

MotionGPT is a technology that harnesses the power of AI to allow users to generate personalised motion animations by inputting text commands. By visually showcasing the respective visions of directors and actors, it has the potential to significantly improve the communication between the two parties, thereby enhancing the efficiency and quality of film production. Combining MotionGPT with the AI-driver virtual avatar models from BuVatar, filmmakers can easily create videos using plain text. The developer of these systems, Dr CHEN Jie, Assistant Professor at the Department of Computer Science, envisions these technologies unlocking more possibilities for filmmakers and actors, allowing for clearer and more seamless collaboration that ultimately reduces the number of retake shots during filming.

18

Tackling Global Sustainability Challenges at the AI × HK OpenCup

To continuously promote AI innovation for the betterment of society, HKBU, co-hosting with the Hong Kong Society of Artificial Intelligence and Robotics (HKSAIR), held the second edition of the "AI × HK OpenCup", where participants from secondary schools and tertiary institutions showcased their creativity in leveraging AI technologies to propose innovative solutions that address pressing sustainability challenges in Hong Kong.

This year, 94 teams, comprising over 370 students from both Secondary and Tertiary Students categories, submitted their proposals for tackling challenges in Hong Kong that align with the sustainable development goals set forth by the United Nations, including good health and well-being, affordable and clean energy, decent work and economic growth, and sustainable cities and communities. In the Tertiary Students category, a team of students from HKBU and the University of Hong Kong won champion with their project "JOI", developing a smart sensor that detects and analyses plant-specific growth needs to promote a green environment that aids users in relieving stress and emotions. In the Secondary Students category, a team from Heep Yunn School clinched first place with their project "First AI'd Box", designing an AI first-aid kit that can identify the type of wound, offer corresponding treatment instructions, and illuminate the location of the relevant supplies. The Competition not only highlighted the innovative potential of Hong Kong's youth but also the importance and power of integrating AI solutions to tackle sustainability challenges.

19 Wizardcoder: Fine-tuning Code Large Language Models

Similar to Large Language Models (LLMs), like ChatGPT, receiving extensive pre-training on internet data and fine-tuning with specific instructional data, Code LLMs are specialised LLMs which are trained on large datasets of code to perform coding tasks. However, most Code LLMs focus on pre-training and lack detailed instructional fine-tuning, which is crucial to improving Code LLMs' performance on diverse tasks. In response, researchers at HKBU and Microsoft collaborated to fine-tune StarCode, an open-source Code LLM by creating detailed code instructions using a modified Evol-Instruct approach, which entails the simplification of prompts, the enhancement of instructions, and the inclusion of code debugging and time-space complexity considerations. Comprehensive experiments on four prominent code generation benchmarks on the enhanced Code LLM, named WizardCoder, yielded impressive results. On the one hand, WizardCoder significantly outperforms all other open-source LLMs in terms of code creation, including StarCoder, CodeGen, CodeGee, CodeT5+, InstructCodeT5+, StarCoder-GPTeacher, and Instruct-Codegen-16B; on the other, it also surpassed major closed-source LLMs, including Claude, Bard, PaLM, PaLM-2, and LaMDA, despite being considerably lower in size.

20 The International Symposium on Humanities, Societies, and Digital Futures

Organised by the Faculty of Arts* and Faculty of Social Sciences* at HKBU, the International Symposium on Humanities, Societies, and Digital Futures was held on 21 and 22 March 2024 at the Hong Kong Palace Museum, gathering experts from the academic, business, NGO, and technology sectors from across the globe to discuss the impact of AI from the perspectives of humanities and society.

Aiming to raise concerns, spark discussions, and explore solutions regarding the advancement of AI, the Symposium addressed numerous hot topics, including the nexus and ethics of AI, while also scrutinising AI's effects on society, culture, the economy, the future business world as well as education. Prominent keynote speakers from around the world who were featured at the Symposium include, *inter alia*, Professor Carl WIEMAN, 2020 Yidan Prize and 2001 Nobel Prize in Physics laureate, Cheriton Family Professor and Professor of Physics and of Education, Emeritus, Stanford University; Dr Wayne HOMES, Associate Professor, Faculty of Education and Society, University College London; and Ms Kay FIRTH-BUTTERFIELD, Former Director, World Economic Forum, and CEO, Good Tech Advisory. The Symposium is a testament to the University's commitment to transcend academic boundaries and initiate discussions that bring together ideas and wisdom from the East and West to comprehensively explore the impact of AI on the future of mankind.

Notes:

* Faculty of Arts and Faculty of Social Sciences are combined as Faculty of Arts and Social Sciences from 1 July 2024.

21

New Statistical Model Predicts Frequency of Heat Wave and Air Pollution Co-occurrence in China

Professor GAO Meng, Professor of the Department of Geography.

Published in the international academic journal *Proceedings of the National Academy of Sciences*, the research led by Professor GAO Meng, Professor of the Department of Geography at HKBU and Dr WANG Zifa, Researcher of the Institute of Atmospheric Physics at the Chinese Academy of Sciences developed a statistical model to predict the frequency of summertime co-occurrence of heat wave and air pollution in China by analysing patterns of springtime warming in the western Pacific Ocean, western Indian Ocean, and Ross Sea. The model provides useful information to the authorities and the general public to take mitigating actions in advance before the occurrence of the joint hazards.

Considering the high rate of high temperatures co-occurring with air pollution in the North China Plain, and the subsequent amplified damages to both human health and the ecosystem, Professor GAO and Dr WANG employed empirical orthogonal function analysis to investigate whether temperature patterns in the western Pacific Ocean, western Indian Ocean, and Ross Sea are associated with the frequency of heat wave and ozone pollution co-occurrences. The conclusion that sea surface temperature anomalies in the three oceans during springtime are correlated to these co-occurrences led to the development of a regression-based statistical model, which currently is able to offer warnings several months in advance. This buffer time allows authorities and communities that are sensitive to extreme climates to take necessary actions, such as optimising air pollutant management plants and coordinating sources of electricity generation. Going forward, the research team aims to further develop the capabilities of the model to offer warnings several years in advance to further enhance the Nation's ability to manage these hazards.

Annex 4:
Humanities and Cultures

22
Learning History through Time and Space

Led by Dr KWONG Chi Man, Associate Professor of the Department of History, the four-year-running undergraduate course "Introduction to Spatial History" empowers students to create their own unique spatial history research projects utilising geographic information systems (GIS), a digital tool used to create, manage, and analyse geographic information. This transdisciplinary approach is not only an effective method of teaching history but also develops students' digital literacies and digital humanities skills, enhancing their competitiveness in future job markets.

With support from a GIS software provider, the Government Records Service, and the Geospatial Lab under the Development Bureau of the Government, students devised projects that covered a wide range of topics about Hong Kong from the 18th to the 20th centuries. For instance, developing interactive historical maps and images, one group of students analysed the spatial history of the economic and social activities of Japanese communities in Hong Kong from 1868 to 1941, tracing their footprints and illuminating their lives and everyday activities. Other projects explored areas ranging from taxation, transportation, and economic development to triads and pollution, spotlighting different aspects of Hong Kong's past while offering new historical insights. This course highlights the University's endeavours to integrate technology to enrich students' learning experiences.

23
HKBU Fact Check Programme

In an effort to combat the spread of misinformation and disinformation and increase the public's media literacy, the HKBU Fact Check, run by the School of Communication at HKBU, seeks to actively educate secondary school students on developing critical information literacy skills through the HKBU Fact Check Programme. As an accredited signatory of the Code of Principles of the International Fact-Checking Network, HKBU Fact Check is well positioned and equipped to impart young people with the knowledge and skills to conduct fact-checking on their own accord, especially in this age of information explosion with increasingly realistic videos and images generated by AI. The Programme recently organised an information literacy exhibition and workshops for secondary school students, in which students were taught techniques to identify the source and origin of images and videos, such as using Google Lens for reverse image searches and Hive Moderation for identifying AI-generated images. Furthermore, the exhibition and workshops highlighted the importance of recognising fake news and misinformation to students, emphasising the need to conduct fact-checking to ensure information veracity and avoid the common pitfall of confirmation bias – the tendency to favour information that aligns with people's existing beliefs.

(From left, front row) Professor HUANG Yu, Professor Emeritus and Professor Raymond LI, Head and Professor of Practice, Department of Journalism of the School of Communication.

24
Documenting Hong Kong's Medical Past

Dr LAW Yuen Han (right) carried out a project about the history of nursing education at Kwong Wah Hospital. Elaine WONG (left), a Year 4 student, conducted oral history interviews for the project.

Two new books written by staff members of the Department of History at HKBU, *History of Western Medical Services in Hong Kong* and *Nursing Education at the Kwong Wah Hospital and the Everyday Life History in Hong Kong: An Oral History*, shed light on the city's medical past, allowing readers the opportunity to reflect how history is closely related to the present ways of life, especially in the current post-pandemic era.

Written by Dr LAW Yuen Han, Lecturer I of the Department of History, *History of Western Medical Services in Hong Kong* catalogues data from various sources, including government gazettes and colonial medical reports, to examine the impact of infectious diseases on the development of Hong Kong's medical system, where a predominantly Chinese society uniquely practises Western medicine at an internationally recognised level. Dr LAW attributes this uniqueness to a turning point that is the bubonic plague in 1894, which prompted governmental reforms to the city's medical policies. With Western clinics being set up in different districts to introduce Western childbirth practices alongside maternal and child health services, there was a gradual societal acceptance of Western medical practices, which ultimately led to their popularisation in Hong Kong.

Meanwhile, the book *Nursing Education at the Kwong Wah Hospital and the Everyday Life History in Hong Kong: An Oral History* written by Dr LAW in collaboration with Professor WONG Man Kong and Dr FAN Wing Chung, featured interviews with 24 retired nursing staff who joined the profession from the post-war period to the 1970s. Filled with firsthand accounts collected by HKBU and secondary school students, the book sheds light on the development of Hong Kong's nursing history and education, guiding readings to better understand the challenges faced by these unsung heroes in Hong Kong's early years.

25
Harnessing the Power of 3D Modelling in e-Learning

Awarded around HK$4.6 million by the Quality Education Fund e-Learning Ancillary Facilities Programme, Dr Sammy LI, Associate Professor of the Department of History, led a research team to develop a learning platform for primary and secondary school students that houses 3D models of early Chinese paintings, with an emphasis on showcasing their unique characteristics and techniques. Integrating research and knowledge of art history with the latest technology, the team endeavours to develop rotatable 3D models and a corresponding database, supplemented by an offline learning platform and an augmented reality application to facilitate mixed-mode teaching.

The genesis of this project originated with Dr LI's frustration of having to travel long distances to view historical artefacts and artwork in distant museums, to which Dr LI responded by developing innovative 3D scanning techniques to recreate models which can be viewed remotely. Subsequently, Dr LI also realised the educational potential of these 3D models, developing an online collection of 20 ancient Chinese artefacts from the Neolithic period to the Qing dynasty, on the one hand, while also utilising 3D printing to produce replicas of two artefacts, used as physical and visual teaching tools for more than 1000 students, on the other. Dr LI's initial efforts soon translated into the e-learning platform development project, through which the team hopes to promote cultural literacy in Hong Kong and foster the development of research in digital humanities.

Dr Sammy LI, Associate Professor of the Department of History.

Annex 5:
Award and Achievement

Dr AIK Wei Shen (left) explains his project to Mr John LEE, the Chief Executive of HKSAR at the Reception for I&T Awards 2024.

HKBU team at the 49th Geneva International Exhibition of Innovation.

26 HKBU at the Geneva International Exhibition of Innovation

HKBU had the opportunity to spotlight its innovative projects at the 49th Geneva International Exhibition of Innovation held from 17 to 21 April, capturing a total of nine awards, including one Gold Medal with Congratulations of the Jury, four Silver Medals and four Bronze Medals. The project "Modular protein-based siRNA delivery agent for gene therapy", led by Dr AIK Wei Shen, Assistant Professor of the Department of Chemistry, won the Gold Medal with its development of a cutting-edge protein-based platform technology for the delivery of small-molecule of RNA interference (siRNA) therapeutics. These award-winning projects exemplify the University's unwavering dedication to translating research outcomes into practical applications for the benefit of society.

27 Guangdong-Hong Kong-Macao Greater Bay Area High-value Patent Portfolio Layout Competition 2023

At the Guangdong-Hong Kong-Macao Greater Bay Area High-value Patent Portfolio Layout Competition 2023, Professor ZHU Furong, Associate Dean (Research and Postgraduate Studies) of the Faculty of Science and Professor of the Department of Physics, and his team won the Excellence Award for their patented invention titled "Traceable Fruit Quality Detection Solution: Cloud-based big data for fruit quality monitoring & authentication".

Mr David WONG (right), Director of Intellectual Property of the HKSAR Government, congratulates Professor ZHU Furong (left) for receiving the award.

28 BUers Shine in Techathon+ 2024

Four HKBU students and five alumni formed different teams and won a total of six awards at Hong Kong Techathon+ 2024. Among them, the team project named "CUROBIT", led by Dr Debajyoti CHOWDHURY, Postdoctoral Research Fellow of the Teaching and Research Division of the School of Chinese Medicine, won the Gold Award in the "Trusted AI and Data Science" track as an open group. Winning teams are admitted into HKSTP's Ideation Programme and have the opportunity to receive up to HK$100,000 in seed funding to actualise their business plans.

29 "Outstanding Financial Technologists of the Year" Award

Led by Ayazhan KADESSOVA (Computer Science, Year 3), a team of HKBU students and recent graduates from the Department of Computer Science and School of Business received the "Outstanding Financial Technologists of the Year – Star in the Making" award at the IFA FinTech and Innovation Awards 2022/2023. The team, "Fintech Foxes", was praised for their innovative "Fintech Compare" banking application, which integrates Buy Now, Pay Later services with advanced AI plugins to offer customised financing options and an extensive marketplace, all while facilitating hassle-free e-commerce transactions. The Award is a testament to the contributions of our students and alumni to the finance and technology industries.

30 Silver Award at the Qianhai Innovation and Entrepreneurship Competition

HKBU students HUNG Ka Lok (BBA, Year 4) and FUNG King Hei (Chinese Medicine, Year 4) and their team won the Silver Award in the Start-up Division at the 2023 Qianhai-Guangdong-Hong Kong-Macau-Taiwan Youth Innovation and Entrepreneurship Competition. The team's winning project, "Zhangyun Microbial Fertiliser", produces a microbial preparation that aims to address the environmental pollution and health issues caused by chemical fertilisers and pesticides. A cash prize of RMB 80,000 was given to support the incubation of the team's project and their settlement in Qianhai.

31 Climate Action Acceleration Award

A social enterprise offering reusable tableware borrowing service and implementing a green reward programme to encourage diners and restaurants to reduce takeaway packages, ReCube won the Climate Action Acceleration Award with a funding of HK$180,000 to accelerate the growth of the enterprise and foster project implementation on combating climate change. ReCube is jointly operated by Simon Tsz-chung NG (Marketing, Year 4) and students from another university, with the goal of promoting green living that is convenient and financially beneficial.

32 Shanghai Medical Science and Technology Award

The project "Molecular Mechanisms and Clinical Precision Diagnosis and Treatment of Hereditary Bone Diseases", conducted by a joint team comprising Professor ZHANG Ge, Associate Dean (Research) of School of Chinese Medicine, Dr WANG Luyao, Post-Doctoral Research Fellow of the Teaching and Research Division of School of Chinese Medicine, along with experts from the Shanghai Sixth People's Hospital, won First Prize at the 2023 Shanghai Medical Science and Technology Award. Through collecting numerous samples to establish a diverse family resource repository of genetic bone diseases, the award-winning project helped delineate the clinical phenotype spectrum and pathogenic gene mutation spectrum of major types of hereditary bone diseases in the Chinese populations, laying a strong foundation for clinical diagnosis, treatment development, and future research. Furthermore, an extension of this project led to the development of a new drug, "Apc001", for the treatment of osteogenesis imperfecta, which has received orphan drug designation and paediatric rare disease designation from the US Food and Drug Administration. Plans are underway to submit an Investigational Drug application in China and the United States.

Professor ZHANG Ge, Associate Dean (Research) of School of Chinese Medicine.

33 The 7th China (Shanghai) International Invention and Innovation Expo

In our first participation in the 7th China (Shanghai) International Invention and Innovation Expo, HKBU achieved excellent results with all three participating research projects winning awards. Professor ZHU Furong, Associate Dean (Research and Postgraduate Studies) of the Faculty of Science and Professor of the Department of Physics, won the Gold Medal with its portable NIR detector that measures fruit quality in a non-invasive manner; Professor ZHANG Hongjie, Associate Dean (Teaching and Learning) of the School of Chinese Medicine, won the Silver Medal with its development of a series of personal care products made from compounds derived from Dendrobium, a Chinese herbal plant; and Professor HAN Quanbin, Professor of Teaching and Research Division of the School of Chinese Medicine, won the Bronze Medal with its provision of rapid and accurate authentication services for precious Chinese medicine.

Annex 6: List of Patents Granted in FY2023/24

No.	Official Title	Country
1	Methods of using metal complexes to promote wound healing	United States
2	Flavan-3-ol analogs and Anti-Inflammatory Activity	United States
3	Identification of Cyclic Peptide Agonists of Galanin Receptor 2 and 3 Guided By Spexin Solution Structure	China
4	Crack engineering as a new route for the construction of arbitrary hierarchical architectures	United States
5	Chromophore-labeled oligosaccharide markers and methods of use thereof	China
6	Chromophore-labeled oligosaccharide markers and methods of use thereof	Hong Kong
7	Chromophore-labeled oligosaccharide markers and methods of use thereof	Singapore
8	A therapeutic inhibitor for EBV-associated tumor with tailor responsive optical imaging	Germany
9	A therapeutic inhibitor for EBV-associated tumor with tailor responsive optical imaging	European Procedure (Patents)
10	A therapeutic inhibitor for EBV-associated tumor with tailor responsive optical imaging	France
11	Peptide markers for authenticating ejiao and related gelatins	United States
12	Tunable laser materials comprising solid-state blended polymers	United States
13	Sapphire coated substrate with a flexible, anti-scratch and multi-layer coating	United States
14	Ultrabright luminescent lanthanide nanoparticles comprising terbium, with longer excited-state lifetime	Hong Kong
15	Ultrabright luminescent lanthanide nanoparticles comprising terbium, with longer excited-state lifetime	India
16	Ultrabright luminescent lanthanide nanoparticles comprising terbium, with longer excited-state lifetime	Iseal
17	Ultrabright luminescent lanthanide nanoparticles comprising terbium, with longer excited-state lifetime	Singapore
18	Ultrabright luminescent lanthanide nanoparticles comprising terbium, with longer excited-state lifetime	China

Annex 7: Performance Measure - Key Performance Indicators

Number of patents **FILED** in the year (with breakdown by jurisdiction and type)

2022-23		2023-24	
Jurisdiction	Type	Jurisdiction	Type
* 16 (US)	* 20 (A61)	4 (HK)	1 (A23)
* 6 (CN)	2 (C07)	6 (CN)	19 (A61)
1 (EP)	2 (C12)	5 (PCT)	2 (C08)
1 (HK)	4 (G01)	27 (US)	1 (C01)
1 (ID)	4 (H01)	1 (JP)	1 (C12)
2 (PCT)			1 (F16)
1 (CH)			12 (G01)
* 1 (AT)			3 (G06)
* 1 (ES)			3 (H01)
* 1 (GB)			
* 1 (DE)			

Number of patents **GRANTED** in the year (with breakdown by jurisdiction and type)

2022-23		2023-24	
Jurisdiction	Type	Jurisdiction	Type
7 (CN)	* 19 (A61)	3 (CN)	4 (A61)
4 (EP)	1 (B02)	6 (US)	1 (B29)
* 4 (DE)	3 (C07)	2 (HK)	10 (C07)
* 4 (HK)	1 (C12)	2 (SG)	1 (G01)
* 2 (GB)	2 (G01)	1 (EP)	2 (H01)
7 (US)	1 (G06)	1 (FR)	
1 (CH)	5 (H01)	1 (DE)	
* 1 (ES)		1 (IL)	
* 1 (JP)		1 (IN)	
* 1 (AT)			
133		**152**	
# Number of licensed IP		Number of licensed IP	

Notes:

* Adjust due to late reporting from licencees / agent

\# This figure has been amended to include the late reporting of data from the licensed patents filed by the licensee and the licensed know-how.

Notes:

Some of the KT performance indicator data previously reported in the HKBU KT Annual Report will now be found under Domain 3 of the University Accountability Agreement (UAA) as sector-wide performance measures (PMs) and institution-specfic key performance indicators (KPIs) data.

N1 Company that has been established by staff, graduates or students and is now operationally independent of the university. It includes but not limited to all spin-off companies that were funded by HKBU Technology Start-up Support Scheme for Universities (TSSSU).

N2 Actual income received for collaborative research refers to the income received during the particular financial year.

N3 Actual income received for contract research refers to the income received during the particular financial year.

N4 Income from consultancy refers to the income received during the particular financial year. Consultancy income for 2022-23 includes HK$13.4m attributed from KT income received from the Beijing Normal University-HKBU United International College.

N5 The student contact hours are defined to be the number of enrollments multiplied by the number of contact/course hours.

N6 This number includes data from Jockey Club Creative Arts Centre (JCCAC) and the Academic Community Hall.

N7 The CPD courses are now defined to include award-bearing and credit-bearing programmes (both in and outstide HK) for learners already in work who are undertaking the course for purpose of professional development/ upskilling/ workforce development, in additon to short term non-credit bearing training programmes.

N8 Data are collected from all units at HKBU. The data includes both in-person and online activities.

	Performance Indicators	2022-23	2023-24
1	Income generating from intellectual property as defined in Common Data Collection Format	HK$1,519,996	HK$2,357,687
2	Expenditure involved in generating income from intellectual property rights	HK$1,952,618	HK$2,667,566
3	Number of economically spin-off companies [N1]	44	66
4	Number of collaborative researches, and income thereby generated [N2]	12 HK$30,119,291	12 HK$19,423,675
5	Number of contract researches (other than those included in "collaborative researches" above), and income thereby generated [N3]	119 HK$314,967,117	115 HK$72,058,373
6	Number of consultancies, and income thereby generated [N4]	62 HK$22,750,815	58 HK$9,470,616
7	Number of student contact hours in short courses or e-learning programmes specially tailored to meet business or CPD needs [N5]	565,283	814,087
8	Number of equipment and facilities service agreements, and income thereby generated [N6]	134 HK$4,545,220	164 HK$5,662,096
9	Income received from CPD courses [N7]	HK$160,471,382	HK$159,232,643
	Total income from knowledge transfer via the provision of research and business services (i.e. collaborative research, contract research, consultancies & continuing professional development) Item (4)+(5)+(6)+(9)	HK$505,557,852	HK$260,185,308
10	Number of public lectures / symposiums / exhibitions and speeches to a community audience	431	612
11	Number of performances and exhibitions of creative works by staff or students	106	60
12	Number of staff engaged as members of external advisory bodies including professional, industry, government, statutory or non-statutory bodies	202	157
13	Number of performances and exhibitions of creative works, public lectures, symposia, exhibitions and speeches per hundred academic staff	147	180
14	Number of entrepreneurship activities [N8]	190	247
15	Number of student participation in entrepreneurship activities [N8]	6,675	12,288

Knowledge
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