



香港浸會大學
HONG KONG BAPTIST UNIVERSITY



ANNUAL REPORT
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KNOWLEDGE TRANSFER OFFICE



CONTENTS

Executive Summary – Knowledge Transfer in the New Normal	1
KT Impacts in Safeguarding our Health and Promoting our Wellness in the New Normal	2
KT impacts in monitoring our health and wellness by developing new convenient, non-intrusive medical testing technologies and providing general health services to the community	4
KT Impacts in Creative Arts and Culture with Technology in the New Normal	6
Community Engagement	7
Virtual InnoCarnival	7
HKBUS: Artworks on the Move	7
HK Voices: Life as a Domestic Helper	8
Let the Forgotten Voices Be Heard	8
I AM A REPORTER	8
HKBU launches fact-checking service to fight fake news	8
Entrepreneurship	9
Cultivating Entrepreneurship through Holistic Entrepreneurship Activities and Education	9
Fostering innovation and knowledge transfer	10
IP Forum 2021 and Copyright Workshops	10
Collaboration with industry and building partnerships	11
Collaboration with industry on research projects	11
Building Platform Technologies for Symbiotic Creativity in Hong Kong	11
Future Cinema Systems: Next-Generation Art Technologies	12
HKBU and Tsinghua University sign agreement to establish AI Laboratory for Creative Arts	12
Partnership on knowledge exchange	12
Looking Ahead	12

EXECUTIVE SUMMARY – KNOWLEDGE TRANSFER IN THE NEW NORMAL

Aspiring to become a leading liberal arts university in Asia for the world, delivering academic excellence in a caring, creative and global culture, Hong Kong Baptist University (HKBU) has blossomed in different ways in the last academic year in this new normal.

When the norms we all were accustomed to no longer apply, HKBU found new ways to transfer our knowledge to the community and make our impacts on the world in the new normal. In the new normal, we have to find ways to live a safe and sustainable life, while intelligently finding new ways to work and create. In this reporting year, professors at HKBU have been diligently working to address these new normal challenges, while engaging with the community. In the reporting year of 2020-21, HKBU has focused on transdisciplinary knowledge transfer with a mission-driven approach and delivered impacts from our research to the world predominantly through two foci of knowledge transfer (KT) at the University, namely:

1. KT impacts in safeguarding our health and promoting our wellness - where
 - a. In the new normal, our impactful research outcomes, both disciplinary and interdisciplinary, have contributed to keeping the Hong Kong community safe from COVID-19, keeping the community informed, fit and healthy through practical knowledge and practices in mobile computing and artificial intelligence, social communication, Traditional Chinese Medicine (TCM) and sports science.
 - b. In monitoring our general health and wellness by developing new convenient, non-intrusive medical testing technologies and providing innovative health services and solutions to the community.
2. KT impacts in creative arts and culture with technology – where in the new normal, professors from our arts and humanities departments have rendered creative convergence of arts and culture with technologies to deliver impactful and educational arts and culture experiences to the community.

The examples of these two KT impact foci are presented in this year's KT annual report. Further narratives of these examples are given in the Annexes where necessary.

Living true to our culture of a caring institution, our professors have also cared for the many disadvantaged or underprivileged communities in Hong Kong through the community engagement KT projects they have championed this year. Some examples of such caring engagements are the work our professors are doing to engage with the domestic workers community and with the poor in Hong Kong who are living under the poverty line and in sub-divided flats. We are also reaching out to the community through virtual and online means so that more people can benefit from the outcome of our research. Moreover, in the domain of news and news reporting, our School of Communication has initiated projects to better educate the youth on the value of truth in news reporting and we have started a service to detect and combat fake news. Examples of such caring community engagement initiatives are presented under the section *Community Engagement*.

During this challenging year, HKBU has further provided more online and offline entrepreneurship training and support opportunities for our students. In 2020-21, a total of 185 online and offline entrepreneurship activities and training offered by local and global partners were held, wherein over 10,600 students have benefited. Examples of these extensive entrepreneurship activities are presented under the section *Entrepreneurship*. While entrepreneurship activities support both staff and students, to further build the capacity for innovation and KT at HKBU, we have also provided extensive intellectual property rights trainings for faculty of the University. Examples of these activities are presented under the section *Fostering Innovation and Knowledge Transfer*.

Despite a difficult year, HKBU has been successful in establishing collaborations and partnerships with the industry and community. An exemplar of this is in the successful HK\$52.8 million Theme-based Research Scheme (TRS) (11th round) project funded under the Research Grants Council (RGC) for a five-year project entitled "*Building Platform Technologies for Symbiotic Creativity in Hong Kong*". This is the first RGCTSR funding for Arts Tech. This TRS project, led by Prof Guo Yike, Vice-President (Research and Development), and Prof Johnny M Poon, Associate Vice-President (Interdisciplinary Research), has the collaborative support from *Huawei, Microsoft, SenseTime and Opera Hong Kong*. Other examples of such successful collaborations with the industry can be found under the section of *Collaboration with Industry and Building Partnerships* in this report.

The significance and reach of the impacts from research we are reporting from HKBU are not new as from the recently released results of the Research Assessment Exercise 2020, 18 out of 24 Units of Assessment at HKBU attained impact cases of 3* rating or above. Furthermore, KTO is committed to facilitating the research excellence of the University from patent protection to patent commercialisation and community engagement. Despite the negative impact of society from COVID-19 pandemic in the reporting year of 2020-21, HKBU attained an increase in number of patents filed and patents granted by 67.7% and 45.7%, respectively, comparing to 2019-20. The number of patents filed was 52, while the number of patents granted was 51. The running average of patent grant rate was 64.4% in the 2020 calendar year. HKBU continues to attain an above-average patent grant rate as a Hong Kong entity according to the World Intellectual Property Organisation. HKBU has accumulatively licensed 102 patents from 354 patents or patent applications with a commercialisation rate of around 29%. The KT income received from IP commercialisation is HK\$1,376,400 in 2020-21. On another front, for the reporting year of 2020-21, HKBU continued to invest in enriching and building up our students in these trying times. In 2020-21, a total of 251 enrichment programmes were offered to our students, which recorded an increase of more than 90% from the past year. These programmes were well received and 12,944 students have participated. This is a more than 100% increase in students participation compared to 2019-20. With the establishment of the Hong Kong Chinese Medicine Hospital and other Knowledge Transfer projects to be implemented in the coming years, we believe we can leverage the success of these projects and foster knowledge transfer of the University.

Finally, this report and the Annexes shall provide a recap on all our efforts and achievements in KT at HKBU for the reporting year of 2020-21.

KNOWLEDGE TRANSFER IMPACTS FROM HKBU IN THE NEW NORMAL

The current COVID-19 global pandemic has redefined the priorities in our lives and restructured the norms on how we interact with one another – this is part of our new normal. In the past, where some of our priorities may have been in pursuing our careers and wealth, or attending special arts and cultural events; for the past 18 months, many of us are more focused on staying safe from COVID-19 and staying healthy.

At Hong Kong Baptist University (HKBU), we have been doing our part in safeguarding the health and promoting the wellness of our community through delivering knowledge transfer (KT) impacts via our research outputs and expert knowledge in computer science with artificial intelligence (AI), Traditional Chinese Medicine (TCM), sports and natural sciences, and technological innovations. Some examples of the impacts we are making in the area of protecting and promoting the health and wellness of the community in the pandemic new normal are presented in the following:

KT Impacts in Safeguarding our Health and Promoting our Wellness in the New Normal

HKBU research informing “LeaveHomeSafe”



The COVID-19 pandemic has caused an unprecedented health crisis across the globe. Owing to the escalation of COVID-19, many universities have arranged working from home for staff and adopted online teaching for students. However, these special arrangements might reduce administration efficiency, compromise teaching quality, delay research progress, and obstruct academic exchange. To help the university to maintain normal education order and safeguard the well being of the campus community, a research team led by Prof Xu Jian-liang, has developed BU-Trace, a contact tracing mobile app to alert users if they have been to a place that has also been visited by people with COVID-19 in the past two weeks.

Contact tracing has been widely recognised to be an effective non-pharmaceutical intervention (NPI) measure for reducing the transmission of COVID-19. Compared with the traditional manual-based method, digital contact tracing is more efficient, cost-effective, and not limited by patient's recollection. Oxford scientists estimated that the pandemic could be stopped if approximately 60% of the population use a contact-tracing app. A notable barrier, however, is the concern over user privacy, which affects the system's uptake. BU-Trace, called “a breakthrough in contact tracing” by The Standard newspaper and awarded the “Best Paper Award” by the International Workshop on Mobile Ubiquitous Systems and Technologies, addressed this challenge by several innovative technologies.

- Permissionless location data collection. The system leverages permissionless QR-code and NFC technologies to record users' venue check-in information. Unlike existing systems, BU-Trace does not request the location permission from the mobile platform, which safeguards user privacy from the system level.
- Privacy-preserving contact matching. Taking a decentralised approach, the system enables users to confidentially conduct contact matching on local mobile phones based on historical venue check-in records, which further protects user privacy and makes the system more scalable.
- Intelligent behavior detection. Powered by a novel artificial intelligence (AI) algorithm, an automatic check-out function is developed to improve user experience and time accuracy of check-out records. To avoid the location permission and alleviate users' privacy concerns, the AI algorithm only utilises the mobile phone's accelerometer readings.

BU-Trace has been deployed on the university campus since September 2020. More than 200 QR codes and NFC tags have been deployed at high-traffic venues such as canteens, restaurants, libraries, and laboratories. The mobile app is available for download from both Google Play (for Android users) and Apple's App Store (for iOS users). Students and staff can install and use the app without authorising the sensitive location permission. The system has been successful in tracing the contacts of an infected student and protecting the safety of the campus community.

Being the first contact tracing system in Hong Kong, the experience of BU-Trace has been shared with the government for the development of the LeaveHomeSafe app, which was launched in November 2020 and has more than 2,000,000 users so far. Additionally, the system's privacy-conserving AI technology has been integrated into LeaveHomeSafe, benefiting large groups of citizens and the entire society.



Overcoming Vaccine Hesitancy in Hong Kong

The “Overcoming Vaccine Hesitancy in Hong Kong” initiative funded by the Hong Kong Baptist University aims to immediately share the incremental findings of up-to-date research on vaccine hesitancy to help the authorities formulate more effective communication tactics promoting vaccination. It will support relevant research, and also encourage the university's faculty and students to be aware of public health challenges and to contribute their knowledge and skills to seeking potential solutions.

Prompt research-informed changes in government policy and vaccination arrangements are a must to combat such a highly-infectious and fast-mutating virus. Researchers are invited to share their findings and insights as their research progresses so that decision-makers can be supplied with the latest information and transform scholarly work into real positive social change. This initiative therefore intends to facilitate the formulation of more targeted and precise interventions and policies. It should facilitate in-depth cross-sector collaboration among the government, the private sector, and society at large. It is such deliberative cooperation among a diversity of stakeholders with varied strengths which can best build public trust in vaccines. A complete narrative of this is provided in the Annexes.

Post COVID-19 rehabilitation programme

HKBU launched a unique Hong Kong Rehabilitation Programme for COVID-19 to deliver comprehensive recovery care to discharged patients by integrating cardiorespiratory and resistance exercise training with the use of Chinese herbal medicine. The programme received a donation pledge of HK\$2 million from the Tsang Shiu Tim Charitable Foundation in support of the University's Hong Kong Rehabilitation Programme for COVID-19, the world's first clinically-validated rehabilitation programme for discharged COVID-19 patients. 172 discharged COVID-19 patients are recruited for a free 12-week intervention programme. HKBU's health professionals instruct the participants to carry out exercises through an online real-time platform. Chinese medicine practitioners prescribe a Chinese herbal formula to the participants that will nourish yin and moisten the lungs.



All participants will be followed up after weeks and will have three assessments to gauge the functional improvements in their metabolism and gut microbiota. All research findings will be publicised and shared with researchers, medical professionals and patients around the world. A complete narrative of this is provided in the Annexes.

Traditional Chinese Medicine and Healthy Living during COVID-19 pandemic

During this pandemic when our community is most concerned about their health and well-being, our School of Chinese Medicine (SCM) has further extended their outreach to the community to provide timely TCM support and advice for healthy living. In 2020-21, Prof Zhang Hong-jie, Dr Zhong Li-dan, Dr Kevin Yue Kin-man, and Ms Edna Chan have partnered with the *Hong Kong Science Museum* in organising four online seminars on the topic of "Traditional Chinese Medicine and Healthy Living" during the *HK SciFest 2021*, which was a two-week science festival that was held from 26 March to 11 April 2021. Visitors participated in activities including do-it-yourself TCM sachets, auricular acupressure workshops and HKBU TCM research showcase. Currently, Hong Kong does not have a school or public programme to promote knowledge and raise awareness of TCM. This programme provides an opportunity for the public to enhance their TCM knowledge and learn simple TCM techniques, which can promote their health and wellness during this pandemic.



A Chinese Medicine Approach to Achieving Body Weight Control – keeping fit and healthy under COVID-19 pandemic

Living under pandemic lockdowns during this new normal has also brought along many challenges for our adult (aged 18 years and over) community in keeping themselves fit and healthy. In an interdisciplinary KT project entitled "*A Chinese Medicine Approach to Achieving Body Weight Control*", Dr Zhong Li-dan and Dr Yang Jun-jun from our School of Chinese Medicine, together with Dr Gemma Gao Yang from our Department of Sport, Physical Education and Health, Faculty of Social Sciences, our professors have developed and delivered practical knowledge to promote a healthier lifestyle for the community, wherein this community-based project teaches the basic principles of TCM, especially those targeting obesity. Four instructional videos have been made to disseminate knowledge and practices of Chinese medicine approach to personal health assessment. These videos cover the topics of physical examination, health constitution identification, meridian assessment system and chronic disease risk assessment. This interdisciplinary project provides online information on key principles in Chinese medicine, as well as simple exercises that can be done in home or office settings. Community members subscribing to these online videos are better equipped to help themselves in staying fit during pandemic lockdowns.



MusFit Action – muscle fitness for elderly under COVID-19 pandemic

Similarly, our professors have also paid attention to the special health and fitness needs of the middle-aged and elderly members of our community. In collaboration with the Department of Orthopaedics & Traumatology at the Chinese University of Hong Kong (CUHK), HKBU's Dr Stephen Hui Research Centre for Physical Recreation and Wellness (CPRW) has launched the *MusFit Action* mobile app and community exercise programme. Under the programme, a series of simple home-based exercises were designed for middle-aged and elderly people, to help them train their muscles and develop a habit of doing exercise regularly. Interested participants aged 50 or above, were invited to join a three-month training course to practice the exercises. After completing the three-month course, participants continued working out at home on their own for the following nine months. A complete narrative of this is provided in the Annexes.



Under this new normal, KT impacts from HKBU have delivered practical and impactful innovations to safeguard the health and to promote the wellness of the Hong Kong community via our knowledge transfer in computer science and AI, healthcare and wellness practices informed by TCM and sports science.

KT impacts in monitoring our health and wellness by developing new convenient, non-intrusive medical testing technologies and providing general health services to the community

Life still goes on in the new normal. Nowadays many Hong Kong people are more reluctant to visit medical facilities for early diagnosis of possible ailments due to their fear of contracting COVID-19. Scientists at HKBU are delivering KT impacts to help alleviate such challenges by developing new medical diagnostic technologies that avoid invasive clinical testing, and the University has been successful in spinning-off such medical testing technologies as commercial services via our start-up companies. Furthermore, we are also making impacts in providing better general health services to the community; inventing new and better health innovation for treating life threatening disease such as cancer. Some examples of the impacts we are making in the area of general health and wellness are presented in the following:

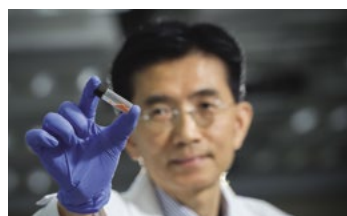
Spermine Risk Score for Prostate Cancer Diagnosis



In one recent example, for men with potential prostate cancer diagnosis, Prof Gary Wong Ka-leung, Professor and Head of the Department of Chemistry at HKBU, Prof Ng Chi-fai and Dr Peter Chiu Ka-fung, Professor and Associate Professor from the Division of Urology, Department of Surgery at CUHK have come up with a non-invasive mean of detecting early prostate cancer. The method relies on a urine-based detection kit invented by Prof Wong. By measuring the levels of spermine, a biomolecule found in urine, they could accurately predict the likelihood of a patient developing prostate cancer.

In 2014, Prof Wong and his co-investigators at the Chinese University of Hong Kong began searching for a new biomarker that could supplement the PSA test. Ultimately, they found that prostate cancer patients in general have low levels of spermine, which offers a clue for the diagnosis of prostate cancer. The research team confirmed their hypothesis through a series of clinical studies. They came up with the so-called spermine risk score that considered other clinical parameters, including digital rectum examination (DRE) outcome, PSA level and prostate volume. Clinical studies showed that the spermine risk score provides an accurate estimation of patients' prostate cancer risk. The results bring good news to the 37% patients who have high PSA level but are tested negative after undergoing an invasive prostate biopsy procedure. With this non-invasive test now being offered at private hospitals in Hong Kong, such patients can be offered a simple take home urine test instead of an invasive prostate biopsy, keeping them safe and worry less in this new normal.

HKBU invents novel MRI contrast agent for Alzheimer's disease diagnosis



Another innovation is in the easier diagnosis of Alzheimer's disease. A research team led by Prof Ricky Wong Man-shing and Prof Li Hung-wing, Professors of the Department of Chemistry, has invented a novel contrast agent for magnetic resonance imaging (MRI), which enables real-time visualisation and detection of the size and number of amyloid-beta ($A\beta$) in the brain, a main hallmark of Alzheimer's disease (AD).

The team loads and coats gadolinium-based nanoparticles, a chemical substance commonly used as an MRI contrast agent, with a specially designed silica layer that can accommodate a proprietary, non-cytotoxic fluorescent cyanine dye. The cyanine dye is an organic compound used to visualise and quantify $A\beta$ proteins.

In model experiments with mice, the modified nanoparticles can bind with $A\beta$ contents and enhance magnetic resonance signals, and differentiate $A\beta$ contents in the brain in terms of size and number when MRI is applied. The invention offers hope for early detection and large-scale routine screening of AD. It can also help to assess the efficacy of drugs used to treat it. A complete narrative of this is provided in the Annexes.

School of Chinese Medicine strengthens elderly services with support from Hong Kong Jockey Club



Other than innovations to help diagnose the health and wellness of potential prostate cancer and Alzheimer's sufferers, at HKBU, we also strive to strengthen our Chinese medicine services to the elderly community. On this front, the School of Chinese Medicine (SCM) has received funding totalling about HK\$10 million from The Hong Kong Jockey Club Charities Trust (the Trust) to enhance two SCM service programmes. These are the "Elderly Sponsorship Scheme of the Jockey Club 'Embrace Health' Chinese Medicine Programme" and the online "Chinese Medicine Video Enquiry Service" offered by the Hong Kong Baptist University - Jockey Club Chinese Medicine Disease Prevention and Health Management Centre. It is expected that about

18,000 elderly people will benefit from these programmes.

Prof Bian Zhao-xiang, Tsang Shiu Tim Endowed Professor in Chinese Medicine Clinical Studies, and Director and Chair Professor of the Clinical Division at SCM, expressed his gratitude for the Trust's support. "SCM is committed to providing quality Chinese medicine education, research and healthcare services. The support of the Trust allows us to further strengthen our clinical services, and it will benefit more elderly people in need," he said. A complete narrative of this is provided in the Annexes.

HKBU-led team uses online counselling and virtual reality to treat social anxiety

Diagnosis and early remedies in mental health and wellness is another area HKBU has been making impacts in the community. A HKBU-led research team has launched an online cognitive behavioural therapy programme named "EASE Online" to help people with social anxiety disorder. It incorporates virtual reality (VR) scenarios that are common triggers for social anxiety, allowing participants to respond as they would to real-life situations and receive counselling services from mental health professionals.

The programme is recruiting 600 participants aged 18 to 70 with social anxiety disorder. It will also provide training to around 100 local mental health professionals on how to operate the programme, with the aim of serving more people in need in the long run.

"Online counselling and VR exposure therapy create a safe and non-threatening environment for people with social anxiety to learn how to cope with fearful social situations. We hope that the EASE Online programme will bring SAD sufferers' social life back on track," Dr Pan Jia-yan added, who led a team comprising investigators from the Department of Social Work and the Department of Computer Science at HKBU. A complete narrative of this is provided in the Annexes.



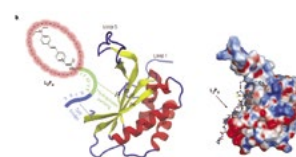
HKBU Launches Online Counselling Programme to Relieve Psychological Distress of Tertiary Students and the Hong Kong Community

Hong Kong is a fast paced and constantly changing city which easily makes people feel stressed and anxious. A research team led by Dr Pan Jia-yan, Associate Professor of the Department of Social Work at HKBU, has launched the "REST ONLINE" programme (<https://restonline.hkbu.edu.hk/>) and the "CANDO" programme (<https://cando.hkbu.edu.hk/>). These two programmes aim to help tertiary students with psychological distress and people with mild to moderate depressive symptoms via the online counselling platform, inject positive energy and help them improve their mental health.



HKBU-led research team develops novel anti-viral targeted drug for nasopharyngeal cancer treatment

On general health and wellness, professors at HKBU have also been making impacts in inventing new and better treatments for life threatening diseases such as cancer. A research team led by HKBU has developed a novel anti-Epstein-Barr virus (EBV) drug that can selectively disrupt a viral protein produced by EBV, leading to the shrinkage of tumours caused by the virus. It is the first known agent to successfully target the virus and disturb its latency in tumour cells in this way.



The strategy of reactivation of EBV from its latency is a new trend in nasopharyngeal carcinoma (NPC) therapy, and some non-specific, anti-viral drugs have recently entered phase one or phase two clinical trials. Our new drug represents the first specific targeted agent to disrupt a single viral protein and to potentially reactivate EBV from its latency. These research results were published in the international journal Proceedings of the National Academy of Sciences. A complete narrative of this is provided in the Annexes.

HKBU and Cornell University jointly develop a novel nano-carrier that increases the efficacy of Chinese medicine treatment for breast cancer

Prof Bian Zhao-xiang, Director and Tsang Shiu Tim Endowed Professor in Chinese Medicine Clinical Studies of the Clinical Division of the School of Chinese Medicine (SCM) and Dr Kwan Hiu-yee, Assistant Professor of the Teaching and Research Division of SCM, in collaboration with Cornell University, have developed a novel targeted therapy for triple-negative breast cancer (TNBC) that uses a specially-designed nano-carrier to deliver the Chinese medicine compound gambogic acid (GA).

The invention enhances the anti-cancer effect of GA and reduces its damage to off-target organs. The invention has the potential to become a more effective therapeutic option for TNBC.

"The application of nanotechnology in this study modernises the delivery of Chinese medicine, thereby enhancing its therapeutic efficacy. We believe that our nano-carriers have great clinical potential to treat TNBC and other types of cancer," said Professor Bian.

The study was supported by the Vincent and Lily Woo Foundation, and the research findings have been published in the international medical journal Frontiers in Oncology. A complete narrative of this is provided in the Annexes.

KT Impacts in Creative Arts and Culture with Technology in the New Normal

Human is a social animal, thus, even we are prioritising the safety of our health and well-being in this new normal, we never cease to crave for human interactions.

At HKBU, we have been delivering impacts in new ways to create and deliver creative arts and culture interactions in our community while keeping safe social distancing – Arts Tech and Culture-Tech in the new normal. Some examples of the impacts we are making in the area of Arts Tech and Culture Tech are presented in the following:

Aria – a COVID-19-proof Arts Tech opera



Labelled “a Covid-proof opera for our times” by the Financial Times (*FT*), *Space to Breathe* was conceived by Dr Eugene Alexander Birman from the Department of Music, Dr Chen Li from the Department of Computer Science, Mr Kingsley Ng from the Academy of Visual Arts, and Prof Johnny M Poon from the Department of Music, as HKBU’s first interdisciplinary Augmented Creativity Lab project, combining big data and immersive music/installation art practices to bring climate change research to life. In creating the Arts Tech work, the investigators sought to find and document a viable strategy – an avant-garde artwork built entirely from actual climate

and pollution data and subjective human experience of air in Hong Kong – to compel individual action and concurrently enrich the cultural sphere in Hong Kong and abroad. Central to this objective was an ambition to connect data to human experience and climate science to personal action.

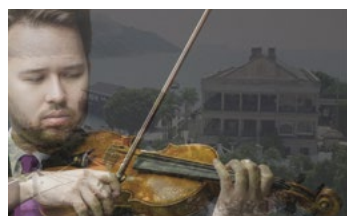
The project team sought to represent ‘air’ through a total reliance on the human voice as a performative instrument; as the most personal and yet most fragile musical instrument, the act of singing is inherently connected to the act of breathing itself. The Grammy and Pulitzer Prize-winning *Theatre of Voices* partnered with the *Hong Kong Children’s Choir*, members of which also created text and visual material that was then combined with research on social media and pollution data into a libretto. The *Forsgate Conservatory* in Hong Kong Park, a huge greenhouse surrounded by the skyscrapers of Hong Kong’s financial district, served as both setting and stage for the experiential eighty-minute production; as audience members promenade through living ecosystems of a primeval forest, a post climate-collapse desert, and then to a contemporary podium with the backdrop of the Hong Kong skyline, they experience a narrative journey of music, visuals, and dance sourced from the work’s research materials and themes.

Premiered in the middle of the COVID-19 Pandemic, *Space to Breathe*’s public output, titled *Aria*, revolutionised performance in the COVID era. The project team transformed its international performers, unable to enter Hong Kong due to travel restrictions, into holograms, pioneering LED fan technology in classical performance. The *FT* further highlighted the project’s key characteristics: “interactivity and sustainability. These ultimately saved the production while so many others across the world have been cancelled due to Covid-19.” Designed around social distancing and gathering restrictions, the experiential aspect of the production allowed live audiences to experience the show in small groups over 16 sold-out performances. A 360-degree immersive Virtual Reality (VR) trailer and a 40-minute professionally filmed and edited digital edition were distributed via the *Leisure and Cultural Services Department (LCSD) ReNew Vision Festival*, which co-produced the work with HKBU – the university’s first such collaboration with the government’s culture body. The South China Morning Post labelled *Aria* the “highlight” of the festival – in fact, it is the only production that remained open to live audiences. This is truly an exemplar of Arts Tech in the new normal.

Future collaborations with the *Manchester International Festival*, the LCSD, and the *Macao International Music Festival*, resulting from the work’s successful premiere in Hong Kong in perhaps the most challenging conditions for the arts in generations, will allow it to be experienced by tens of thousands over the next two years.

This Arts Tech project is also the only project from a Hong Kong institution to be shortlisted in the category *Excellence and Innovation in the Arts* in the [THE Awards Asia 2021](#). *Space to Breathe – Aria* website: aria.com.hk

Travelling through Time and Cultures

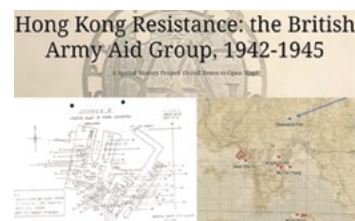


Similarly, when in the new normal audience cannot gather in concert halls to enjoy soul refreshing musical performances, professors from our Department of Music brought their creative performances to their audience via the use of technology. In March of 2021, Dr Patrick Yim Tinsing and Dr Austin Yip Ho-kwen, with their team of musicians held two online concerts titled *Travelling through Time and Cultures* where they performed music inspired by architecture and artworks from the early days of Hong Kong. Four music pieces were written especially for these two concerts wherein the performance was accompanied by videos of splendid Hong Kong scenery.

The composers drew inspiration from the Murray House in Stanley, Canto-pop classics and stories by the Chinese writer Xi Xi, which reflect on the ever-changing Hong Kong. Prior to each performance, the audience was given the opportunity to hear the composers introducing their works. Dr Yim and his world-class composers premiered three pieces for solo violin especially for these online concerts. The audience also saw performances by HKBU music students using traditional Chinese and Western instruments.

Japanese Occupation and the Battle of Hong Kong – a Culture Tech for online learning

Delivering such a KT impact is Dr Kwong Chi-man, Associate Professor from the Department of History, who has developed a Historical Geographic Information System (HGIS) wherein secondary schools can learn about the Japanese Occupation and the Battle of Hong Kong in December 1941 through an online interactive map platform. This innovative KT project has received HK\$1.57 million from the Quality Education Fund and aims to stimulate the student's interest in learning history and is just in time to cater for the students' online learning needs in the new normal of pandemic lockdowns in Hong Kong. This HGIS map platform tells the Battle of Hong Kong over a session that lasts 30 to 40 minutes. Students are invited to explore the historical information and events, layer by layer, interactively, by visiting various locations on the online map platform. Apart from visualisation, the HGIS platform also serves as a database for gathering and organising historical information relating to Hong Kong and the invasion of the Japanese Army. It is an open-source software for the general public to learn about the facts and untold stories behind the Battle of Hong Kong in December 1941. Unlike conventional history textbooks, students can teach themselves and practice problem-solving skills through the interactive map platform. It gives students the freedom to learn autonomously and independently. Apart from these benefits, the interactive map platform has also integrated historical facts of Hong Kong for the period from 1941 to 1945, which makes the history teachers' preparation work for history lessons much easier. In turn, history teachers can place their focus on interactive activities with their students. The interactive map platform has been trialled by schools and will be implemented into the curriculum of six secondary schools across Hong Kong in the coming academic year. With the support of the Education Bureau, Dr Kwong will also be hosting sharing sessions to train secondary schools' history teachers on the use of the online interactive map platform in a classroom setting and for online learning.

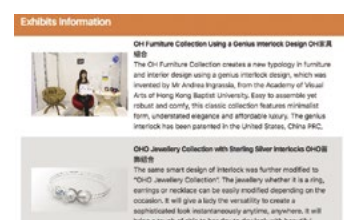


COMMUNITY ENGAGEMENT

In the new normal with many pandemic restrictions and social distancing measures, many of the community engagement activities at HKBU have been transferred to online and virtual events. One such example is our annual participation in the HK Innovation and Technology Commission's *InnoCarnival* exhibition.

Virtual InnoCarnival

Last December, thousands of children, teenagers and families joined *Virtual InnoCarnival* to learn about the latest innovations and technological advances in Hong Kong. The online event, which was under the theme of "*Collaborate, Innovate and Beyond Imagination*", gave everyone a fun-filled experience by delivering a wide range of educational activities, including online exhibitions, workshops and webinars. Traditionally held at the Hong Kong Science & Technology Park, this event also marks the first time that *InnoCarnival* has gone completely virtual due to concerns associated with the COVID-19 pandemic.



HKBU, being one of the exhibitors of *Virtual InnoCarnival*, was assigned a virtual booth. Our theme for the event was "*Creativity, Innovation, Research Excellence & Chinese Medicine Wisdom*". Our booth showcased HKBU's latest patented applications including "*OH Furniture x OH Jewellery Collection*", "*Quality Control Markers for Use in Herbs Authentication*", and "*Smart Compounds for Cancer Cells Diagnosis*". Videos and animations were provided to foster a better understanding of new inventions, arouse the community's interest in local innovations, and inspire young people's creativity. To educate the public on disease prevention and health management, the School of Chinese Medicine also designed a series of edutainment online activities through which visitors can learn practical health tips. An interactive game zone, a Chinese medicine practitioner's mailbox, a virtual tour of the Chinese medicine museum, as well as a platform for citizens aged 60 or above to meet the practitioners, were offered.

HKBUS: Artworks on the Move

HKBU is well-known for its liberal arts and for having produced thousands of amazing artworks, some of which have gained acclaim in Hong Kong or beyond. In light of this, the university launched a community-based initiative called *HKBUS* last year wherein a double decker bus was used as a moving showroom to promote these great artworks before the general public. With the support of HKBU Strategy Development Fund, the initiative helped foster art culture and creativity in Hong Kong.



A vetting and advisory panel comprising HKBU faculty and external partners *Crystal Bus Holding Limited* and *LINK Asset Management Limited* has selected six projects to showcase on HKBUS. However, due to the COVID-19 pandemic, the showcase of these project has been moved online.

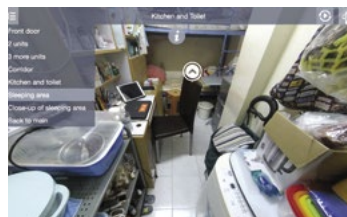
HK Voices: Life as a Domestic Helper



Some community groups, rarely being the focus of our attention, are even more being ignored during the COVID-19 pandemic. The KT community engagement project *HK Voices: Life as a Domestic Helper* by Mr Dean Cox and Ms Robin Ewing, both from the Department of Journalism, is one of the HKBU community projects, which engages with such ignored communities.

There are over 330,000 foreign domestic helpers working in Hong Kong. To raise awareness and encourage engagement between the public and the foreign domestic helper community, this KT community engagement project team endeavoured to showcase personal life stories of foreign domestic helpers working in Hong Kong. In cooperation with two non-governmental organizations *Dear HK* and *The Other Hundred*, this community engagement project celebrated the cultural diversity of Hong Kong and the unsung heroes who helped their communities during the pandemic. Through audios, videos and photos, visitors learnt what it means for people to leave their family and friends, as well as the hardship of foreign domestic helpers living in Hong Kong. Running a large-scale documentary project dedicated to foreign domestic helpers is not only a first for HKBU, but also for Hong Kong universities. In addition to the exhibition gallery at Koo Ming Kown Exhibition Gallery, a permanent stand-alone website (www.hongkongvoices.org) for hosting multimedia stories of foreign domestic helpers is also launched. Given the size and importance of our foreign domestic helper community, new contents will be added to the website on a continual basis. These digital materials are also exhibited permanently online to better engagement with the community at large under this new normal.

Let the Forgotten Voices Be Heard



In the new normal, another community often forgotten by many is the underprivileged community living under the poverty line. In another HKBU community engagement project led by Dr Benjamin Cheung Ka-lun, Ms Iris Chan Hiu-fong, and Ms Carman Leung, from the College of International Education, School of Continuing Education and Dr Janet Lo Wai-han from the Department of Journalism, School of Communication, our professors bring forth the voices and needs of this underprivileged group which are also rarely heard of in Hong Kong. Their community engagement project *Let the Forgotten Voices Be Heard* uses mobile media and virtual reality (VR) to tell the stories of underprivileged senior citizens, as well as the sunset industries that supported their living. Through creative displays and computer simulations, visitors can experience the lives of the underprivileged, as well as creative solutions for enhancing their quality of life. This community engagement project was made possible thanks to the collaborative partners *Longevity Design House* and *City Image Technology Limited*, who, respectively, provided creative solutions for enhancing the life quality for the underprivileged and for creating the VR content for this project. Using these technologies, the stories of these underprivileged senior citizens could be told through an immersive medium and ideas were showcased on a whole new level. Moreover, through this community engagement project, our community can better understand the plights of our underprivileged senior citizens, especially in the challenging new normal. (Project website: www.cityimage.com.hk/hkbu/cn/index.html).

I AM A REPORTER



Another social phenomenon in the new normal is the rampant dissemination of fake news with the pent-up stress and fears of communities under pandemic lockdowns and unchecked channels of social media. Thus, there has never been a better time when accurate, impartial and unbiased news are more needed in Hong Kong than now. The community engagement project *I AM A REPORTER* by Ms Jenny Lam from the Department of Journalism educates the public about the basic principles of factual journalism. This community engagement project invited students from 29 secondary schools to learn about journalistic objectivity through experiential learning, workshops and games. In this programme, HKBU journalism students guided the secondary school students through a news anchoring experience and showed them how to take journalistic photos using mobile phone. They also gave a fact-checking workshop and played quiz games on "how to conduct an interview" and "why we need journalists". Most of the secondary school students said that they would take part in similar events in the future, and that they would recommend this programme to their friends.

In this new normal with many pandemic restrictions and social distancing measures, professors at HKBU have not only engaged with their communities via digital means, they have also taken the caring mission of the University to heart by engaging with the often ignored and underprivileged communities in Hong Kong. At the same time, our professors have also reached out to address some of the social ills that are especially prevalent in the new normal – fake news, by educating our youths on the truth and virtues of factual journalism.

HKBU launches fact-checking service to fight fake news

Another example of Culture Tech is in the use of AI technology in fact-checking fake news in our daily lives. With the vision of providing an authoritative, professional and impartial fact-checking service amidst the proliferation of fake news, and to improve the public's media literacy in the digital era, the School of Communication at HKBU launched the HKBU FactCheck Service in December 2020. It is the first research-based, systematic fact-checking service launched and operated by an independent academic institution in Hong Kong.

As a “research-public service” product, the Service is characterised by a high level of transparency as well as an integration with academic research in journalism and communication studies. It develops towards the direction of a human-machine hybrid intelligence system, representing an innovative concept of Artificial Intelligence (AI)-supported fact-checking.

The pilot run of the Service involving manual fact-checking was carried out in September 2020. Selected suspicious content appearing in popular online and social media platforms in Hong Kong were identified for investigation by the project team. The topics covered politics, business, health, science and other social issues. Results of the fact-checking were shared on the Service’s website and social media platforms including Facebook and Instagram. A complete narrative of this is provided in the Annexes.



ENTREPRENEURSHIP

Another major social challenge brought by the COVID-19 pandemic is the global recession as a direct result from the forced economic activities lockdowns across the globe. Hong Kong cannot escape from such a predicament with the monthly unemployment rate hitting a high of 7.2% in the month of February 2020, the highest since 2004. In times of high unemployment like this, entrepreneurship offers possibilities to alleviate such social stress. Some examples of our many entrepreneurship activities are presented in the following:

Cultivating Entrepreneurship through Holistic Entrepreneurship Activities and Education

Entrepreneurship is recognised as one of the effective ways to promote knowledge transfer from the university to the broader community. Therefore, since its inception in 2012, the Business Entrepreneurship Support and Training (BEST) Programme at HKBU is dedicated to cultivating entrepreneurial spirit across campus through tailor-made holistic entrepreneurship support and training for faculty members, students and alumni.

To address the different needs and development stages of our start-up teams from students and the academia, HKBU has organised a wide range of activities, training, seminars, funding support and opportunities to facilitate the different pathways to successful entrepreneurship and commercialisation at the University.

In 2020-21, a total of 185 online and offline entrepreneurship activities and training offered by local and global partners were held. Over 10,600 students benefited from these sessions albeit in a challenging pandemic new normal. Highlights from some of these activities are as follows.

HKBU virtual hackathon connects global youth under “new normal”

HKBU hosted the Global Virtual Hackathon 2021 from 7 to 9 April 2021. The competition aimed to address the sustainability of the “new normal” under the COVID-19 pandemic, and it brought together around 90 university students from 16 countries and cities who then devised innovative plans and creative solutions to the associated issues in 48 hours.

With the theme “Hack for a Sustainable New Normal”, the competition was organised for the second year in a row by the Department of Computer Science, School of Communication, Centre for Innovative Service-Learning and Office of Student Affairs at HKBU in collaboration with West Virginia University in the US, Ritsumeikan University in Japan and the National Cheng Kung University in Taiwan.

University students from 16 countries and cities, including Bangladesh, Hong Kong, India, Italy, Taiwan and the UK, were divided into 16 teams, with each team comprising students with diverse cultural and academic backgrounds. They then worked together to design solutions that addressed the four sustainable development goals of the United Nations, namely “quality education”, “good health and well-being”, “sustainable cities and communities”, and “responsible consumption and production”.



O2O entrepreneurship training platform

Since 2017, BEST has created an O2O entrepreneurship training platform on Moodle to better equip HKBU members for their start-up journey. To date four training modules that cover essential entrepreneurship topics including *innovative mindset*, *design thinking*, *pitching and presentation for entrepreneurs*, and *networking skills for entrepreneurs* have been developed for the HKBU community. These online modules were all conducted by renowned academia and industry speakers from local and overseas institutions. A total of 2,692 staff and students were enrolled in these training modules in 2020-21.



Hybrid Seminars on Innovation and Entrepreneurship

Apart from providing online training materials, BEST has also invited renowned speakers from Hong Kong and overseas to share their tips and insights on innovation and entrepreneurship under the new normal with the HKBU community. Over 30 online/hybrid seminars were organised in 2020-21. Over 2,400 participants had benefited from these seminars wherein they attained more practical skills and insights on innovation and entrepreneurship. For highlights of the talks and seminars, please refer to Annexes.



Holistic Start-up Training Programme



For academia, researchers and post-funded start-up teams, BEST has especially launched the Holistic Start-up Training Programme (HSTP). It is a comprehensive entrepreneurship training programme for HKBU researchers, staff and students who wish to turn their innovative technologies or business ideas into viable and feasible business ventures, as well as to deliver impact to the society. HSTP helps researchers to amplify their research impact. It also helps teams to conduct market validation and identify concrete commercialisation pathways forward for their inventions. In 2020-21, a total of 14 research and student teams had participated in HSTP, in which eight of them successfully commercialised their technologies through means of start-ups; and four of the student start-up teams were successfully admitted to external incubation programmes.

Opportunities for Incubating HKBU Start-ups



With holistic entrepreneurship support and training, BEST has nurtured many aspiring start-up teams who were ready to step up to the next stage of their entrepreneurship journey. In 2020-21, BEST successfully arranged many regional and global competitions and opportunities, for the start-up teams. For example, Technology Start-up Support Scheme for Universities (TSSSU), Hong Kong Techathon 2021, Global Venture Catalyst organised by UC Berkeley, Pitch Perfect 1.0, etc. For details, please refer to Annexes. Through participating in these competitions, HKBU students and start-up teams expanded their business network and made remarkable achievements. For details, please refer to Annexes.

Despite the economic challenges of the new normal, the entrepreneurship programmes at HKBU, especially those provided through the BEST platform have striven to nurture HKBU staff and students towards successful entrepreneurship and commercialisation at the University.

FOSTERING INNOVATION AND KNOWLEDGE TRANSFER

In this new normal, many of the usual physical KT outreach activities at HKBU have to be postponed or cancelled. Instead, we focused our resources and our efforts onto capacity building that will further foster good innovation and knowledge transfer at the University and within our community. Below are the two major intellectual properties training initiatives we have delivered, in this reporting year, to our community to better equip themselves in their daily work of knowledge transfer.

IP Forum 2021 and Copyright Workshops

To prepare academia and researchers to foster innovation and knowledge transfer, HKBU had launched a practical IP Forum and a series of copyright workshops to HKBU members so as to equip them copyright issues and IP protection through their research and commercialisation journey.

Intellectual Property Forum 2021



The KTO, University Library, and the Intellectual Property Department of Hong Kong jointly organised the *Intellectual Property Forum 2021* on 19 and 20 April. The aim of this forum was to provide intellectual property (IP) rights education to faculty and students, as well as to answer questions on copyright issues and patent protection in both Hong Kong and Mainland China.

This online forum, which was under the theme of “*Empowering your IP knowledge and know your rights!*”, attracted over 200 faculty members, students, librarians, researchers and administrative staff from local higher education institutions, as well as entrepreneurs and industry leaders. Nine speakers shared their insights on various issues relating to copyright and patent protection. They include Miss Maggie Wong, Senior Solicitor of the Intellectual Property Department; Mr Terence Tseung, Senior Inspector of the Customs and Excise Department; Prof Alice Lee, Associate Professor of the Faculty of Law, the University of Hong Kong; and Mr Robert Jackson, a registered US patent attorney and the Principal of Spruson & Ferguson (Hong Kong) Limited. Apart from the expert talks, participants also had a chance to exchange views online with the speakers on specific topics relating intellectual property.

Copyright Workshops



Following the implementation of a copyright recordal module in HKBU's IP management system, KTO organised a series of copyright workshops for HKBU staff to learn about copyright protection and the use of copyright materials for education. These workshops were held from 21 December 2020 to 2 February 2021. During the copyright workshops, our speakers shared important notes on the copyright protection of original works, as well as exemption cases where the use of copyright materials is permissible. Our teaching staff found this information extremely useful especially when it comes to the preparation of teaching materials. It helped teachers and students understand how to make use of copyrighted materials for teaching and learning purposes without infringing other's copyright.

The copyright workshops drew over 50 attendees in total. These workshops were a huge success as we received much positive feedback from the attendees. The percentage of people who were “very satisfied” and “satisfied” with the workshops was 39% and 61%, respectively. In general, the response from the audience was positive and encouraging. One attendee said it was “nice to have case sharing of copyright”, while another attendee suggested that it would be good to “have more cases to illustrate and highlight common misbehaviours in teaching and learning”.

COLLABORATION WITH INDUSTRY AND BUILDING PARTNERSHIPS

In the new normal, with travel restrictions and social distancing, making new contacts with the industry and establishing new partnerships are very challenging. Although we can meet others online, it is hard to build trust via such online interactions and more often than not the collaborations and partnership we have made in the past year are mostly building upon the social credits we have established previously with such partners in the community.

Collaboration with industry on research projects

KTO fosters productive partnerships between the University, industries and government; by creating a pathway for HKBU's academia to synergise its research capabilities into delivering positive societal impacts to local communities and beyond. This year, through the Research Matching Grant Scheme (RMGS), we have fostered 38 collaborative research projects between HKBU and industry partners in areas covering agriculture, arts, banking, biotechnology, Chinese culture, Chinese medicine, computer science, education, electronics, energy, food, pharmaceuticals, and social work. Our industry partners are mainly from Australia, Mainland China, Hong Kong, France, and the United States. These research projects, in terms of interdisciplinary collaborative research, laboratory testing, and consultancy service, covered 16 types of research areas, bringing in a total income value of more than HK\$30m to the University.

Many impactful research projects at HKBU are done in collaboration with the industry and other institutions of higher learning. Some examples of such win-win-win collaborations are as follows:

Building Platform Technologies for Symbiotic Creativity in Hong Kong

A research project led by HKBU entitled “Building Platform Technologies for Symbiotic Creativity in Hong Kong” has been awarded HK\$52.8 million in research funding from the Theme-based Research Scheme (11th round) under the Research Grants Council (RGC) for a five-year project. This is the first time that major funding has been allocated by the RGC for an art-tech project. The research team will develop platform technologies for symbiotic creativity, providing unlimited art content for humans, including an art data repository, an artificial intelligence (AI) creative algorithm system, a research theatre, a digital art and policy network, and some unique and creative application projects, to usher in a new era of art technology.



Led by Prof Guo Yike, Vice-President (Research and Development), and Prof Johnny M Poon, Associate Vice-President (Interdisciplinary Research), at HKBU, the research team will develop an immersive and interactive extended reality (XR) platform to capture human data during the artistic creation and appreciation process, which includes the cognitive and physiological data of artists and the audience, such as brain waves, body temperature and heart rates, gait and movements, etc. The platform will then convert the data into the descriptors of cognition, emotions, and behavioural patterns.

The researchers will associate and link the artworks with the descriptors to build a comprehensive and extensive data repository for artificial intelligence model training. It will enable machines to learn human aesthetics, instead of mimicking art created by humans.

The platform will also enable the audience to immerse themselves in a virtual world. They will be surrounded by images, sounds, etc, and have new artistic experiences. In addition, the immersive and interactive XR platform will be equipped with a number of sensing devices, which will help the artists to go beyond the traditional forms and boundaries and communicate and interact with the audience in new ways.

“This research project has secured funding from the RGC, demonstrating that Hong Kong attaches great importance to the development of artistic and creative technologies based on AI. This project stands at the forefront of the arts and science nexus, harnessing the power of science and technology to advance human and AI interaction in art creation. It will foster a new direction in art created by both humans and machines,” said Prof Guo. *“We will spare no effort in building a world-class AI art creation platform, and it will drive a new revolution that transforms the creative and cultural industries. It will enable Hong Kong to assume a leading position in art-tech on the global stage,”* he added.

Under this project, HKBU will launch three application projects: the Super AI artist – the world's first “Combined Music and Art Biennale”, which will host multidisciplinary musical works and artworks jointly created by humans and AI; Shared Mind and Empathetic AI – a concert series featuring a three-way collaboration between performers, the audience and machines; and Symbiotic Opera – a new form of opera that integrates with immersive XR technology, and it will be jointly created by humans and machines in an immersive virtual world.

Members of the multidisciplinary research team led by HKBU include cognitive scientists, AI and data scientists, media scientists, ethicists and art policy scholars from Yale University, the University of Cambridge, Imperial College London, the University of Kent,

Tsinghua University, the University of Hong Kong and City University of Hong Kong. The research team will also collaborate closely with industrial and musical partners, including *Huawei*, *Microsoft*, *SenseTime* and *Opera Hong Kong*.

Future Cinema Systems: Next-Generation Art Technologies

On another major collaborative project, together with industry partners such as the Cameron Pace Group China, Tai Kwun Culture and Arts Company Limited, and the Hong Kong Culture Festival; government bodies such as the M Plus Museum Limited and the Airport Authority Hong Kong, and other institutions of higher education such as École Polytechnique Fédérale de Lausanne and the City University of Hong Kong, HKBU is embarking on a major research project – the “Future Cinema Systems: Next Generation Art Technologies”, which is on creating a future cinema system that combines innovations powered by artificial intelligence, deep learning, virtual reality, augmented reality, interactive narrative and generative aesthetics. Working together the system will create a wholly new and authentically bilateral, co-evolving interactive and immersive architecture for participant spectators. This architecture can be readily exploited by artists from all fields to create novel interactive and immersive experiences, but this project will develop new practical applications in the representation and experience of three aesthetic and cultural domains: 1) The audio-visual archive; 2) the place and space of cultural heritage; and 3) digitally mediated performance.

HKBU and Tsinghua University sign agreement to establish AI Laboratory for Creative Arts



The Augmented Creativity Laboratory at HKBU and the Institute of Artificial Intelligence at Tsinghua University signed a collaboration agreement on 14 January to establish the Tsinghua-HKBU AI Laboratory for Creative Arts.

Under the agreement, HKBU and Tsinghua University will undertake collaborative research in the broad fields of science and the arts, and will jointly organise events such as conferences, symposiums and expert seminars to facilitate interdisciplinary interactions and foster knowledge exchange. The two universities will combine their respective strengths to conduct

impactful research on artificial intelligence (AI)-based art creation, especially music composition and music performance.

The Augmented Creativity Laboratory is one of the six interdisciplinary research laboratories established by HKBU last year to expand the University's research strength and drive cutting-edge research in focused areas. A complete narrative of this is provided in the Annexes.

Partnership on knowledge exchange



KTO is committed to facilitating and expanding the impact of HKBU's research excellence to the community. We launched a brand-new website of HKBU R&D Licensing Limited (HKBURDL) this year. This aims to provide an online platform enabling external enterprises to drive their business growth through our innovative solutions and one-stop services. We featured the research outcomes of HKBU via “*Innovation Offers*” and sought requests for innovative solutions from external enterprises through “*Innovation Needs*” on this online portal which connects HKBU professors to industrial partners via knowledge exchange.

To expand our global business network with potential knowledge exchange partners, HKBURDL collaborates with the Innovation Partner for Impact, Singapore (IPI). This enables the “*Innovation Offers*” of HKBU to be directly accessible to IPI's industrial partners in Singapore and other Asia regions. Likewise, our online platform can also directly pull the many “*Innovation Needs*” presented by IPI and their network of industry partners. In our new normal, when we cannot reach out and build new networks of partners, leveraging such win-win-win bilateral knowledge exchange collaborations with trusted super connectors can help us to continue to reach to new markets and seek new commercialisation opportunities for the many research output innovations at HKBU.

LOOKING AHEAD

The new normal brought new challenges and new opportunities for KT at HKBU. While we strive to do better under the new challenges, we shall surely seize the new opportunities brought forth in the new normal.

With the global focus on the COVID-19 pandemic, it is very opportune for HKBU to focus on delivering even more impactful KT projects on healthcare and wellness, especially from the interdisciplinary research from our faculty in natural sciences, social sciences and TCM. This is one major KT focus at the University, especially with the new opportunities presented from our recent award of the service deed to operate the first Chinese Medicine Hospital (CMH) in Hong Kong by the Hong Kong Hospital Authority.

Moreover, with the global trend of convergence in arts and technology, the development of Arts Tech can render fresh opportunities for the entire arts sector, as well as the broader cultural and creative industries (CCI). As a leading liberal arts university, HKBU is well positioned to make impactful KT contributions in the area of Arts Tech in Hong Kong, Mainland China and Asia for the world. Moving forward, this is another major focus for KT at HKBU. Furthermore, with major collaborations with the industry, the government and the community in projects such as the “Building Platform Technologies for Symbiotic Creativity in Hong Kong”, the “Future Cinema Systems: Next Generation Art Technologies” and the “Tsinghua-HKBU AI Laboratory for Creative Arts”, there will be surely many more impactful Arts Tech and Culture Tech research outcomes from HKBU that will impact the world.





香港浸會大學
HONG KONG BAPTIST UNIVERSITY



ANNUAL REPORT ANNEXES
2020-21
KNOWLEDGE TRANSFER OFFICE



CONTENTS

Overcoming Vaccine Hesitancy in Hong Kong	1
Rehabilitation programme for COVID-19 pandemic	1
MusFit Action – muscle fitness for elderly under COVID-19 pandemic	2
HKBU invents novel MRI contrast agent for Alzheimer’s disease diagnosis	2
School of Chinese Medicine strengthens elderly services with support from Hong Kong Jockey Club	3
HKBU-led team uses online counselling and virtual reality to treat social anxiety	4
HKBU-led research team develops novel anti-viral targeted drug for nasopharyngeal cancer treatment	5
HKBU and Cornell University jointly develop a novel nano-carrier that increases the efficacy of Chinese medicine treatment for breast cancer	6
HKBU launches fact-checking service to fight fake news	7
HKBU virtual hackathon connects global youth under “new normal”	8
Technology Startup Support Scheme for Universities (TSSSU) 2020-21: Spin-off Companies	9
HKBU and Tsinghua University sign agreement to establish AI Laboratory for Creative Arts	16
HKBU Symphony Orchestra (BUSO) Annual Gala Concert	16
HKBU Symphony Orchestra (BUSO) Annual Gala Concert	17

Overcoming Vaccine Hesitancy in Hong Kong

Another major objective is to help socially or economically vulnerable communities by meaningfully engaging with them to understand barriers to vaccination, and disseminating effective, comprehensive vaccine education and campaigns. To ensure policy translates into practice, the recognition of population diversity is key to developing tailored approaches to encourage uptake and rebuild trust. In the context of COVID-19, with all its uncertainties, different segments of population need to be reassured and feel that their concerns are attended to.

In that effort we seek to develop local and international partnerships that will establish the HKBU as a leader in interdisciplinary engagement with the challenge of vaccine hesitancy. Apart from potential contributions to real-world vaccine campaigns, we also intend to make theoretical advances in this initiative. Extending the theme of overcoming vaccine hesitancy in Hong Kong, we will strive to develop new analytical approaches and lines of research applicable anywhere. Such research output would of course be extremely valuable.

With the resources of six interdisciplinary laboratories at the HKBU we intend to draw on big data analytics, communication, Artificial Intelligence, policy, economics and other areas to support an interdisciplinary analysis of the interconnected factors underlying vaccine hesitancy. From there we should be able to suggest effective and comprehensive solutions. The School of Communication and the Department of Computer Science will lead and coordinate this effort. The latest Research Assessment Exercise affirms the HKBU's world-leading research position in both areas. HKBU is the top performer in quality of media and communication research. Digital publication of interim research reports will make any findings immediately accessible. In addition to research reports, we will also establish a visual dashboard with up-to-date information about local infections and vaccination progress. We believe this effort will facilitate a coordinated response that not only improves the effectiveness of the battle against vaccine hesitancy, but also helps restore trust and a sense of common purpose in our response to the pandemic.

Rehabilitation programme for COVID-19 pandemic

According to the data released by the Centre for Health and Protection, Department of Health, up to April 2021, there are over 11,600 cases of coronavirus disease (COVID-19) in Hong Kong. In 2020, The World Health Organization also declared the outbreak of the COVID-19 as a global pandemic. To deal with this huge challenge of the global pandemic, Prof Julien Baker, Head of the Department of Sport and Physical Education at HKBU, launched a rehabilitation programme for discharged COVID-19 patients, hope to use interdisciplinary methods to help.

The two-year rehabilitation programme is led by a team including Prof Guo Yike, Vice-President (Research and Development), Prof Bian Zhao-xiang, Director and Chair Professor of the Clinical Division of the School of Chinese Medicine, Prof Julien Baker, Professor and Head of the Department of Sport, Physical Education and Health, and Prof Jia Wei, Chair Professor of the Teaching and Research Division of the School of Chinese Medicine. While medical resources have been directed to developing vaccines and virus detection, this programme is the first-of-its-kind in Hong Kong to focus on patient rehabilitation. This programme aims to test the effects of cardiorespiratory exercise and Chinese herbal medicine on rehabilitation from pulmonary fibrosis of post-discharge patients with COVID-19 and the underlying mechanism.

This programme received a generous donation of HK\$2 million from Tsang Shiu Tim Charitable Foundation in support of the world's first clinically validated rehabilitation programme. It recruits participants to join a randomised controlled trial four groups to a 12-week combined mode of effective cardiorespiratory exercise on aerobic, resistance and inspiratory muscle training. Combined with Chinese herbal medicine, patients can comprehensively recover. The exercises are prescribed online and express companies can deliver Chinese herbal medicine to participants.



All-round rehabilitation for discharged patients

The team hopes that the programme can optimise patients' recovery progress and ease the medical burden in Hong Kong including medical, physical, cognitive and psychological related problems. For patients, they can improve systemic metabolic and immune function through these 12-week tele-exercises and Chinese herbal medicine. The exercise will be facilitated by two educated in exercise science or rehabilitation coach to a group of five to seven patients through the online platform. There are also 12 educational sessions based on psychological theories to improve the patients' motivation, self-regulation, habit-formation relating to exercise. All the participants will be followed up with three functional assessments including blood, urine and faecal tests to assess the programme's effectiveness.

Unfortunate opportunity

COVID-19 heartlessly causes devastating losses in lives around the world. In Hong Kong, we have excellent medical services and vaccine programme to secure citizens from COVID-19. The interdisciplinary approach of the first-of-its-kind rehabilitation programme would take a new step to fight against COVID-19. The implications and findings of the study will have long-lasting healthcare impact to prevent and cope with the next waves of the pandemic. A four-week pilot study has already finished testing the patient recruitment, data collection, instrumentation and the research have started until December 2022.

MusFit Action – muscle fitness for elderly under COVID-19 pandemic

The *MusFit Action* mobile app serves to guide and motivate the participants to continue with their exercise programmes and maintains a healthy lifestyle. Key functions of the mobile app include:

- A digital health adviser function, which enables users to easily obtain accessible health and exercise information as well as sports and health knowledge.
- Demonstration videos for users to follow and do self-workouts at home.
- Reminders to users to do exercise.
- A class schedule of the project's exercise courses for eligible new participants' reference and registration.

Users who register for the mobile app will be asked to fill in a questionnaire, so that the project team can evaluate whether their physical condition is suitable to join the programme. Users can also receive a health report by filling in their personal health information, such as height, weight and lifestyle, through the mobile app, after which a health score will be shown for the users' reference. The *MusFit Action* mobile app is available for free download from the *Apple App Store* and the *Google Play Store*. The *MusFit Action* programme was led by Prof Chow Bik-chu, Prof Cheung Siu-yin, and Dr Lobo Louie from Department of Sport, Physical Education and Health at HKBU; and Prof Patrick Yung Shu-hang, Professor and Chief of the Sports Medicine Team in the Department of Orthopaedics & Traumatology at CUHK. The benefits of the *MusFit Action* mobile app will go beyond maintaining the health and fitness of the participants during this pandemic. With its simple interface, the app can effectively motivate the middle-aged and elderly to pay more attention to their health in the long run. (*MusFit Action* programme website: www.mus-fit.hk).

HKBU invents novel MRI contrast agent for Alzheimer's disease diagnosis

HKBU scientists have invented a novel contrast agent for magnetic resonance imaging (MRI), which enables real-time visualisation and detection of the size and number of amyloid-beta in the brain, a main hallmark of Alzheimer's disease (AD). The invention offers hope for early detection and large-scale routine screening of AD. It can also help to assess the efficacy of drugs used to treat it.

Lack of contrast agent to visualise amyloid-beta

AD is a chronic neurodegenerative disease that constitutes 60 to 70 percent of dementia cases. It is characterised by the abnormal accumulation of amyloid-beta (A β) in the brain. Real-time visualisation of A β contents in the brain is crucial for the diagnosis of AD and the monitoring of the disease's progression.

A positron emission tomography (PET) scan is currently the clinical method used to visualise A β . But this method is expensive, invasive and radioactive, with limited image resolution. MRI is a more widely used clinical imaging tool, which requires a contrast agent to enhance the visibility of targeted objects in a specific location. However, at present there is no clinically approved MRI contrast agent available for the real-time imaging of A β in human brains.

Nanoparticles with silica layer as novel MRI contrast agent

A research team led by Prof Ricky Wong Man-shing and Prof Li Hung-wing, Professors of the Department of Chemistry at HKBU, has created a novel nanomaterial for A β imaging. It loads and coats gadolinium-based nanoparticles, a chemical substance commonly used as an MRI contrast agent, with a specially designed silica layer that can accommodate a proprietary, non-cytotoxic fluorescent cyanine dye. The cyanine dye is an organic compound used to visualise and quantify A β proteins.

The dye-adsorbed silica coating layer turns the gadolinium-based nanoparticles into a bio-compatible, bio-stable and non-toxic agent that is permeable to cell membrane, can penetrate blood-brain barriers, and is neuroprotective for practical biomedical applications. Most importantly, in model experiments with mice, the modified nanoparticles can bind with A β contents and enhance magnetic resonance signals (i.e., electromagnetic waves), and differentiate A β contents in the brain in terms of size and number when MRI is applied.

"By modifying the surface functionalised layer of the gadolinium-based nanoparticles, we have developed a versatile and sensitive MRI contrast agent for the diagnosis of Alzheimer's disease which was proved effective in the mouse model," said Prof Wong.

Passes through blood-brain barriers to bind with A β contents

In the mouse model experiments, HKBU researchers injected the modified nanoparticles into both transgenic mice with over-expressed A β and mice of the control group. MRI of their brains showed that the magnetic signals were stronger and longer in the transgenic mice, which proved that the modified nanoparticles had passed through blood-brain barriers to bind with A β contents in the brain.

Clinical observation showed that the size and number of A β spots in human brains increase with the age of AD patients. In line with this, the research team observed that the brightness of the brain sections of transgenic mice increased with their age, and their magnetic resonance signal intensity was generally higher than that in the mice of the control group. More bright spots were also found in older transgenic mice whereas almost no bright spots could be seen in the mice of the control group. All these results demonstrated the sensitivity and effectiveness of the modified nanoparticles in A β targeting and imaging.

Promising application in AD diagnosis

"The research findings show that our invention demonstrates great potential for the early detection and routine screening of Alzheimer's disease. It can also help monitor disease progression and assess the efficacy of potential drugs," said Prof Li.

With the invention and clinical application of an effective MRI contrast agent for AD, large-scale routine screening for the disease will become possible, enabling early diagnosis and treatment that can achieve better clinical care for patients and reduce public healthcare burdens.

Furthermore, experiments conducted by the research team also found that the modified nanoparticles have inhibited the A β aggregation process and the neurotoxicity of A β effectively. Its high therapeutic potential for AD is another direction of investigation for the research team in future.

The research discovery was published in the international academic journal *Advanced Functional Materials*.

School of Chinese Medicine strengthens elderly services with support from Hong Kong Jockey Club

The School of Chinese Medicine (SCM) at HKBU has received funding totalling about HK\$10 million from The Hong Kong Jockey Club Charities Trust (the Trust) to enhance two SCM service programmes. These are the "Elderly Sponsorship Scheme of the Jockey Club 'Embrace Health' Chinese Medicine Programme" and the online "Chinese Medicine Video Enquiry Service" offered by the Hong Kong Baptist University - Jockey Club Chinese Medicine Disease Prevention and Health Management Centre (the Centre). It is expected that about 18,000 elderly people will benefit from these programmes.

Prof Bian Zhao-xiang, Tsang Shiu Tim Endowed Professor in Chinese Medicine Clinical Studies, and Director and Chair Professor of the Clinical Division at SCM, expressed his gratitude for the Trust's support. "HKBU's School of Chinese Medicine is committed to providing quality Chinese medicine education, research and healthcare services. The support of the Trust allows us to further strengthen our clinical services, and it will benefit more elderly people in need," he said.

Elderly Sponsorship Scheme lowers eligible age, raises subsidies

With funding of more than HK\$5.5 million from the Trust, the Elderly Sponsorship Scheme of the Jockey Club "Embrace Health" Chinese Medicine Programme launched by the Centre has extended its scope and increased its subsidies, thereby improving the quality of life of the elderly and their health management awareness. The eligible age of applicants has been lowered to 60 or above, from 65 or above previously. In addition, the maximum full-rate subsidy per consultation is raised, from HK\$550 to HK\$800, and that for half-rate subsidy is increased from HK\$275 to HK\$400. It is estimated that about 10,000 people will benefit from these enhancements.

Applications for this programme can be made throughout the year. Please visit the programme website or call 3411 2689 for more details.

Encouraging elders to use video health consultation

SCM also received funding of HK\$4 million from the Trust to encourage elders aged 60 or above to use the free online video health consultation service. This service aims to reduce the risk of COVID-19 infection when elders need to commute for consultations.

After making a telephone appointment (tel: 3793 3428) with Chinese medicine health practitioners at the Centre, elders can have a 10-minute health consultation using Zoom, the online video conferencing platform. The consultation covers health tips as well as everyday information about Chinese medicine. Once the consultation is completed, participants receive two complementary packs of health-preserving decoction or herbal tea, which can be delivered to their residence or a designated location. This programme is expected to benefit over 8,000 people. Please visit the above website for details.

HKBU-led team uses online counselling and virtual reality to treat social anxiety

A Hong Kong Baptist University-led (HKBU) research team has launched an online cognitive behavioural therapy (CBT) programme named “EASE Online” to help people with social anxiety disorder (SAD). It incorporates virtual reality (VR) scenarios that are common triggers for social anxiety, allowing participants to respond as they would to real-life situations and receive counselling services from mental health professionals.

The programme is recruiting 600 participants aged 18 to 70 with social anxiety disorder. It will also provide training to around 100 local mental health professionals on how to operate the programme, with the aim of serving more people in need in the long run.

Blended mode of counselling to treat social anxiety disorder

People with social anxiety disorder are characterised by excessive fear and anxiety which are disproportionate to the social situations they encounter, such as meeting someone new, eating or even making phone calls in public. This overwhelming fear can keep them away from social contact and prevent them from seeking counselling services.

Dr Pan Jiayan, Associate Professor of the Department of Social Work at HKBU, who led a team comprising investigators from the Department of Social Work and the Department of Computer Science at HKBU, has developed a 13-week programme named “EASE Online” to help them cope with social anxiety and improve their quality of life with CBT. CBT is a goal-oriented psychotherapy that helps people cope with life challenges by adjusting their patterns of thinking or behaviour.

Having started in 2020, the four-year EASE Online programme will run until 2023. It adopts a blended mode of service delivery including both online and offline counselling. The online service comprises nine weekly online modules delivered on the programme website or mobile app. The online modules include a CBT skills briefing, case demonstration videos, exercises and feedback, a forum and self-assessment.

Integration of VR exposure therapy

The counsellor will provide three face-to-face sessions plus two telephone follow-ups to supplement the online service and review the service progress. VR exposure therapy will be adopted in two out of the three face-to-face sessions. The research team designed five VR environments that reflect real-life scenarios, such as giving a presentation and attending a job interview, for participants to experience the anxiety and fear associated with such settings. These scenarios are designed by the research team and delivered in Cantonese, which are adapted and produced from local cases to fit the language and cultural context of Hong Kong.

Therapist-guided VR exposure therapy is an intermediate treatment step for SAD clients that exposes them to real-life social situations. A trained counsellor will guide participants in person throughout the exposure process and provide a debriefing for them on a variety of strategies as well as advice on how to tackle social anxiety.

In order to evaluate the effectiveness of the programme, participants need to fill in an online questionnaire upon completion of the programme, and at three- and six-month follow-ups, respectively.

Novel alternative tackles social anxiety

“Social anxiety disorder sufferers feel more than just shy or nervous in certain social circumstances. Their difficulty in building up good social and interpersonal relationships brings them unspeakable pain,” said Dr Pan.

“Online counselling and VR exposure therapy create a safe and non-threatening environment for people with social anxiety to learn how to cope with fearful social situations. It is especially suitable for those who do not want to be stigmatised by society or cannot afford traditional face-to-face counselling services. We hope that the EASE Online programme will bring SAD sufferers’ social life back on track,” Dr Pan added.

The programme is supported by a grant of more than HK\$6 million from the Research Impact Fund of the University Grants Committee and HKBU. Besides investigators from HKBU, the EASE Online programme team also includes researchers from the Department of Psychology at Stockholm University, and the programme has also partnered with the Richmond Fellowship of Hong Kong and the Caritas Wellness Link – Tsuen Wan.

The EASE Online programme is now recruiting participants. Registration and participation in the programme are free of charge. Further details can be found on the programme webpage (<https://easeonline.hkbu.edu.hk>). Those who are interested can call 3411 5686 or email easeonline@hkbu.edu.hk for enquiries.

HKBU-led research team develops novel anti-viral targeted drug for nasopharyngeal cancer treatment

A research team led by HKBU has developed a novel anti-Epstein-Barr virus (EBV) drug that can selectively disrupt a viral protein produced by EBV, leading to the shrinkage of tumours caused by the virus. It is the first known agent to successfully target the virus and disturb its latency in tumour cells in this way.

The strategy of reactivation of EBV from its latency is a new trend in nasopharyngeal carcinoma (NPC) therapy, and some non-specific, anti-viral drugs have recently entered phase one or phase two clinical trials. Our new drug represents the first specific targeted agent to disrupt a single viral protein and to potentially reactivate EBV from its latency. These research results were published in the international journal *Proceedings of the National Academy of Sciences*.

EBV infection can lead to cancer

EBV is a human herpesvirus that spreads through close person to person contact. It has infected more than 90% of the human population worldwide.

The human immune system usually suppresses the EBV activity effectively, but in some people the virus continues to exist in the human body and becomes a risk factor for many cancers, such as post-transplant lymphoproliferative disease, Hodgkin lymphoma, Burkitt lymphoma, T/Natural Killer cell lymphomas, some gastric carcinoma, and NPC—a highly prevalent cancer in Hong Kong and southern China.

In search of new therapies for EBV-related carcinomas, a research team comprising Prof Gary Wong Ka-leung, Head of the Department of Chemistry, HKBU; Prof Mak Nai-ki, Professor, Department of Biology, HKBU; Dr Lung Hong-lok, Assistant Professor, Department of Chemistry, HKBU; and Dr Jiang Li-jun, Research Assistant Professor, Department of Applied Biology and Chemical Technology at The Hong Kong Polytechnic University, developed a novel drug which has shown promising results in an animal model.

Novel drug binds and disrupts vital EBV protein

EBNA1 is the viral protein which is expressed in all EBV-associated tumour cells. EBNA1 plays a vital role in the maintenance of the viral genome and the proliferation of EBV-infected tumour cells.

The research team constructed a new peptide drug with higher affinity to the EBNA1 protein, leading to the disruption of the structure and functions of EBNA1. The tumour cells will thus stop proliferating and die eventually.

Furthermore, the study also showed that the new drug emits unique responsive fluorescence signals once bound with EBNA1 or its metal cofactor. The imaging results demonstrated that the drug can enter the nucleus of EBV-infected cells, where EBNA1 resides, to inhibit their growth and division. It could also potentially be applied to tumour cell imaging in the human body.

Reactivating EBV

After EBV infection, the virus can establish latent infection, remain hidden in the infected cells, and promote pathogenic development of the tumour cells. Disruption of EBV latent and induction of EBV lytic cycle is one of the current strategy to control of EBV-associated malignancy. As a result, the EBV-infected cells will die and will be eliminated by the immune system. The research team discovered that the new drug can reactivate EBV lytic cycle through the disruption of EBNA1, and provides a new mentality of treatment of NPC.

Testing the new drug in a mouse model

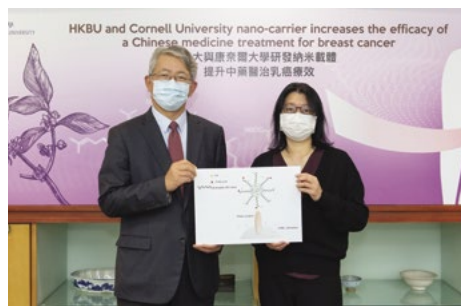
The research team tested the new drug in an animal model by injecting it into mice with heavy tumour burden of EBV-positive nasopharyngeal tumours. The new drug could restore the body weights of the mice in the treatment group to healthy levels and it completely shrank the tumours in 70 days. The survival rate was also remarkably raised to 86% for the treatment group while it was only 6% for the control group without any treatment.

"This discovery lays a good foundation for the development of therapeutics for the treatment of EBV-associated diseases such as NPC," said Prof Gary Wong Ka-leung.

Way forward

Patents have been filed for the new drug and its previous generation. Based on these patents, HKBU researchers have established a HKBU spin-off company, called BP InnoMed Limited, with startup support from the Technology Start-up Support Scheme for Universities, and the new company aims to further develop the drug and carry out clinical trials.

HKBU and Cornell University jointly develop a novel nano-carrier that increases the efficacy of Chinese medicine treatment for breast cancer



Researchers from HKBU, in collaboration with Cornell University, have developed a novel targeted therapy for triple-negative breast cancer (TNBC) that uses a specially-designed nano-carrier to deliver the Chinese medicine compound gambogic acid (GA). The invention enhances the anti-cancer effect of GA and reduces its damage to off-target organs. The invention has the potential to become a more effective therapeutic option for TNBC.

The study was supported by the Vincent and Lily Woo Foundation, and the research findings have been published in the international medical journal *Frontiers in Oncology*.

GA as a breast cancer treatment and its limitations

TNBC accounts for 10-24% of all breast cancer cases and it also grows and spreads faster than other types of breast cancer. There are limited treatment options for TNBC and it has a high risk of recurrence and metastasis. In the advanced stage of the disease, the five-year relative survival rate is only about 12%.

GA is a herbal compound isolated from a dry, brownish resin called gamboge, which is derived from *Garcinia hanburyi*, a plant with a long history of medicinal use in Southeast Asia. Previous studies have shown that GA can inhibit the growth of cancer cells. However, its clinical application is limited by the fact that it is rapidly eliminated from the circulation system and has poor water solubility, which makes it difficult for GA to reach the cancer cells. Furthermore, high dosages of GA can cause damage to off-target organs due to its toxicity.

Nano-carrier increases treatment efficacy of GA

In the search for a more effective treatment protocol for TNBC when compared to existing options, Prof Bian Zhao-xiang, Director and Tsang Shiu Tim Endowed Professor in Chinese Medicine Clinical Studies of the Clinical Division of HKBU's School of Chinese Medicine (SCM) and Dr Kwan Hiu-yee, Assistant Professor of the Teaching and Research Division of SCM, together with the research team of Prof Chu Chih-Chang at Cornell University, designed a novel nano-carrier to enhance GA's efficacy as a TNBC treatment and reduce its off-target toxicity.

The researchers made a bio-degradable nano-carrier out of polyester urea urethane (PEUU), and they decorated it with folate (also known as vitamin B9) and arginine (an amino acid). Folate receptors are highly expressed in TNBC cells, and they can serve as a target for therapy. Arginine is a positively charged amino acid, and it can attract the nano-carrier to the negatively charged tumour surface. These features enable the nano-carrier to target and deliver GA effectively to TNBC cells.

Treatment efficacy tested in mice

The research team tested the efficacy of the GA-loaded nano-carrier as a TNBC treatment in a series of mouse experiments. Two groups of mice with TNBC were treated with the same dosage of GA, one in the form of the GA-loaded nano-carrier, and the other in the form of free GA. After 17 days of treatment, the average reduction in tumour weight of the GA-loaded nano-carrier group was 67.6% higher than the free GA group. The results showed that the GA-loaded nano-carrier is more effective at shrinking the tumours than the free GA.

In addition, the group treated with the GA-loaded nano-carrier had 0.23 µg/mL of GA in their tumours two hours after injection, and the tumour GA concentration of the GA-loaded nano-carrier group was three times of the free GA group, showing that GA is being delivered to TNBC cells more effectively with the nano-carrier. Also, the concentration of GA in the plasma of the GA-loaded nano-carrier group two hours after injection was nearly three times of the free GA group, showing that the GA carried by the nano-carrier stays in the circulation system for longer.

Reduced off-target damage to other organs

Furthermore, when compared with free GA, the GA delivered by the nano-carrier caused less damage to the off-target organs of the mice including their hearts, livers and lungs. It also caused minimal damage to their kidneys and spleens as relatively low levels of GA were detected in these two organs.

"As demonstrated in our study, the novel nano-carrier for GA offers many benefits when it comes to treating TNBC," said Dr Kwan Hiu-yee.

"The application of nanotechnology in this study modernises the delivery of Chinese medicine, thereby enhancing its therapeutic efficacy. We believe that our nano-carriers have great clinical potential to treat TNBC and other types of cancer," said Prof Bian Zhao-xiang.

HKBU launches fact-checking service to fight fake news

With the vision of providing an authoritative, professional and impartial fact-checking service amidst the proliferation of fake news, and to improve the public's media literacy in the digital era, the School of Communication at HKBU launched the HKBU FactCheck Service today in December. It is the first research-based, systematic fact-checking service launched and operated by an independent academic institution in Hong Kong.

First fact-checking service operated by a Hong Kong academic institution

As a "research-public service" product, the Service is characterised by a high level of transparency as well as an integration with academic research in journalism and communication studies. It develops towards the direction of a human-machine hybrid intelligence system, representing an innovative concept of Artificial Intelligence (AI)-supported fact-checking.

The pilot run of the Service involving manual fact-checking was carried out in September this year. Selected suspicious content appearing in popular online and social media platforms in Hong Kong were identified for investigation by the project team. The topics covered politics, business, health, science and other social issues. Results of the fact-checking were shared on the Service's website and social media platforms including Facebook and Instagram.

Mobile app for crowd-sourced fact-checking

The Service will be further enhanced with the launch of the BU FactCheck app. It serves as a platform on which the Service's project team joins hands with veteran media practitioners to conduct fact-checking.

The app, currently in soft launch, applies a crowd-sourced fact-checking strategy to aggregate ratings, comments and suspicious content by experts. Media professionals will be invited to register for the app, act as contributors and participate in the fact-checking process of information carried in viral posts. They can upload evidence to the app related to suspicious content in various formats such as pictures, videos, text and web-based information. Aggregated fact-checking results will be published via the app. Suspicious claims will be classified in categories including "True", "Partially True", "False", or "Unsubstantiated".

The public can also download the app soon to receive up to date fact-checking results.

Fact-checking characterised by credibility and transparency

The HKBU FactCheck Service is operated jointly by the AI and Media Research Lab and Institute for Journalism and Society of HKBU's School of Communication, and is under the University's System Health Lab. It is co-directed by the School of Communication's Dr Celine Song, Associate Professor, and Mr Raymond Li, Associate Professor of Practice, and is managed by Dr Stephanie Tsang, Assistant Professor, with the support from Dr Nick Zhang, Assistant Professor.

"Through publishing fact-checking articles regularly, the Service is dedicated to raising public awareness of misinformation, guiding the public to determine what is false and truthful information, and advancing journalism teaching and learning. At a later stage, the project will make use of the collected data to develop a resourceful AI-supported data platform for carrying out impactful research projects," said Dr Celine Song.

Mr Raymond Li said: "The mobile app facilitates interaction between scholars, professionals and individual citizens. It enhances the efficiency in identifying fake news in a way that has a high level of credibility and transparency. With HKBU's extensive network in the media and communication industry, I believe we can take a leading role in providing a trustworthy fact-checking service for the community."

Future development: Computational approach to fact-checking

The project team is planning to develop an annual index of news credibility on selected topics and platforms. Annual reports will be published to review and give insights into the status of disinformation in Hong Kong. In the long run, the Service plans to accept third party requests in conducting theme-based academic surveys and fact-checking on specific issues.

The Service is in the process of developing Hong Kong's first Cantonese language AI-supported Misinformation Research Database, which adopts a computational approach to fact-checking. Instead of selecting suspicious claims manually and conducting fact-checking in a time-consuming manner, a system driven by AI algorithms will be developed to enable automatic detection and fact-checking of viral and suspicious information.

With this platform in place, researchers can search and browse extensive multi-labelled datasets about fake news in Hong Kong. It will benefit the academic community in its journalism research, and assist policymakers and the public in detecting social trends as well as taking necessary actions to fight misinformation.

HKBU virtual hackathon connects global youth under “new normal”

HKBU hosted the Global Virtual Hackathon 2021 from 7 to 9 April. The competition aimed to address the sustainability of the “new normal” under the COVID-19 pandemic, and it brought together around 90 university students from 16 countries and cities who then devised innovative plans and creative solutions to the associated issues in 48 hours.

With the theme “Hack for a Sustainable New Normal”, the competition was organised for the second year in a row by the Department of Computer Science, School of Communication, Centre for Innovative Service-Learning and Office of Student Affairs at HKBU in collaboration with West Virginia University in the US, Ritsumeikan University in Japan and the National Cheng Kung University in Taiwan.

University students from 16 countries and cities, including Bangladesh, Hong Kong, India, Italy, Taiwan and the UK, were divided into 16 teams, with each team comprising students with diverse cultural and academic backgrounds. They then worked together to design solutions that addressed the four sustainable development goals of the United Nations, namely “quality education”, “good health and well-being”, “sustainable cities and communities”, and “responsible consumption and production”.

During the competition, participating teams were provided with a wide range of online training workshops, and they were supported by 19 mentors from different professional fields. Interactive discussions across different regions and time zones between team members were conducted using video conferencing software. The teams created online surveys, and interviewed experts or target audiences prior to developing their creative solutions. Their ideas were then peer-reviewed and presented to judges via a three-minute video.

The championship title and the Best Team Work Award went to the team that came up with the idea of creating an online platform called “Quokkconnect”. It aims to help children overcome physical boundaries and make friends with people from different regions, and it also provides them with opportunities to work on projects, including those focused on sustainable development. The team hopes to collaborate with non-governmental organisations and enhance children’s mental health and learning abilities through the platform.

The first runner-up prize was awarded to a team that came up with the idea of developing a mobile app to promote sustainable diets. The second runner-up team’s proposal focused on creating a mobile app called “Skillshack” that aims to promote peer teaching and skill sharing.

Joanne Luo Yi, one of the team members and a first-year student from the Bachelor of Business Administration programme at HKBU, said that the Hackathon gave her an opportunity to brainstorm ideas that could bring positive changes to society. “It was a memorable experience working with students from different regions. I have become more proactive in terms of teamwork, and I’m also more self-motivated when it comes to acquiring new knowledge,” she said.

Apart from receiving a cash prize, students from the top winning teams will be eligible for scholarship opportunities offered by HKBU and West Virginia University.

Dr Albert Chau, Vice-President (Teaching and Learning) of HKBU, said at the opening session that the participants are indeed some of the most dedicated young minds from all over the world, and they put their knowledge and ideas together to create projects that can have a positive impact on the world. “I feel very privileged that HKBU and our students are part of this international initiative. This hackathon fully encapsulates HKBU’s DNA: Caring, Creative, and Global,” he said.

Dr Kristen Li, a member of the organising committee of the competition and a lecturer of the Department of Computer Science at HKBU, said: “The first virtual hackathon last year received an overwhelming response. We hope that we can keep on engaging with students from around the world, as we want to encourage them to overcome the language barriers and time differences that exist between regions. The participants showcased their energy and creative minds in the competition, as well as their eagerness to embrace learning opportunities under the ‘new normal.’”

Technology Startup Support Scheme for Universities (TSSSU) 2020-21: Spin-off Companies

In 2020-2021, the Technology Start-up Support Scheme for Universities (TSSSU) awarded six start-up companies with the funding of HK\$8 million, supporting the commercialisation of their research and development results.

Track 1

	Name of Academics	Company Name	Company Description
1	Dr Lung Hong-lok, Assistant Professor of Department of Chemistry, Faculty of Science Prof Gary Wong Ka-leung, Head of the Department of Chemistry, Faculty of Science	BP InnoMed Limited	BP InnoMed Limited develops therapeutic molecules for cancer treatment. Molecules designed for nasopharyngeal cancer have been tested in preclinical trials, while molecules designed for bladder cancer, prostate cancer and liver cancer are under development.
2	Prof Ken Yung Kin-lam, Former Associate Head of the Department of Biology, Faculty of Science	CD133 Innovation Limited	CD133 Innovation Limited is committed to developing and perfecting an innovative technology in nanomaterial-based and globally available applications for promoting the healthcare and clinical practices, which targeting to restoring health and extending life of patients with incurable diseases.
3	Dr Tsang Siu-wai, Part-time Lecturer of the School of Chinese Medicine	Herbap Biotech Limited	Herbap Biotech Limited is a green company founded by two Hong Kong scientists who specialise in phytomedicinal research and product development. One of its signature products is a phytonutrient-based fluid for the remedy of hypertrophic scars.
4	Prof Ricky Wong Man-shing, Professor of the Department of Chemistry, Faculty of Science	MIND and Tech Limited	MIND and Tech Limited develops nanoparticle-based tools for use in medical imaging and diagnostics. It seeks to provide simple and cost-effective solutions for customers in the early detection of neurodegenerative diseases.
5	Dr Jeffery Huang Zhi-feng, Associate Professor of the Department of Physics, Faculty of Science Prof Ken Yung Kin-lam, Former Associate Head of the Department of Biology, Faculty of Science	Mat-A-Cell Limited	Mat-A-Cell Limited has developed Mat A® culture nanomatrix, a biological substrate for growing cell culture that has been coated with a patented nanomaterial. It is used for the proliferation and differentiation of neural stem cells and does not require the addition of growth factors, thereby minimising the risks of forming cancer.

Track 2

	Name of Academics	Company Name	Company Description
1	Prof Joseph Ng Kee-yin, Professor of the Department of Computer Science, Faculty of Science Prof Howard Ling Ho-wan, Adjunct Professor of the Department of Marketing, School of Business	CP2Joy IT Co. Limited	Founded in 2019, CP2Joy IT Co. Limited is a Hong Kong start-up that manufactures computer equipment, software and technologies designed for disabled people and other vulnerable groups in the society. The company's first product is CP2Joy, a revolutionary voice control system designed to aid severely disabled people when using computers.

To nurture potential start-ups and help them turn innovative technologies into a successful business venture, the Knowledge Transfer Office (KTO) has launched a Business Entrepreneurship Support and Training (BEST) programme that provides entrepreneurship training and support to HKBU faculty members, students and alumni. Many HKBU spin-off companies made great achievements and won multiple awards on the global stage after going through the programme.



BP InnoMed Limited and Dr Lung Hong-lok Won Best Public Communicator at 2020 BRACE Award Venture Competition

BP InnoMed Limited, a HKBU spin-off company co-founded by Prof Gary Wong Ka-leung and Dr Lung Hong-lok, Department of Chemistry, Faculty of Science, has been awarded Best Public Communicator at 2020 BRACE Award Venture Competition. Organised by the Asian Fund for Cancer Research, the competition seeks to catalyse the advance and commercialisation of cancer-related innovations.

BP InnoMed Limited has developed an antiviral drug for treating nasopharyngeal cancer and a therapy that specifically targets Epstein-Barr virus (EBV). EBV is a ubiquitous human herpes virus that spreads primarily through saliva, while nasopharyngeal cancer is an EBV-associated cancer with the highest incidence rate recorded in South China. "Our solutions can be used not only to kill but also to image nasopharyngeal tumour cells," says Dr Lung.



Mat-A-Cell Limited established R&D line and received landing subsidy from Guangdong Provincial Government and Baiyun District

Mat-A-Cell Limited, a HKBU spin-off company co-founded by Prof Ken Yung Kin-lam, Department of Biology, Faculty of Science and Dr Jeffery Huang Zhi-feng, Department of Physics, Faculty of Science, established a subsidiary in Guangzhou namely "Guangzhou Mat-A-Cell Limited" and joined "匯龍台港澳青年創新創業基地" in May 2020. Landing subsidy of RMB 100,000 and RMB 200,000 were received from the Guangdong Provincial Government and Baiyun District respectively in December 2020 to support R&D and commercialization in Guangzhou.

Since January 2021, Mat-A-Cell Limited has been advancing their product and developed "The Technology Combination of New Stem Cell Culture Nanomaterials and Stem Cell Serum-Free Medium", in cooperated with Guangdong Guoke Cell Technology Company Limited on a joint project.



CD133 Innovation Limited was awarded Asia Pacific's Most Valuable Companies Awards

CD133 Innovation Limited, a HKBU spin-off company co-founded by Prof Ken Yung Kin-lam, Department of Biology, Faculty of Science and Dr Cathy Lui Nga-ping, HKBU alumna, achieved Asia Pacific's Most Valuable Companies Award 2020-2021. The award was presented by Mediazone Publishing in February 2021, in recognition of the company's achievement in fighting against cancer to new heights with a revolutionary technology. CD133 Innovation

Limited is committed to pursuing a precise and sensitive detection of circulating tumour cells (CTC) through our bio-imaging technology together with the current early cancer detection method.



MIND and Tech Ltd was awarded 2021 Most Valuable Companies Awards in Hong Kong

In June 2021, MIND and Tech Limited, a HKBU spin-off company, was awarded 2021 Most Valuable Companies Awards in Hong Kong organised by Mediazone Publishing in recognition of the company's innovative medical imaging technology. The company provides a cost-effective, simple, direct yet sensitive platform for early neurodegenerative diseases detection and diagnostics. Benefiting from the brand's designed fluorophore, it is the first detection

assay capable of measuring the subtle changes in the expression profile of disease associated biomarkers. The technology is invented by a research team led by Prof Ricky Wong Man-shing, Department of Chemistry, Faculty of Science.



MIND and Tech Limited Won Hong Kong Most Outstanding Leaders Awards 2021

MIND and Tech Limited was also awarded Hong Kong Most Outstanding Leaders Awards 2021 at a ceremony organised by Corphub Asia on 24 June 2021. MIND and Tech was recognised for its remarkable achievements in providing developing novel nanoparticle based tools for medical imaging and Nano Diagnostics. All awardees were selected by an independent committee comprising industry leaders, business executives and experts to ensure fairness, openness, and impartiality.

Holistic Startup Training Programme

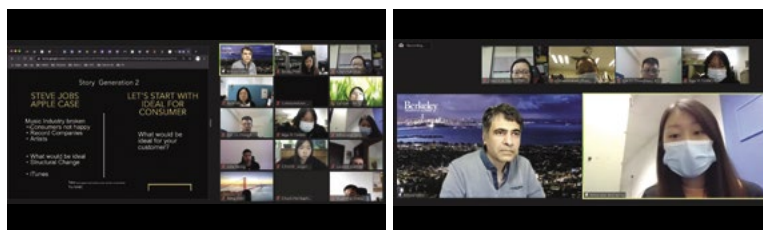
The Holistic Startup Training Programme comprises online courses, offline seminars and one-on-one customised consultations designed to help participants amplify their ideas, validate their business propositions, and develop unique business models with the guided support of international and local experts. There are three training modules in the programme –

1. HSTP 1001: Building a winning team and pave way to successful ventures & research impact
2. HSTP 1002: Ideation & business modelling
3. HSTP 1003: How to captivate any audience and connect emotionally with your audience

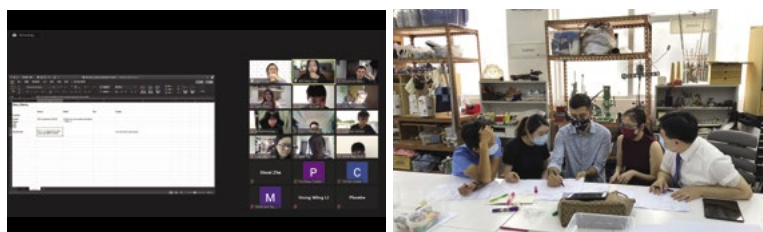
This project has contributions to the United Nations Sustainable Development Goal 4: Quality Education, and Goal 8: Decent Work and Economic Growth.

The first module *HSTP1001 — Building a winning team and pave way to successful ventures & research impact* was successfully held in November and December 2020. Thirteen start-up teams were invited to attend classes.

After the teams shared their company challenges, they immediately received advices from our lead instructor Prof Ikhlaz Sidhu on ways to amplify their research impact, turn technologies into commercial products and set the roadmap to commercialisation.



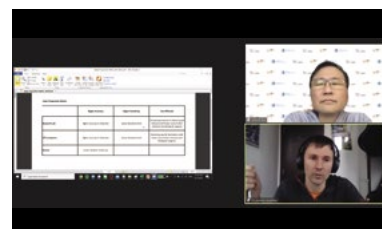
Eight HKBU spin-off companies joined the second module *HSTP1002 Ideation & Business Modelling* at MakerBay last May and June. In this three-day module, participants reviewed their business by taking their ideas and inventions through a design-thinking process. Ultimately, they were able to find the right solution for their problems.



This programme began with a masterclass on 29 May 2021. Under the guidance of Mr Cesar Jung-Harada, Director of MakerBay Limited, the participants went through the design-thinking process as a team by brainstorming, prototyping and presenting their project ideas.

A session on how to communicate effectively with your audience. Eight start-up teams attended the *HSTP1003 module – How to captivate any audience and connect emotionally with your audience* in March 2021.

Our lead instructor Dr Alfred Tan, who is also the Head of Knowledge Transfer Office, shared his rich pitching experience in the class. The teams received further advice on presentation skills from Dr Tan through one-on-one consultations. They received tips and tricks on selling ideas to an audience, as well as developing rapport with an audience.



For details, please visit <http://kto.hkbu.edu.hk/eng/HSTP>.

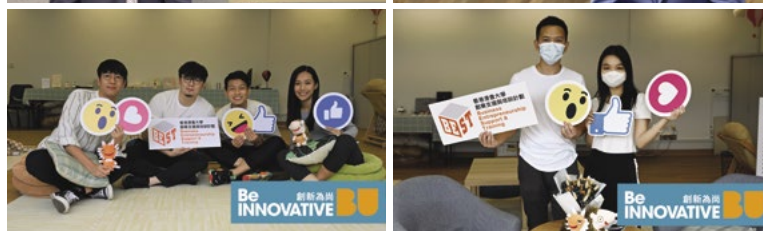
Cultivating Innovation and Entrepreneurship Under the New Normal

To keep everyone safe and healthy during the pandemic, we have reduced gatherings and practised social distancing. While this was the right thing to do, it also drastically reduced our ability to share ideas and gain feedback. In light of this, BEST has initiated two talk shows called “BEST VIP” and “BEST Signal” at the beginning of this year.

BEST VIP invites inspirational leaders from different sectors and industries worldwide to share with young people their life experiences, entrepreneurial stories and practical tips for starting a business.

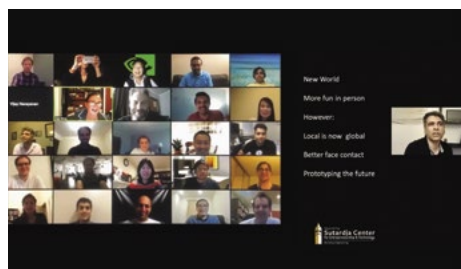


BEST Signal hosted by HKBU students, seeks to understand the concerns and challenges facing young people of today's world. It covers a wide range of trendy topics which university students typically care about. It also invites inspirational leaders and HKBU alumni to share insights on how to better navigate in uncertainties.



Distinguished Lecture Series

HKBU invited renowned speakers from Hong Kong and overseas to share their insights on innovation and entrepreneurship under the new normal. There were over five online/hybrid seminars held in 2020–21. Over 500 people had been benefitting from these seminars where they could attain more practical skills and insights on innovation and entrepreneurship.



Webinar – Innovation in Times of Change

To help us better navigate in these uncertain times, KTO invited Prof Ikhlaz Sidhu, Founding Director and Chief Scientist of Sutardja Center for Entrepreneurship and Technology, University of California, Berkeley, to share with us his roadmap in a webinar held on 25 September 2020. Prof Sidhu also shared business strategies and practical tips how to enhance the impact of an innovation, as well as insights into future consumer demands.



Webinar – Five Common Mistakes in Start-up

On 7 December 2020, KTO invited Mr Sam Lee Kin-sum, a member of the BEST community and an experienced consultant, to share his insights on start-ups. Mr Lee provided practical tips on how to run a start-up. He also taught students tactics on how to plan for their future career.

Hybrid Seminar by Prof Otto Lin

HKBU invited Prof Otto Lin Chui-chau, Senior Advisor to the President and Vice Chancellor of HKBU, to give seminars on “Laozi – Principle on Innovation” and “University’s Role in Knowledge Transfer” on 24 May and 4 June 2021. In these seminars, Prof Lin illustrated Laozi’s principle on innovation on three aspects: source of innovation, implementation of innovation, and innovators’ preparedness for a changing environment. The seminar aroused interest in the audience over the legacy and impacts of Laozi in modern times as well as determinants of a university’s success.



Hybrid Seminar – Our IT Journey: Mapping Out Our Future from A Public Policy Perspective

To promote the conversion of research findings into impactful applications, KTO invited Mr Tony Lam Chik-ting, Senior Advisor of Tonic Consulting Limited, to give a talk on funding policy from a government perspective in June this year. His insights has inspired our faculty members to map out their future with underpinning research and inventions.

Opportunities for Aspiring Student Start-up Teams

Hong Kong Techathon 2021 – Tech Your Way to Business

Hong Kong Techathon 2021, a seven-day start-up pitching competition jointly organised by Hong Kong Science and Technology Parks Corporation and all of seven Hong Kong universities, was held in January this year. Over 1,000 participants enrolled in the competition; and together they presented over 100 projects in one of four categories: new generation technology, AI & fintech, smart city, and social impact & health tech.

In particular, the project “Robohire” by HKBU postgraduate business students Jovan Trajceski and Irina Flamme was crowned champion of AI & fintech.



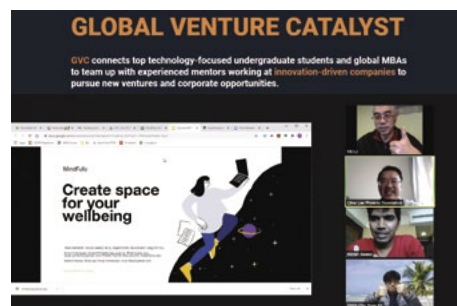
Pitch Perfect 1.0 – A Student-led Pitching Competition

Co-organised by the Knowledge Transfer Office and the Centre for Innovative Service-Learning at HKBU, Pitch Perfect 1.0 is a student-led pitching competition made for aspiring entrepreneurs. It seeks to equip start-up teams with the skills to make a business pitch deck. Participants attended training workshops, online modules and consultation sessions given by industry mentors and placed their business ideas into test.



Global Venture Catalyst

Global Venture Catalyst (GVC) is a social network initiative organised by the University of California, Berkeley. It provides a global platform for students to connect with corporates and venture capitals. Nine HKBU students participated virtually in the GVC programme in mid-January 2021. Over the course of two weeks, they worked with students from other top-ranked universities and received mentorship from industry experts.

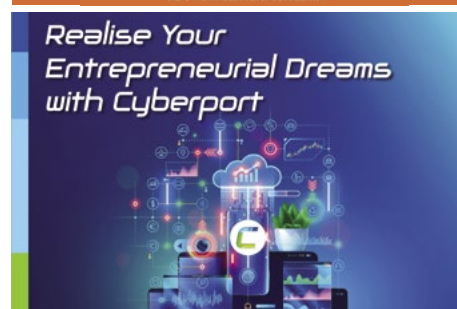


Promising HKBU Start-up Teams Join Various Incubation Programmes

With the staunch support from our community partners, KTO nominated several HKBU start-up teams to join various incubation programmes. These include:

Science and Technology Entrepreneur Programme (STEP) by Hong Kong Science and Technology Parks Corporation (HKSTP) – STEP is a one-year start-up programme designed for tech-focused entrepreneurs. Admitted teams will receive all-round support, including seed funding (HK\$100,000 per team), coaching and training. Five start-up teams nominated by KTO were admitted into this year's programme. They were Foodmula, Go Live, Dualspace, iRetiree and HONGKONG BAUHINIA TCM LIMITED.

Cyberport Creative Micro Fund (CCMF) – CCMF sponsors high-potential digital tech start-ups and businesses through a HK\$100,000 grant. Participants may use the grant over six months to produce proof-of-concepts and prototypes. Two start-up teams nominated by KTO were admitted into this year's programme. They were LearningCo. (Hong Kong) and PAJO Visitor Engagement Limited.



Achievements of HKBU students and Spin-off Companies

Name of Team / Winner	Competition / Programme	Achievement
<u>HONGKONG BAUHINIA TCM LIMITED</u> Tian Yuan-yang, Postgraduate, School of Chinese Medicine Zhou Wu, Postgraduate, School of Chinese Medicine	The 7 th Hong Kong University Students Innovation and Entrepreneurship Competition	Second Prize in Entrepreneurship Category (Startup)
<u>Renew</u> Chu Yung-kit, Year 4 student, Faculty of Social Sciences Chan Hei-man, Year 4 student, School of Business Wu Hao-xin, Postgraduate, School of Communication		Merit Award in Entrepreneurship Category (Startup)
<u>Renew</u> Chu Yung-kit, Year 4 student, Faculty of Social Sciences	2020 Qianhai Guangdong-Hong Kong-Macao Youth Innovation and Entrepreneurship Competition	Bronze Award
<u>人人學信息技術</u> Tai Ka-chun, Alumnus, Faculty of Science		Bronze Award
<u>RoboHire</u> Jovan Trajceski, Postgraduate, School of Business Irina Flamme, Postgraduate, School of Business	Hong Kong Techathon 2021	Champion in the track of AI & Fintech
<u>TeaTimes</u> Vivian Lai Chui-yan, Alumna, School of Business Marvis Lee Chun-hang, Alumnus, School of Business	Science and Technology Entrepreneur Programme (STEP) of the Hong Kong Science Park	HK\$100,000
<u>iRetiree</u> Justin Kwong Ching-in, Year 3 student, Faculty of Social Sciences Mildred Chan May-tsun, Year 3 student, Faculty of Arts		HK\$100,000
<u>HONGKONG BAUHINIA TCM LIMITED</u> Tian Yuan-yang, Postgraduate, School of Chinese Medicine Zhou Wu, Postgraduate, School of Chinese Medicine		HK\$100,000
<u>FoodChain</u> Naomi Chan Wing-sum, Alumna, School of Business David Ho Kin-ting, Alumnus, School of Business Steward Chan Chi-man, Alumnus, Faculty of Science	Cyberport University Partnership Programme (CUPP) 2020	HK\$100,000 from the Cyberport Creative Micro Fund
<u>LearningCo(HK)</u> Leung Yuen-wei, Alumnus, Faculty of Arts	Cyberport Funding Programme	HK\$100,000 from the Cyberport Creative Micro Fund
<u>PAJO Visitor Engagement Ltd.</u> Alexander Hein, Postgraduate, School of Business		HK\$100,000 from the Cyberport Creative Micro Fund
<u>13Q</u> Wong Man-hin, Year 4 student, School of Business Chan To, Year 3 student, School of Business Cheng Mei-yan, Year 4 student, School of Business To Kwok-tou, Year 4 student, School of Communication Kan Ka-lok, Year 4 student, Faculty of Social Sciences	HKGCC Business Case Competition 2020	2 nd Runner-up in the Citibank track with HK\$10,000 Cash Prize

Name of Team / Winner	Competition / Programme	Achievement
RSP新一代高效能大資料分析平臺 李俊傑 藍鯨國數(深圳)科技有限公司 首席技術官 (CTO) Alumnus, Faculty of Science	第十二屆中國深圳創新創業大賽深港 澳高校預選賽區暨第二屆深圳虛擬大 學園創新創業大賽	市賽優秀獎 二等獎 (預選決賽)
深圳市高佳海綿科技有限公司 沈峻 深圳市高佳海綿科技有限公司 首席執行官 (CEO) Alumnus, School of Business		二等獎 (預選決賽)
金雷團隊 陳穎婕 Alumna, School of Chinese Medicine		入圍獎 (預選決賽)
諾信中醫藥創新研發團隊 鄭亞 Zheng Ya Senior Research Assistant, School of Chinese Medicine		入圍獎 (預選決賽)
Quality control marker and its use in herbs authentication Hong Kong Authentication Centre of Valuable Chinese Medicines Limited HKBU Spin-off Company	2 nd Guangdong-Hong Kong-Macao Greater Bay Area (GBA) High-Value Patent Portfolio Contest 2020	Excellence Award (the third prize)
Anti-scratch thin film coating on metal surface Cathay Photonics Limited HKBU Spin-off Company	Special Edition 2021 of the International Exhibition of Inventions of Geneva (Geneva Inventions Expo)	Gold Medal with the Congratulations of Jury
Therapeutic inhibitor for Epstein-Barr virus (EBV)-associated cancers with responsive optical imaging function BP InnoMed Limited HKBU Spin-off Company		Gold Medal
Quality control markers for use in herbs authentication Hong Kong Authentication Centre of Valuable Chinese Medicines Limited HKBU Spin-off Company		Gold Medal
Portable body motion analyzer for elderly fall risk assessment Booguu Co Ltd. HKBU Spin-off Company		Silver Meda
Dr Cathy Lui Alumna, Co-founder and Chief Executive Officer of OPER Technology Limited HKBU Spin-off Company	Distinguished Alumni Award	HKBU Distinguished Alumni Award
BP InnoMed Limited HKBU Spin-off Company	2020 BRACE Award Venture Competition	Best Public Communicator Award
MIND and Tech Limited HKBU Spin-off Company	Hong Kong Most Outstanding Leaders Awards 2021	Hong Kong Most Outstanding Leaders Awards 2021
MIND and Tech Limited HKBU Spin-off Company	2021 Most Valuable Companies in Hong Kong Awards	Mediazone's Hong Kong's Most Valuable Companies
CD133 Innovation Limited HKBU Spin-off Company	Asia Pacific's Most Valuable Companies Awards 2020-2021	Mediazone's Asia Pacific's Most Valuable Companies Award
Guangzhou Mat-A-Cell Limited Subsidiary of Mat-A-Cell Limited HKBU Spin-off Company	匯龍台港澳青年創新創業基地	Incubation Awardee With landing subsidy of RMB 100,000 and RMB 200,000

HKBU and Tsinghua University sign agreement to establish AI Laboratory for Creative Arts

The Augmented Creativity Laboratory at HKBU and the Institute of Artificial Intelligence at Tsinghua University signed a collaboration agreement on 14 January to establish the Tsinghua-HKBU AI Laboratory for Creative Arts.

The agreement was signed by Prof Johnny M Poon, Associate Vice-President (Interdisciplinary Research) of HKBU, and Prof Sun Maosong, Executive Deputy Dean of the Institute of Artificial Intelligence at Tsinghua University. Prof Guo Yike, Vice-President (Research and Development) of HKBU; Dr Yang Liwei, Senior Manager of the Office of the Associate Vice-President (Mainland Development) at HKBU; Prof Liu Zhiyuan, Deputy Director, Departmental Affairs Committee, Department of Computer Science and Technology at Tsinghua University; Prof Li Guoliang, Deputy Director, Department of Computer Science and Technology at Tsinghua University; and Prof Liu Yang, Director, Research Institute of Artificial Intelligence, Department of Computer Science and Technology at Tsinghua University, witnessed the exchange of the agreement.

Under the agreement, HKBU and Tsinghua University will undertake collaborative research in the broad fields of science and the arts, and will jointly organise events such as conferences, symposiums and expert seminars to facilitate interdisciplinary interactions and foster knowledge exchange. The two universities will combine their respective strengths to conduct impactful research on artificial intelligence (AI)-based art creation, especially music composition and music performance.

The Augmented Creativity Laboratory is one of the six interdisciplinary research laboratories established by HKBU last year to expand the University's research strength and drive cutting-edge research in focused areas.

"The collaboration between HKBU and Tsinghua University will meet the fast-growing need for the application of AI in art creation," remarked Prof Johnny M Poon. "I believe the establishment of the Tsinghua-HKBU AI Laboratory for Creative Arts will bring synergies to both sides and further contribute to the development of research in this area."

The agreement was signed by Prof Johnny M Poon, Associate Vice-President (Interdisciplinary Research) (middle) on behalf of HKBU. Prof Guo Yike, Vice-President (Research and Development) of HKBU (right) and Dr Yang Liwei, Senior Manager of the Office of the Associate Vice-President (Mainland Development) at HKBU (left) witnessed the exchange of the agreement.

The agreement was signed by Prof Johnny M Poon, Associate Vice-President (Interdisciplinary Research) (middle) on behalf of HKBU. Prof Guo Yike, Vice-President (Research and Development) of HKBU (right) and Dr Yang Liwei, Senior Manager of the Office of the Associate Vice-President (Mainland Development) at HKBU (left) witnessed the exchange of the agreement.

Prof Sun Maosong (second right), Executive Deputy Dean of the Institute of Artificial Intelligence signed the agreement on behalf of Tsinghua University. Prof Liu Zhiyuan, Deputy Director, Departmental Affairs Committee, Department of Computer Science and Technology (first left); Prof Li Guoliang, Deputy Director, Department of Computer Science and Technology (second left); and Prof Liu Yang, Director, Research Institute of Artificial Intelligence, Department of Computer Science and Technology at Tsinghua University (first right) witnessed the exchange of the agreement.

HKBU Symphony Orchestra (BUSO) Annual Gala Concert

The 2020 HKBU Symphony Orchestra (BUSO) Annual Gala Concert, which featured the renowned pianist Ms Colleen Lee Ka-ling along with the Collegium Musicum Hong Kong, was like no other. Due to the COVID-19 pandemic, the performance was recorded in the empty Concert Hall in the Hong Kong Cultural Centre on 30 June 2020, but it was later presented digitally to the public through YouTube and Facebook from 3 to 31 July, 2020. Overall, the Concert was not only an experiment in adopting video streaming technology for a performance, but it also represented a journey for our young musicians as they continue their quest to lead a career in music.

With restrictions on the use of performing venues changing from time to time according to the pandemic's development, the rehearsals for the Gala Concert lasted for only two weeks. In a bid to get the BUSO ready during this unique time, Prof Johnny M Poon, Dr Hung Hin Shiu Endowed Professor in Music and Head of the Department of Music, who also serves as the music director and conductor of the BUSO, introduced small group practice sessions for members of the BUSO before the final rehearsal. However, it was only on the day of the performance that the entire ensemble of around 80 members was able to meet on stage for the final rehearsal.

During the pandemic, another social distancing measure was introduced to separate musicians playing wind instruments, with transparent partitions installed on stage. Such arrangements required musicians to be even more focused in order to keep in time with others, because the partitions prevented not only the spread of the virus, but also the smooth transmission of sound.

Besides, after a successful trial involving the use of 4K video streaming technology for the Gala Concert's production and broadcast, Prof Poon believes that the process has presented new opportunities for the Department to share students' performances with stakeholders and the community at large on online platforms in the future. As a result, the talents of HKBU's student musicians can be showcased to a wider audience more effectively.

Other than creative arts with technology, professors at HKBU are also bringing history and culture to life with the use of technology. Nowadays, in the new normal, when visiting a public enclosed space such as a museum may create a sense of unease for some, our professors in historical studies are bringing their research outcomes and expert knowledge to the digital world. Such Culture Tech is more than just digitalising historical artefacts, as our professors actually are building digital humanity platforms wherein anyone can virtually visit and explore the historical treasure trove of the past from the safety of their computer at home – a true "historical museum tour from your home" experience in the new normal. Such Culture Tech is also very timely for serving the needs of online learning for students under pandemic lockdowns.

Performance Measure - Key Performance Indicators

Performance Indicators	2019-20	2020-21
Number of patents filed in the year (with breakdown by country and type)	Country	Country
	17 (US)	9 (US)
	7 (CN)	4 (CN)
	2 (PCT)	4 (PCT)
	3 (HK)	2 (HK)
	1 (EP)	1 (EP)
	1 (JP)	3 (TW)
		1 (AU)
		1 (JP)
		1 (IN)
		2 (SG)
		4 (GB)
		3 (DE)
		2 (FR)
		2 (CH)
		1 (AT)
		2 (BE)
		1 (IE)
		1 (IL)
		1 (LU)
		1 (MC)
		2 (NL)
		1 (PL)
		2 (SE)
		1 (CA)
	Type	Type
	9 (A61)	19 (A61)
	1 (A62)	2 (A62)
	2 (B09)	1 (B29)
	1 (B29)	19 (C07)
	2 (B32)	2 (C12)
	4 (C07)	1 (C40)
	1 (C12)	3 (G01)
	1 (C40)	5 (H01)
	2 (G01)	
	2 (G06)	
	6 (H01)	

Performance Indicators	2019-20	2020-21
Number of patents granted in the year (with breakdown by country and type)	Country	Country
	12 (US)	9 (US)
	5 (CN)	3 (CN)
	7 (HK)	5 (HK)
	2 (EP)	3 (EP)
	4 (TW)	3 (DE)
	1 (FR)	3 (GB)
	1 (KR)	2 (TW)
	2 (DE)	1 (JP)
	1 (CH)	3 (FR)
		2 (CH)
		1 (KR)
		2 (SG)
		1 (AT)
		2 (BE)
		1 (IE)
		1 (IT)
		1 (LU)
		1 (MC)
		2 (NL)
		1 (PL)
		2 (SE)
		1 (ES)
		1 (CA)
	Type	Type
	3 (A47)	23 (A61)
	16 (A61)	1 (B32)
	1 (A63)	1 (C02)
	1 (B01)	14 (C07)
	1 (C02)	1 (G01)
	2 (C07)	2 (G06)
	2 (C09)	9 (H01)
	1 (C12)	
	1 (G01)	
	1 (G06)	
	6 (H01)	
Number of licenses granted	85 (Royalty)	102 (Royalty)

Performance Indicators	2019-20	2020-21
Number of student contact hours in short courses or e-learning programmes specially tailored to meet business or CPD needs ^{N1}	459,656	622,160
Number of equipment and facilities service agreements, and income thereby generated ^{N2}	139	100 ^{N3}
	HK\$3,931,833	HK\$2,408,205 ^{N3}
Number of public lectures / symposiums / exhibitions and speeches to a community audience	395	441
Number of performances and exhibitions of creative works by staff or students	83	60
Number of staff engaged as members of external advisory bodies including professional, industry, government, statutory or non-statutory bodies	138	178

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-specific key performance indicators (KPIs) data.

N1 The student contact hours are defined to be the number of enrollments multiplied by the number of contact/course hours.

N2 This number includes data from Jockey Club Creative Arts Centre (JCCAC) and the Academic Community Hall.

N3 The number drops due to COVID-19 pandemic issue.

