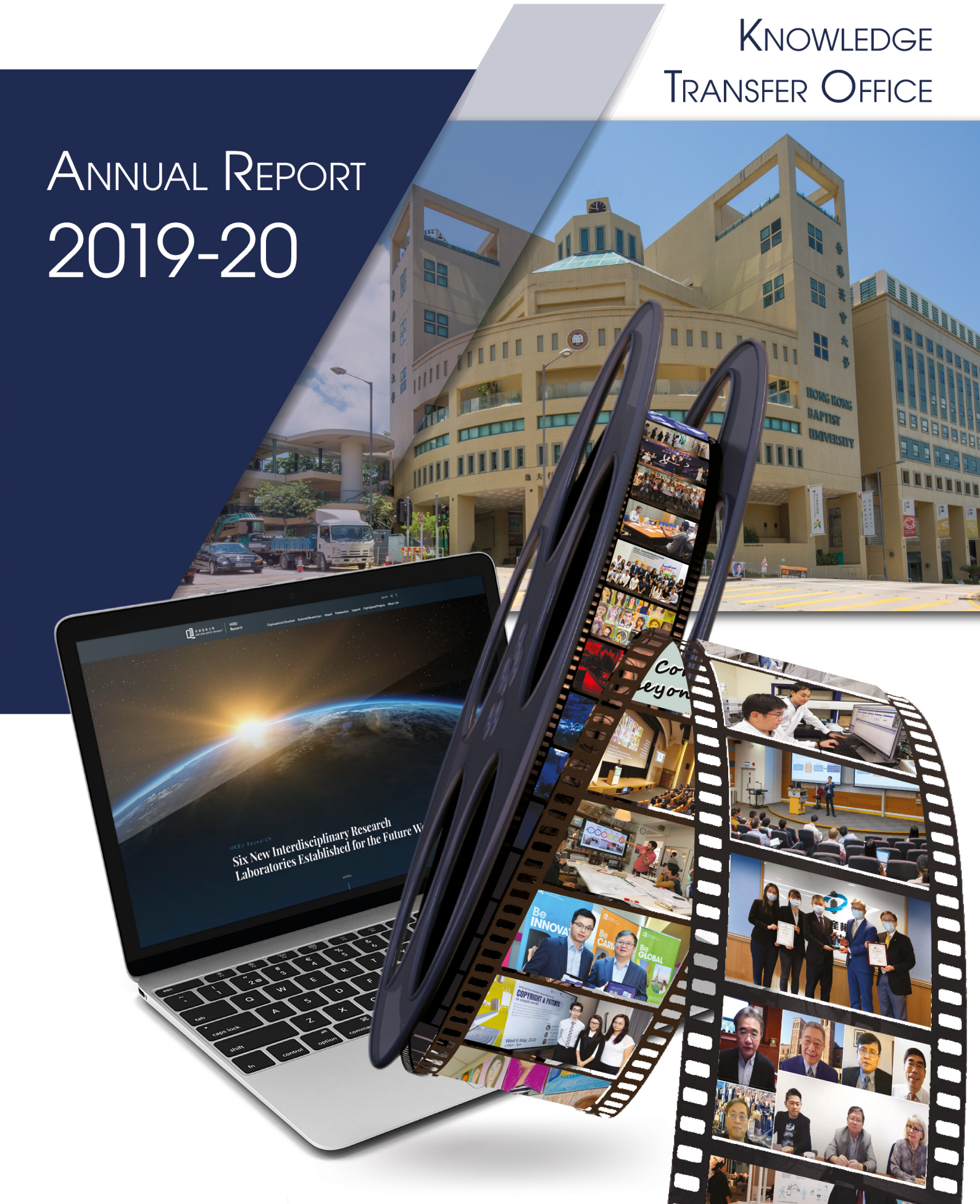
香港浸會大學
HONG KONG BAPTIST UNIVERSITY

KNOWLEDGE TRANSFER OFFICE

ANNUAL REPORT 2019-20



CONTENTS

Executive Summary: Knowledge Transfer at HKBU

The Hong Kong Baptist University (HKBU) is a liberal arts university. HKBU is committed to academic excellence in teaching, research and service, and to the development of the whole person in all these endeavours built upon the heritage of Christian higher education. The vision of the University is to be a leading liberal arts university in Asia for the world delivering academic excellence in a caring, creative and global culture. Thus, the vision of knowledge transfer (KT) at HKBU is to become a facilitator and an innovative hub for transferring liberal arts knowledge created at the University in a caring and creative way to our strategic global partners, to serve the broader community and for the betterment of HKBU, to facilitate research impact outside academia, and to become a driving force in realising the University's vision.

The reporting year of 2019-20 has both been a challenging and a rewarding year for KT at HKBU. Like the rest of Hong Kong and the world, HKBU has been challenged by the local social unrest and the global pandemic with lockdowns and travel restrictions. Nonetheless, this year has also been a rewarding year for knowledge transfer at HKBU as this year saw our research outcome being granted Hong Kong's first FDA orphan drug designation, which expedited the development of our new drug for commercialisation with our industry partner. This year also saw the research outcomes from two of our Social Works professors being put to practice by NGOs both in Hong Kong and abroad to provide mental health services to the community. Furthermore, AI based epidemic surveillance tools developed by our Computer Science professor has been endorsed by the World Health Organisation and have helped China to eradicate her malaria epidemic. These AI tools are now being considered for use by the governments of Cambodia, Bhutan and Sri Lanka to help them eradicate their problems with malaria. In 2019-20, an industry leader in news dissemination – Wiser Information Limited has engaged the research strength of our University to tackle the societal problem of fake news detection.

During this reporting period, HKBU has also shared her caring DNA and engaged the global community with the hosting of global events like CARE24.Global, an international symposium on "COVID-19 and Beyond, Culturally Speaking" and the Global University Film Awards (GUFA) 2020. HKBU also cared for our local community with KT projects such as "Rehabilitation Programme for Discharged COVID-19 Patients", "COVID-19 Alert System" and "Project SEED – Community Building & Student Engagement Enrichment Development (SEED)".

Finally, for the reporting year of 2019-20, HKBU has achieved a record success in our actual received KT income, totalling HK$288,001,774, from the KT activities of collaborative research, contract research, consultancies and CPD. This is an increase of 236% over the actual received KT income for the previous reporting year of 2018-19, which totalled HK$85,559,436. This can be attributed in part to the successes of our faculty in attracting research incomes for successful matching to the Research Matching Grant Scheme (RMGS) under UGC. This is also an affirmation from industry and the community who are investing in the research at HKBU.

The remainder of this report will expound on all of our KT achievements for 2019-20 with a focus on the KT strategy at HKBU.

1 The KT Strategy of HKBU

To achieve the vision of KT at HKBU, it is the KT strategy of the University to:

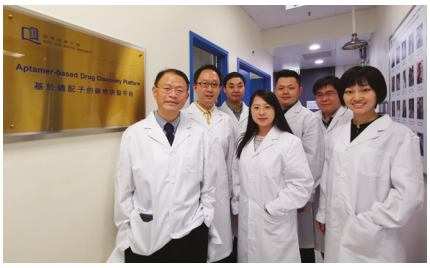
1. Facilitate KT from the University to solve problems for and with the society – commercialisation;
2. Build communities and partnerships, locally, nationally and internationally, that serve as catalysts and platforms to imagine new solutions and respond creatively to complex global challenges – internationalisation;
3. Support diverse approaches to scholarship, including individual scholar, interdisciplinary, and team-based models; and addressing community needs through applied research – interdisciplinary research;
4. Facilitate discovery, knowledge creation and transfer through technology development, community engagement, and public service – community impact, and
5. Take a proactive approach to managing risk and rewarding innovation – entrepreneurship.

To exemplify the KT strategy of the HKBU, this report shall summarise each strategy focus with succinct KT examples at the University for the current reporting year with further narratives being presented in the corresponding Annexes.

2 Facilitate KT from the University to Solve Problems for and with the Society – Commercialisation

HKBU is a research-led liberal arts university in Asia for the world. The University has strong research in science through her School of Chinese Medicine and Faculty of Science, and has excellence in arts and humanity research through her Faculty of Arts, Faculty of Social Sciences, School of Business, Academy of Visual Arts and School of Continuing Education. Many of the research at HKBU are directed to solving problems for and with the society. Some highlighted examples are:

2.1 AI-developed Drug Receives US FDA Orphan Drug Designation



A research team led by Prof Zhang Ge, Associate Director of HKBU's Law Sau Fai Institute for Advancing Translational Medicine in Bone and Joint Diseases (TMBJ), and Prof Lyu Aiping, Dr Kennedy Wong Endowed Professor of Chinese Medicine, Dean of the School of Chinese Medicine at HKBU and Director of HKBU's Institute of Integrated Bioinformedicine and Translational Science at HKBU, has successfully developed a novel aptamer for the treatment of osteogenesis imperfecta (OI) with the aid of artificial intelligence (AI) technology. This aptamer has also become the first drug in Hong Kong to be granted the orphan drug designation by the US Food and Drug Administration (FDA) in 2019. OI, also known as brittle bone disease, is a rare genetic disorder that prevents the body from building strong bones. Bone mass of sufferers is significantly lower than normal, resulting in bone fragility. There are six to seven cases per 100,000 persons worldwide, and in Hong Kong, an estimated 700 to 800 people have OI. Currently, there is no effective drug treatment for the disorder. This project was conducted in collaboration with a local pharmaceutical company. Supported by the Innovation and Technology Commission, a HK$1 million fund was granted to the research team from the University-Industry Collaboration Programme (UICP). Further narrative of this project is presented in Annex 1.

2.2 Alternative Healing Therapy: Use of Art for Mental Wellness

With the current global pandemic and global economic depression, mental health of our society is on the decline. To help alleviate this social problem, Dr Joshua Nan Kin Man from the Department of Social Work has transferred his expertise in art therapy to frontline mental health social workers through a two-level intensive training project. Through this project, the professional self-efficacy and professional quality of life of the participating trainees have been significantly enhanced by Dr Nan's Use of Art (UoA) training model. The collaborators, including the Mental Health Association of Hong Kong (MHA), confirmed that the incorporation of art therapy into their recurrent regular services has helped to build rapport, promote better emotional regulation and encourage self-discovery in both social workers and their clients. As part of HKBU's knowledge transfer and commercialisation efforts, Dr Nan provided professional UoA training to social workers from the Mental Health Association of Hong Kong (MHA) and to professional practitioners at a mental health NGO – HumanKind in Kuala Lumpur, Malaysia. The UoA training consisted of two levels, an introductory level and an advanced level, to provide progressive training across different art media, mental health topics and activity forms. A total of 20 professional practitioners from Malaysia benefited from the introductory level training while 28 social workers from MHA successfully completed both UoA training levels. The MHA social workers then applied what they have learned by planning and executing UoA therapy sessions in pairs. With guidance and supervision from Dr Nan, each social worker pair conducted four sessions, with six social service community users in each session. A total of 56 art sessions were held and 336 direct social service community users benefited from this project. MHA is a leading NGO in providing mental health services in Hong Kong and is the owner of three out of 28 Integrated Community Centres for Mental Wellness (ICCMWs) across Hong Kong. The impact coverage of this project extended to 10.7% of the total community mental health service providers in Hong Kong. The professional practitioners from Malaysia had also provided positive feedback and said they greatly look forward to attending the next level in the training process. Further narrative of this project is presented in Annex 2.

2.3 AI Surveillance of Epidemics

Covid-19 is the current pandemic that is affecting the world, but it is not the only epidemic afflicting mankind. During the reporting period, Prof Liu Jiming and his research team from the Department of Computer Science won the 2019 Yunnan Health Science and Technology Award for the impact of their ongoing work in applying AI to fight epidemic in China – firstly with the eradication of malaria, which now has been extended to combat the current COVID-19 pandemic. This project begun in 2011 when Prof Liu and his team joined hands with the National Institute of Parasitic Diseases (NIPD), a national organisation under the Chinese Center for Disease Control and Prevention (China CDC) to tackle malaria in China. Prof Liu's AI tools were deployed in Tengchong, a city in Yunnan with a long history of malaria. The city's malaria elimination policy was changed as a result of the team's research. In 2016, Tengchong was declared the first city in the China-Myanmar border to eliminate malaria, four years before the national target. NIPD and the China CDC then applied the same technology to tackle malaria in 20 cities along the border. Owing to the positive impact of the AI tools, Prof Liu's team received the Yunnan Health Science and Technology Award 2019. His team is continuing the joint research with NIPD in the hope of accomplishing the goal of ending the risk of malaria nationwide. Prof Liu and his team has presented their tools and findings to the World Health Organisation (WHO). The WHO recognises the usefulness of the AI tools in assessing the malaria transmission risk in a timely manner for anti-malaria resource allocation. It also endorses the tools developed by Prof Liu and his team, and further supports malaria control officers and field practitioners in malaria affected countries to learn how to use these tools. As part of HKBU's technology transfer and commercialisation efforts, national-level Department of Health from countries such as Cambodia, Bhutan and Sri Lanka are in discussion with Prof Liu and his team on plans to collaborate to help these countries fight their malaria problem. Further narrative of this project is presented in Annex 3.

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

The current global pandemic and global economic depression is not only affecting the mental health of the working adults in our society. Our youth are also under much psychological distress. A research team led by Dr Pan Jiayan, Associate Professor of the Department of Social Work has launched an online cognitive behavioural therapy (CBT) programme named "REST Online" (https://restonline.hkbu.edu.hk/) for tertiary students aged 18 or above with mild to moderate levels of psychological distress. The programme is recruiting 280 tertiary students with the aim of providing easy access to counselling services, and it hopes to help students alleviate distress when encountering challenges in post-secondary school life. The programme has partnered with the Mental Health Association of Hong Kong and it is supported by a grant of HK$964,160 from the University Grants Committee. As part of HKBU's knowledge transfer and commercialisation efforts, Dr Pan and her team has also established another online mental health services for the Hong Kong community, the CANDO 勇破抑鬱谷 programme (https://cando.hkbu.edu.hk/), in partnership with the Richmond Fellowship of Hong Kong and the Caritas Wellness Link - Tsuen Wan. Together with these NGOs, the CANDO programme is targeting it services for people in the community with mild to moderate depression disorders. The project has also attracted HK$4,198,105 of funding from the Innovation and Technology Commission's Better Living Fund and has served more than 90 people to date. Further narrative of this project is presented in Annex 4.

2.5 HKBU and Wisers Sign Collaboration Agreement to Conduct Research on Big Data, AI and Digital Media

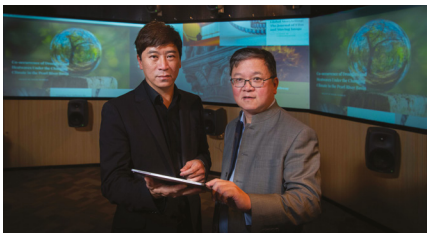
Fake news is another societal problem now plaguing the world of instantaneous news and social media. To combat this societal problem, the Department of Computer Science and the Department of Journalism at HKBU signed a long-term strategic collaboration agreement with the Wisers AI Lab of Wisers Information Limited (Wisers). The agreement will enable the partners to embark on research in the areas of big data, artificial intelligence (AI) and digital media, as well as the in-depth exploration of data integration and the innovative development of the journalism and media industry in the digital era. HKBU is the first university partner of Wisers in Hong Kong and mainland China. To examine news production and dissemination in the big data and AI era, HKBU and Wisers are collaborating on a series of research projects which focus on the impact of news chatbots and personalised news recommendation systems on news reading habits.

Under the agreement, Wisers will provide access to a sizable pool of data and relevant advanced technology to HKBU for research purposes. This includes 85 billion data sets from more than 570,000 media sources, and the world's largest Chinese semantic embedding model covering over 13 million Chinese words. Research teams from HKBU's Department of Computer Science and Department of Journalism will collaborate with the Wisers AI Lab to embark on research on different topics, such as the generation of a press criticism index; the relationship between the macro environment, geopolitical and social news on stock market performance; health-related discussions and information diffusion on social media; and the impact of the promulgation of online misinformation aka "fake news". In addition, HKBU and Wisers will endeavour to nurture skilled talent and promote exchange, resulting in a win-win collaboration. Further narrative of this project is presented in Annex 5.

3 Support Diverse Approaches to Scholarship, Including Individual Scholar, Interdisciplinary, and Team-based Models; and Addressing Community Needs through Applied Research – Interdisciplinary Research

In recent decades, there have been increased evidences of global problems such as extreme changes in the weather, global surges of natural pandemics and major disruptions to human systems. All of these global problems are multi-faceted and interdisciplinary in nature. Thus, the research into possible solutions for such global problems must span across a broad range of disciplines and the knowledge created are interdisciplinary in nature – often interlinking expertise in both arts and sciences. Being a research-led liberal arts university, HKBU is well-positioned to contribute towards solving such big problems by applying the research outcomes from our interdisciplinary researches to the world. Building the foundation for such interdisciplinary work, HKBU has formed research clusters in key areas, for example: Creative Media / Practice (for example: film, graphics, literary arts, music, and visual / media arts); Health, and Drug Discovery (for example: Chinese medicine, chemistry, microbiology, ageing, physical education); and Data Analytics and Artificial Intelligence in X (where X denotes applications such as Data-Journalism, Data-healthcare, and Data-literature). To further interlink the research outcomes from these three research clusters, together with other research strengths at the University, HKBU has further established six interdisciplinary research laboratories.

3.1 Hong Kong Baptist University (HKBU) has established six new interdisciplinary research laboratories that expand on the University's existing research strengths



The research laboratories will support HKBU's Institutional Strategic Plan 2018-2028 and enable the University to produce world-class research in selected research clusters. They will also help HKBU make a positive impact on local and international communities. The six interdisciplinary research laboratories include the Augmented Creativity Laboratory, Computational Medicine Laboratory, System Health Laboratory, Smart Society Laboratory, Data Economy Laboratory, and Ethical and Theoretical AI Laboratory. With HKBU clearly positioned as a research-led liberal arts institution, the University is well-placed to develop and use its innovative new laboratories to address frontier research issues; apply advanced technologies, such as big data and artificial intelligence; and deeply embrace the data-driven world. Each research laboratory is envisaged as an interdisciplinary research intellectual interactions where researchers and collaborators can develop and discover novel solutions that can drive cutting-edge research in focused areas. Professor Guo Yike, Vice-President (Research and Development) of HKBU, said: "With our inspiring cross-faculty research structure, the laboratories will enable us to radically break disciplinary boundaries and foster close engagement between the sciences, arts and social sciences. This development will enable researchers to make new discoveries." The six new interdisciplinary research laboratories and their key research themes are as follows:

1. **Augmented Creativity Laboratory**: augmenting human creativity, artificial intelligence and human-machine collaboration, and public policies and strategies for the creative industries.
2. **Computational Medicine Laboratory**: therapeutics and new drug discovery, driven by traditional Chinese medicine research.
3. **Data Economy Laboratory**: new theories, business practices and technologies in today's rapidly evolving web-based economic and financial context. In particular, the development of cryptocurrencies and blockchain technologies, and data capitalisation as a new natural resource and business asset.

4. **Ethical and Theoretical AI Laboratory**: basic theories of artificial intelligence, with a particular emphasis on machine and cognitive behaviour studies, as well as central issues in philosophy, ethics, AI verifiability, and AI interpretability.
5. **Smart Society Laboratory**: society's future organisational structure, operation and development mode, in particular the intelligent social administration led by applications of big data technologies, and its unprecedented challenges and opportunities
6. **System Health Laboratory**: the behavioural and wellbeing mechanisms that underpin complex systems including life, the environment, human society and web-based media.

HKBU has started the recruitment of top-tier research talent on a global scale to join the six new laboratories in the next three years. By joining HKBU, they will be able to take forward their respective research projects and strengthen the University's interdisciplinary research capabilities in its pursuit of becoming a world-renowned research-led liberal arts institution. "We hope researchers from around the world can join us in any way possible to extend the knowledge frontiers across disciplines and help us put our collective minds together to address global challenges," said Professor Guo.

4 Build Communities and Partnerships, Locally, Nationally and Internationally, that Serve as Catalysts and Platforms to Imagine New Solutions and Respond Creatively to Complex Global Challenges – Internationalisation

The world's leading universities are going global to attract the best students and scholars and to collaborate and contribute to the solution of global problems. HKBU's global aspiration is distinctive because we strive to achieve both academic excellence and the development of the whole person. In this strategic KT focus, the University builds communities and partnerships, locally, nationally and internationally, that serve as catalysts and platforms to imagine new solutions and respond creatively to complex global challenges. A few highlighted examples are:

4.1 CARE24.Global – A 24-hour Online Event that Motivates Youths Worldwide

2020 has challenged us all. It is not enough to just survive. Resilience is the tool we need to get to the next step. However, the next step is constantly shifting. We understand the stress and frustration most people have because of this and we want to help. With this in mind, HKBU organised a 24-hour global online event — CARE24.Global with Sutardja Center for Entrepreneurship & Technology of UC Berkeley, University of Oxford, MIT Hacking Medicine and our key collaborator - Mr Nathan Gold on 12 September 2020. This virtual event was created with an aim to inspire, educate and activate the next generation and give them the confidence to meet the future with optimism. Over 100 volunteers from around the world came together to turn this seemingly impossible idea into action; and over 80 innovators, adventurers and activists shared their stories, practical tools and strategies for taking powerful actions. Representatives from Hong Kong also participated in the event, including Mr NiQ Lai (Co-owner and CEO of Hong Kong Broadband Network), Ms Viola Lam (Founder and CEO of Find Solution Artificial Intelligence Limited (FSAI)), Mr Jimmy Tao (Managing Director & CEO of Vitargent International Holdings Limited), Mr Cesar Jung-Harada (Director of Makerbay Limited) and Ms Laura Cozijnsen (Founder of Lighthouse Consultant Limited). This event has successfully attracted over 31,000 views in just 24 hours. With the recordings continue being streamed on YouTube and Facebook, it is believed that more young minds will be inspired to step confidently in these unprecedented times.

4.2 Signing MOU for Technology Transfer to the Greater Bay Area (GBA)

To further facilitate commercialisation of HKBU technologies at Greater Bay Area, the HKBU R&D Licensing Limited (HKBURDL), signed a memorandum of understanding with Zhongshan National Health Technology Park and Phaeton Capital Management, L.P. on 1 December 2019. Under this MOU, three parties will follow the Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area, they are committed to collaborating and creating a commercialisation platform for facilitating technology transfer of HKBU R&D intellectual properties in Greater Bay Area. Potential HKBU bio-tech and healthcare projects will be funded and supported by Zhongshan National Health Technology Park and Phaeton Capital Management, L.P. for commercialisation and setting up companies at Zhongshan.

5 Facilitate Discovery, Knowledge Creation and Transfer through Technology Development, Community Engagement, and Public Service – Community Impact

Care is recognised by many of our students, alumni, staff, and partners as a fundamental part of HKBU's history and DNA. In this strategic KT focus at the University, caring means facilitating discovery, knowledge creation and transfer through technology development, community engagement, and public service. Some highlighted examples are:

5.1 COVID-19 Alert System

With the COVID-19 pandemic still spreading unabated, researchers at HKBU are developing technology to aid the public in limiting the spread of the disease and to do contact tracing. Prof Xu Jianliang, Associate Head and Professor of the Department of Computer Science, has developed a COVID-19 alert system which will send a message to users through a mobile app if they and an infected person have visited the same place within a time period that gives rise to risks of exposure. The system will not collect users' personal information and location data, thereby protecting individuals' privacy while alerting them on disease transmission risks associated with confirmed infection cases. HKBU will make efforts to collaborate with the Government and the relevant departments with the aim of helping society by transferring the University's research and contributing to the fight against the pandemic in Hong Kong. Further narrative of this project is presented in Annex 6.

5.2 HKBU Launches Rehabilitation Programme for Discharged COVID-19 Patients

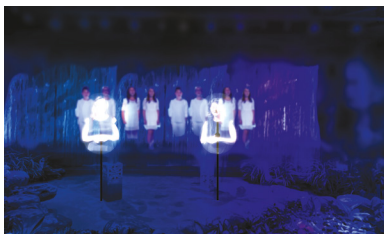
HKBU has launched a unique Hong Kong Rehabilitation Programme for COVID-19 which aims to deliver comprehensive recovery care to discharged COVID-19 patients by integrating cardiorespiratory and resistance exercise training with the use of Chinese herbal medicine. The Programme will recruit around 170 participants. The Programme team is led by HKBU's eminent scientists and health professionals, namely, Prof Guo Yike, Vice-President (Research and Development) and Professor of the Department of Computer Science; Prof Julien Baker, Head and Professor of the Department of Sport, Physical Education and Health; Prof Bian Zhaoxiang, Director and Chair Professor of the Clinical Division of the School of Chinese Medicine (SCM); and Prof Jia Wei, Chair Professor in Chinese Medicine and Systems Biology at SCM. Further narrative of this project is presented in Annex 7.

5.3 HKBU International Symposium Initiates Global Dialogue on the Role of Culture in the COVID-19 Pandemic

While the COVID-19 pandemic is commonly perceived as a public health issue with the solutions to the crisis clearly defined in the scientific and medical domains, the economic, educational, generational, and social crises regularly traced back to COVID-19 are in fact largely the result of culture. HKBU held the online international symposium "COVID-19 and Beyond, Culturally Speaking" on 15 and 16 September 2020, and over 1,300 participants from all over the world gathered to examine and reflect on the COVID-19 pandemic from a cultural perspective. The symposium, which was a unique HKBU initiative, aimed to foster conversations that help define the challenges and articulate the solutions to issues related to the pandemic from a cultural perspective. The symposium was organised by HKBU's Faculty of Arts with the support of the Office of the Vice-President (Research and Development) and the School of Communication, and Prof Mette Hjort, Dean of Arts and Chair Professor of Humanities and Prof John Erni, Head of the Department of Humanities and Creative Writing and Fung Hon Chu Endowed Professor in Humanics as the symposium's co-convenors. Further narrative of this project is presented in Annex 8.

5.4 Space to Breathe

Engaging the community to ponder over a societal issue is yet another impact HKBU researchers are making in the community. Space to Breathe provides an authoritative and inspiring narrative for Hong Kong residents and visitors to learn, be more conscious and mindful of their role in causing environmental degradation. This project transcends its immediate subject matter, local air pollution, to become a more universally impactful work, calling upon audiences not



only in Hong Kong but globally to consider their place in the global ecosystem and make quantifiable steps to improve their quality of life. Space to Breathe is a trans-cluster research project led by Dr Eugene Alexander Birman from the Department of Music, Mr Kingsley Ng from the Academy of Visual Arts, Dr Li Chen from the Department of Computer Science and Prof Johnny Poon from the Department of Music. The project unites art and science in seeking to dramatise and bring the genuine affliction of air pollution, affecting not only Hong Kong but the world, to the forefront of the cultural sphere. Through the interdisciplinary collaboration, information and ideas related to air pollution and the environment will be rendered artistically in an immersive exhibition and vocal performances. This project is in partnership with the Leisure and Cultural Services Department, which provided a funding of HK$525,000, Hong Kong Children's Choir, and Theatre of Voices from Denmark. Responsive to the ongoing pandemic and a new vision on what a concert may become, a series of culminating public events and performances will be realised at the Forsgate Conservatory greenhouse of Hong Kong Park in 2020.

5.5 Over 2,500 Films by Young Talents Worldwide Highlight HKBU Global University Film Awards 2020

The Academy of Film (AF) at HKBU will present the Global University Film Awards (GUFA) 2020. Envisaged as the "University Oscars", GUFA is well-recognised as the most celebrated international film event in the academic arena ever undertaken in Hong Kong. It recognises the excellence of film productions by university students from across the world by connecting the global film community and its audiences with the outstanding works and groundbreaking ideas presented by the participants. The event not only showcases the students' talents but also fosters the exchange of ideas and enhances professional networks. Organised for the second time (with the event in 2019 cancelled due to social unrest), this year's GUFA received a total of 2,503 submissions from 104 countries and regions, including France, Germany, Hong Kong, Iran, Lebanon, Puerto Rico, South Korea, United States, Venezuela, Yemen, and many more.

5.6 BEST Ambassador Caring Campaign - Reaching Out to Our Community

As COVID-19 cases continued to climb and social distancing became a way of life, all face-to-face events scheduled for this academic year were cancelled in order to protect members of our wider community. However, social distancing does not have to mean social isolation. Humans are social beings and staying socially connected helps us maintain our mental and physical health. To show our care and support to the community during this challenging time, two rounds of the BEST Caring Campaign were launched. In February, special soup and herbal tea bags prepared by the Hong Kong Baptist University – Jockey Club Chinese Medicine Disease Prevention and Health Management Centre were delivered to our students, teachers, supporters, partners and various stakeholders to boost their immune system amid the pandemic. This was followed by a student-led 'Little Smiley Face' video project in June 2020 to improve mental wellbeing by spreading love, hope and positivity.

5.7 Project SEED – Community Building & Student Engagement Enrichment Development (SEED)

In view of the adverse effects brought about by the social unrest and the COVID-19 outbreak, HKBU has set up Project SEED which the university works with alumni and supporters to offer a range of educational opportunities to enhance students' personal attributes and readiness for career development. Activities organised include:

- Fifteen SEED Talks (with a total attendance of 1,610 students), that covered legal, marketing, IT resources, pitching, e-commerce etc.;
- Two Start-up Workshops (with a total attendance of 92 students) that covered IT resources and social innovation; and
- A SEED Start-up Support Scheme – Start-up Saturday (with an attendance of 44 students), which granted HK$30,000 SEED money to 10 selected teams to kick start their businesses.

6 Take a Proactive Approach to Managing Risk and Rewarding Innovation – Entrepreneurship

HKBU's liberal arts education has the power to develop the creativities, entrepreneurial spirit, and out-of-the-box thinking that the 21st century's everchanging global challenges increasingly demand of our graduates. In this strategic KT focus at the University, entrepreneurship at HKBU has provided many supports and programmes to nurture future entrepreneurs at HKBU and the University has spun off many successful companies. Some highlighted examples of HKBU's successful spin-off companies and programmes at the University are:

6.1 Online Entrepreneurship Learning Resources under the New Normal

To nurture potential start-ups to turn innovative technologies and business ideas into viable and feasible business venture, KTO BEST at HKBU has provided entrepreneurship training and support to professors, students and alumni. Some highlighted examples of these programmes are:

- Webinar - 12 Ways to Captivate Your Audience When Presenting Online;
- Holistic Start-up Training Programme
  - HSTP1001: Building a Winning Team and Successful Ventures
  - HSTP1002: Ideation & Business Modelling
  - HSTP1003: How to Captivate Any Audience and Connect Emotionally with Your Audience
  - HSTP1004: Intellectual Property Rights for Innovators and Entrepreneurs
- Online Module BEST1005 – How to Captivate any Audience and Connect Emotionally with Your Audience

Details of these programmes and the promotion of entrepreneurship at HKBU can be found in Annex 9.

6.2 Co-founder of Spin-off Companies Receives Two Women Entrepreneur Awards

In November 2019, Dr Cathy Lui, HKBU alumna and co-founder of OPER Technology Ltd and CD133 Innovation Ltd, was named Young Achiever of the Year by the American Chamber of Commerce at the Women of Influence Awards in Hong Kong in recognition of her strong leadership potential in the biotechnology start-up. She also won the Greater Bay Area Outstanding Young Women Entrepreneur Award in recognition of her distinguished achievements and contributions to the development of the Greater Bay Area. The honour was jointly presented by the Hong Kong Small and Medium Enterprises Association and FM 104 Metro Finance.

6.3 The Opening Ceremony of the Research Centre of the Affiliate of New Life Medicine Technology Company Ltd ("New Life") in Zhongshan

Sky Blue Biomedical Equipment Ltd, the affiliate of New Life, has seized the opportunity arising from the development of the Greater Bay Area and transformed their research project into a real product called Prostate Cancer Early Detection Kit, and established its R&D and manufacturing line in Zhongshan, in the Greater Bay Area of China. The opening ceremony celebrating the establishment of the research centre of the affiliate of New Life Medicine Technology Company Ltd ("New Life") was held on 24 October 2019. Officiating at the ceremony were Dr Cheng Yan Kee, former Chairman of the HKBU Council and Court, Prof Rick Wong, former Vice-President (Research and Development) of HKBU, Mr Zheng Xiangrong, Executive Vice Minister of the United Front Work Department of the Zhongshan Municipal People's Government.

6.4 Celebrations - HKBU Inventions Awarded Top Prize and Medals at the 2nd Asia Exhibition of Inventions Hong Kong

Prof Jeffrey Cheung Tai Kin, Adjunct Professor of the Department of Physics of HKBU and the founder of HKBU spin-off company Booguu Co Ltd. Invented the award-winning technology called Portable Gait Analyser, a patented mobile IoT (internet of things) health solution designed to prevent and minimise the risk of falls in the elderly. This invention proudly won the Grand Award and a Gold Medal at the Asia Exhibition of Inventions Hong Kong (AEI).

6.5 HKBU Patent Wins Excellence Award in the Guangdong-Hong Kong-Macao Greater Bay Area High Value Patent Portfolio Contest 2020

The patented invention "Quality Control Marker and Its Use in Herbs Authentication" developed by Dr Simon Han Quanbin, Associate Professor of the School of Chinese Medicine (SCM), won the Excellence Award (the third prize) with a cash prize of RMB50,000 at the 2nd Guangdong-Hong Kong-Macao Greater Bay Area (GBA) High Value Patent Portfolio Contest 2020. This portfolio has been licensed to the spin-off company of Dr Han – the Hong Kong Authentication Centre of Dendrobii Officinalis Caulis Limited.

6.6 Mat-A-Cell Ltd Wins Third Prize in GBA Competitions

HKBU spin-off company Mat-A-Cell Ltd received a string of awards for their Culture Nanomatrices innovation technology. They won Third Prize at the 2nd "Creation of Youth" Guangdong-Hong Kong-Macao Greater Bay Area Youth Innovation and Entrepreneurship Competition on 9 September 2019, Bronze Prize at the 6th "Creation of Youth" China Youth Innovation and Entrepreneurship Competition on 4 November 2019, and Third Prize at the 8th China Innovation & Entrepreneurship Competition of Hong Kong, Macao and Taiwan on 5 November 2019. "Creation of Youth" is a national start-up competition which aims to cultivate young entrepreneurs in mainland China.

6.7 HKBU Technology Spin-off Companies

In 2019-20 Technology Start-up Support Scheme for Universities (TSSSU), nine start-up companies were awarded the funding, totalling HK$8 million, to commercialise their research and development results. For details of the 2019-20 TSSSU awarded companies, please refer to Annex 11. For achievements of HKBU students and spin-off companies, please refer to Annex 12.

7 Closing Remarks and the Way Forward

To say that the current reporting year has been challenging would be an understatement. The reporting year of 2019-20 has been plagued by both social unrest and the current pandemic. Challenges and changes are often the predetermined constants in life but how do we perform under such pressures is often up to us. Despite the challenges we faced in 2019-20, the KT initiatives at HKBU has been rewarded with affirmations in the prizes and awards our inventions, patents and spin-off companies have won.

Looking forward, with the abating COVID-19 pandemic and the ease of travel restrictions, it is timely that HKBU will reignite her efforts in transferring knowledge and delivering research impacts to the GBA and beyond. This will entail the full implementation of our KT strategies to facilitate KT from the University to solve problems for and with the society in the GBA; to build communities and partnerships, locally, in GBA, nationally and internationally; to facilitate discovery, knowledge creation and transfer through technology development, community engagement, and public service – making community impact in the GBA, and to expand our entrepreneurship initiatives into the GBA.

HKBU
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Innovationem Award

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ANNUAL REPORT ANNEXES 2019-20

CONTENTS

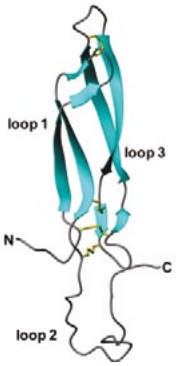
Annex 1

AI-developed Drug Receives US FDA Orphan Drug Designation

A research team led by Prof Zhang Ge of HKBU's School of Chinese Medicine has successfully developed a novel aptamer for the treatment of osteogenesis imperfecta (OI) with the aid of artificial intelligence (AI) technology.

Targeting a specific protein segment

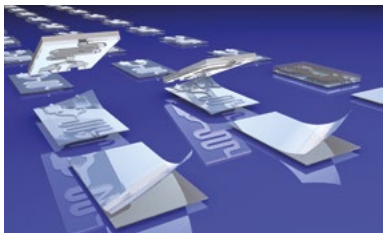
The research team made a breakthrough in tackling this dilemma. Structurally, proteins consist of several segments that are different in form. There are three domains in the core region of sclerostin, named loop 1, 2 and 3. "The function of loop 1 in sclerostin is as yet unknown. We know that both loops 2 and 3 are responsible for inhibiting bone formation, but only loop 2 protects the cardiovascular system. The monoclonal antibodies bind on both loops 2 and 3, thus causing the increased cardiovascular risk," explains Dr Yu Yuanyuan, Research Assistant Professor of TMBJ and a member of the research team. To avoid the side effect, the team decided to develop an inhibitor targeting only loop 3.



Three domains in the core region of sclerostin. Loops 2 and 3 of sclerostin are responsible for inhibiting bone formation, but only loop 2 protects the cardiovascular system

Aptamers are single-stranded deoxyribonucleic acid (DNA) or ribonucleic acid (RNA) molecules regarded as an alternative to antibodies. With three-dimensional structures, they can bind tightly and inhibit specific targets, in this case the sclerostin. Since the mechanism works like a lock and a key, aptamers have a high specificity and do not affect molecules other than their targets.

Use of AI boosts efficiency



The application of microfluidic selection shortens the time required for SELEX

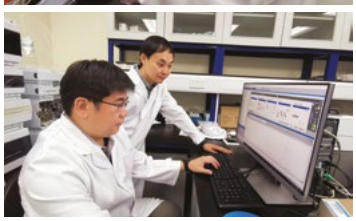
To find a suitable aptamer, the team screened aptamers from the single-stranded DNA library. Aptamers were selected, amplified and enriched through a process called Systematic Evolution of Ligands by EXponential enrichment (SELEX). Traditionally, SELEX is done manually and is very time-consuming. The process can take as long as three months to complete. For this project, the team cooperated with Dr Ren Kangning, Associate Professor of the Department of Chemistry at HKBU, to apply microfluidic system in the selection process. Microfluidics is a technique that can precisely control and manipulate fluid in the microlitre range (one millionth of a litre). The chip used in the microfluidic system is made of a new material that has an anti-fouling property and can avoid sample loss. After screening out tens of thousands of aptamers, AI technology was used to calculate the affinity, specificity and inhibition potency of molecules to identify the optimal candidates. Compared with the traditional method, the use of AI technology shortened the time for SELEX to just one week. It also saved manpower and reduced reagent consumption.

The research team then conducted an *in vivo* experiment to test the effect of the aptamer on mice with OI. The test group of mice were injected with the aptamer twice a week, while the other group of mice were the vehicle control group. After six weeks, the bone mass of the mice that received the aptamer injections increased significantly, compared to those that didn't. The results also showed that the aptamer did not increase cardiovascular risk. Dr Yu says that aptamers have other advantages over antibodies. Since antibodies are extracted from animals, their quality varies from batch to batch. The storage of antibodies also requires refrigeration because they easily become denatured. In contrast, aptamers are produced through chemical synthesis, therefore it is easier to ensure production quality control. DNA and RNA are also more stable and do not require refrigeration.

Hong Kong's first FDA orphan drug

The aptamer against sclerostin was granted orphan drug designation by the FDA in August 2019. In the US, the Orphan Drug Act allows the FDA to grant special status to drugs for the treatment of rare diseases. Success in obtaining orphan drug designation brings a series of benefits to subsequent research and development of the drug, including faster FDA approval process and a waiver or reduction of application fee. FDA will also provide professional advice during the process and their approved product will enjoy market exclusivity for seven years. FDA recognition and market exclusivity are considered exceptional advantages in attracting investment for further research.

According to Dr Yu, the research team is currently conducting pre-clinical research, including quality control and toxicity evaluation, to apply for a clinical trial.



The laboratory for aptamer analysis, synthesis and modification

Alternative Healing Therapy: Use of Art for Mental Wellness

Dr Joshua Nan Kin Man from the HKBU's Department of Social Work has been progressively developing a community-based art therapy model—Use of Art for Mental Wellness (UoA)—which can be transferred to frontline mental health professionals as a commonly adopted self-sustainable service. He has made remarkable contributions to the sophisticated concept of affect regulation. The theoretical underpinnings, therapeutic mechanism, and treatment results of clay art therapy in illustrative case examples of depression are also expounded in his research. With his expertise in clay art therapy, Dr Nan advocates the alchemical process of clay art in enhancing mental wellness and fostering discovery of personal potentials. He has applied clay art therapy to adults with signs of depression in a randomised control trial, showing improved treatment outcomes for depression, general health and body-mind-spirit wellbeing. In his ethnographic research, expressive-arts-based methods were found effective in helping elderly to reorganise life experiences and reduce ambivalent emotions regarding life-death issues. Structured group sandplay was also shown to significantly improve the resilience level of college students.

Artworks created by the participants in Hong Kong during a training session

Integrating art therapy into conventional mental health services provided by social workers

Social services in Hong Kong have long been dominated by the traditional social work training model. Local social workers are trained in the conventional verbal form of counselling. As such, Dr Nan has been a pioneer and advocator in promoting the Use of Art (UoA) and the combination of verbal and nonverbal counselling in mainstream social work practice. In the last decade, he has actively promoted a cutting-edge art therapy model—Expressive Therapies Continuum (ETC)—both in Hong Kong and overseas, and has endeavoured to integrate it with social work services.

With his research on UoA gaining prominence, Dr Nan received an invitation from the Hong Kong Jockey Club to launch a Train-the-Trainer project. After the training, which combined training, supervision and research components, the participants reported a higher level of perceived competence in providing holistic and person-centred EOLC services ($p<0.05$, $d=0.63$-0.96) with signs of enhanced communication, namely reconstruction and therapeutic relationship with their clients.

Use of Art induction course for mental health professionals

The valuable research results of this project were presented at two national and international conferences – the 65th Anniversary Symposium of the Mental Health Association of Hong Kong, and the Arts in Society Annual Conference in Portugal in 2019, which were attended by almost 200 local and 50 international mental health professionals. Representatives of Tung Wah Group of Hospitals Wong Chuk Hang Complex showed keen interest in introducing the Use of Art (UoA) training model in their Integrated Community Centres for Mental Wellness (ICCMWs). MHA is planning to implement a further enhanced level of training based on Dr Nan's studies. Caritas Family and School Social Work Services is also committed to join the UoA training for its school social workers in the second half of 2021. Caritas is serving around 80 local secondary schools.

In addition, 500 monographs were produced and distributed to MHA, eight university libraries, 10 public libraries and 25 mental health community centres. 200 copies of a training manual that includes a full catalogue of different UoA activities would be distributed to 25 local ICCMWs. Dr Nan was invited to contribute a book chapter in *The Neurosciences of Depression* titled "Clay art therapy on emotion regulation: Research, theoretical underpinnings, and treatment mechanisms". This two-volumn book will be published by Elsevier Publishing Co. in 2021. His another book chapter in a local art therapy book published by Hong Kong Association of Art Therapists (HKAAT), and 1,000 copies of this book will be distributed to local bookstores and published on HKAAT's online platform. All these publications will further promote community implementation of the UoA protocol outlined in Dr Nan's research. His research has received worldwide recognition from established institutions, including the American Art Therapy Association and British Art Therapy Association, and also covered in a news report by New York art magazine *Artsy*.

Dr Joshua Nan speaking at the 65th Anniversary Symposium of the Mental Health Association of Hong Kong

Annex
3

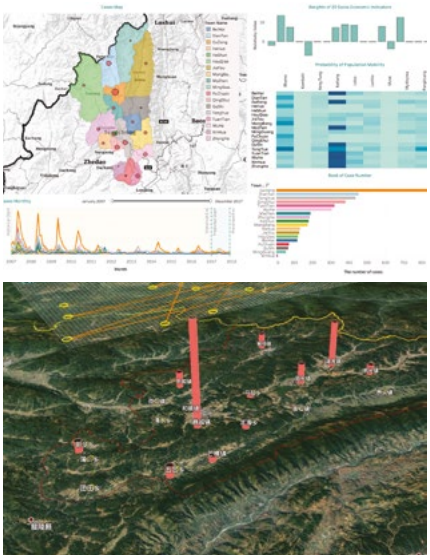
AI Surveillance of Epidemics

During the reporting period, Prof Liu Jiming and his research team from the Department of Computer Science has applied their research to combat the current COVID-19 pandemic.

Prediction based on socio-economic and ecological factors

According to observations by the disease control specialists, most cases of infection in Yunnan are imported from Myanmar through cross-border activities, which makes it extremely difficult to trace the spread of the disease. The mountainous terrain, which also implies a lack of resources, doctors and disease control specialists, adds extra challenges to disease control.

Instead of tracing infected individuals, Prof Liu's team takes a more proactive approach. They applied data-driven modeling to predict the spread of malaria based on available information. The reason Yunnan villagers cross the border is to work on the other side. Thus, their movement can actually be determined by socio-economic factors, i.e. their income status and distance from the border. On the other hand, the transmission of malaria is related to the life cycle of the mosquitoes that can harbour and transmit the disease. This is based on several ecological factors, including the amount of rainfall, temperature, and distance from water.



The data-driven model predicts and ranks the malaria transmission risk of different villages based on socio-economic and ecological factors

Future plans in the Mekong region

The next step for Prof Liu's team is to extend the research project to other countries in the Greater Mekong subregion and Southeast Asia which are affected by malaria and lack resources, such as Cambodia and Laos. The research team has presented their tools and findings to the WHO and other Greater Mekong subregion countries at the International Workshop on AI-enabled Malaria Control and Prevention. The WHO recognises the usefulness of the AI tools in assessing the malaria transmission risk in a timely manner for anti-malaria resource allocation. It also supports malaria control officers and field practitioners to learn how to use the tools. Prof Liu has also received collaboration plans from national-level Department of Health in Cambodia, Bhutan, and Sri Lanka to help fight malaria.

Unveiling COVID-19 transmission patterns

In addition to his work on malaria, Prof Liu also contributed to the battle against the COVID-19 outbreak in mainland China. He led a new research on characterising and quantifying the underlying transmission patterns of COVID-19 among different populations using a data-driven modelling approach, in collaboration with NIPD and the Chinese Academy of Sciences. One key feature of the computational model is that it is able to estimate the number of infections per day. According to literature, COVID-19 has an average incubation period of six to seven days. Thus, the number of confirmed cases might not necessarily reflect the actual threat of the disease during that period of time. The computed infection numbers provide the disease control department a clearer picture of the situation. The estimation also aligns with the confirmed cases a few days later, which proves its accuracy.

The research was published in *The Lancet's EClinicalMedicine* journal. Prof Liu says their data-driven computational modelling and analytical tools have been openly shared with public health policymakers and researchers around the world. This will allow them to capitalise on the AI tools for decision making using their domestic epidemiological data and cope with the current situation.

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

A research team led by Dr Pan Jiayan from the Department of Social Work has launched an online cognitive behavioural therapy (CBT) programme named "REST Online" for tertiary students aged 18 or above with mild to moderate levels of psychological distress arising from changes in lifestyle, increased workload and new interpersonal relationships, yet most of them may not seek counselling services proactively.

CBT is a goal-oriented psychotherapy treatment that helps people cope with life challenges by adjusting their patterns of thinking or behaviour. "REST Online" is launched to enhance their stress management skills and improve their mental health. In addition to online CBT modules, REST Online has invited an experienced counsellor to provide online and offline support to participants. Participants will first be selected through an online screening questionnaire and a face-to-face intake interview. Those who show mild to moderate levels of psychological distress will be invited to participate in the 10-week programme, while high-risk cases will be referred to social service agencies for urgent follow-up.

REST Online adopts a blended mode of service delivery including both online and offline counselling. The online service comprises eight weekly online modules, an online forum, reminder, booking, internal messaging and self-evaluation assessments delivered on the programme website or mobile app. The online modules include CBT skills briefing, case demonstration videos, exercise and feedback. The service content is tailored for local tertiary students and delivered in Cantonese, with the case demonstration videos produced from local cases to fit the cultural context of Hong Kong. In order to evaluate the effectiveness of the programme, participants need to take a test upon completion of the programme, and a follow-up test three months later. The offline counselling is provided by an experienced counsellor, who will provide one face-to-face session plus one telephone follow-up to assist with the online service and review the service progress.

"Counselling services on campus are often inadequate to meet tertiary students' increasing mental health needs, especially in Hong Kong. The "REST Online" programme will be a valuable supplementary resource for local counsellors in tertiary institutions, helping them to relieve the service bottleneck of insufficient manpower," said Dr Pan. "With young peoples' strong learning capabilities and conversant skills in information technology, the novel approach of "REST Online" will be easily accepted by students and it will help address their increasing mental health needs," she added.

Besides the Department of Social Work, Dr Pan's research team also includes Prof Xu Jianliang, Associate Head and Professor of the Department of Computer Science at HKBU, as well as Prof Per Carlbring, Head of the Clinical Psychology Division in the Department of Psychology at Stockholm University, Sweden. The programme has partnered with the Mental Health Association of Hong Kong and it is supported by a grant from the University Grants Committee.

HKBU and Wisers Sign Collaboration Agreement to Conduct Research on Big Data, AI and Digital Media

The Department of Computer Science and the Department of Journalism at HKBU signed a long-term strategic collaboration agreement with the Wisers AI Lab of Wisers Information Limited (Wisers).

The agreement will enable the partners to embark on research in the areas of big data, artificial intelligence (AI) and digital media, as well as the in-depth exploration of data integration and the innovative development of the journalism and media industry in the digital era.

The partnership between HKBU and Wisers will help drive in-depth research projects with a data-driven approach, and promote the use of novel ideas and approaches for nurturing journalists and AI-equipped data analysts for the new era, which will bring long-term benefits to the media industry at large.

Data Analytics and AI in applications is one of the key research clusters at HKBU. In 2018, HKBU's Department of Computer Science and Department of Journalism jointly established an interdisciplinary Data and Media Communication Concentration in its undergraduate programme. In 2019, the School of Communication and the Department of Journalism took a step forward with the launch of the Master of Science (MSc) in AI and Digital Media programme. Both programmes are the first of their kind in Hong Kong, and they aim to respond to changes and challenges faced by the industry in this computational and digital age.

Wisers is the world's leading provider of Chinese media and business intelligence. Wisers AI Lab's advanced proprietary technologies cover the full spectrum of automated media intelligence, such as sentiment analysis, entity recognition, knowledge graphing, and critical event detection and tracking. Its automatic document summarisation technology claimed the top spot at the International Conference on Natural Language Processing and Chinese Computing in 2018.

Annex
6

COVID-19 Alert System

Prof Xu Jianliang, from HKBU's Department of Computer Science, has developed a COVID-19 alert system which will send a message to users through a mobile app if they and an infected person have visited the same place within a time period that gives rise to risks of exposure. The system has two anonymous modes of operation: venue-to-person tracing and person-to-person tracing. The system is easy to operate and users can simply use it by downloading the mobile application.

By taking a decentralised design approach, the system, which has been developed in four months, will not collect any personal information and location data. It is a safe and reliable system that uses the latest cryptographic technology to protect users' privacy. It also includes a mechanism that prevents users from falsely claiming that they are one of the contacts of a confirmed case.

Under the venue-to-person tracing mode, when users scan the QR code before entering the venue, the venue information and the time of visit will be saved onto their mobiles. If a user tests positive for the virus, he will receive a password to log on to the system, which will then broadcast the information, including the venues he has visited and the visiting times in the past 14 days, to all users' mobiles. The system will send an alert to the users through their mobile phones if they and the infected user have visited the same place at the same time period in the past two weeks. This will enable users to take appropriate action, including virus tests.

The person-to-person tracing mode is supported by Bluetooth Low Energy, a wireless communication technology. If two users stay within two meters of each other for a certain period of time, their mobile phones will exchange an anonymous code via Bluetooth and then save it in the respective phone's database. The anonymous code associated with each user's mobile phone will change regularly. If a user tests positive for the virus, the other users' mobile phones will receive the codes broadcast by the infected user's mobile phone over the past two weeks. By comparing the codes in the database of the mobile phone, the system can assess the risk for each user that came into contact with the infected person, and set off the alarm if necessary.

Users' privacy is well protected because all the information is stored on an individual's mobile phone. HKBU plans to launch a trial run of the venue-to-person tracing mode of the alert system on campus.

Prof Guo Yike, Vice-President (Research and Development) of HKBU, said: "Promoting the integration of science and the humanities is a key research direction of HKBU. When the pandemic in Hong Kong was still in the early stages, we have been boosting various research projects related to the virus research projects and the development of this alert system is one of the results. The system can effectively warn people who have been in contact with a confirmed case, but it does not collect personal information. It strikes a balance between disease prevention and privacy protection."

Prof Guo also mentioned: "The global pandemic has not yet stopped. We hope to find out the mode of transmission of the virus in a timely manner to prevent it from spreading. We will make efforts to collaborate with the Government and the relevant departments with the aim of helping society by transferring the University's research and contributing to the fight against the pandemic in Hong Kong."

HKBU has launched a trial run of the system on campus with the aim of enhancing COVID-19 risks alert capability inside campus venues and during teaching and learning activities. Staff and students can join the trial voluntarily. The experience of launching the system, including the lessons learned throughout the technological development process and in terms of encouraging members of the University and visitors to use the system, will help the Government and relevant organisations combat the pandemic.

https://youtu.be/X0pO_FcuY7Y

Source: The HK China News Agency, in its YouTube channel Tong Visual https://youtu.be/X0pO_FcuY7Y . Retrieved: 5th October 2020.

HKBU Launches Rehabilitation Programme for Discharged COVID-19 Patients

Hong Kong Baptist University (HKBU) has launched a unique **Hong Kong Rehabilitation Programme for COVID-19** which aims to deliver comprehensive recovery care to discharged COVID-19 patients by integrating cardiorespiratory and resistance exercise training with the use of Chinese herbal medicine. The Programme will recruit around 170 participants.

Rehabilitation integrating exercise training and Chinese medicine

Discharged COVID-19 patients can experience a number of debilitating physical and mental changes, such as shortness of breath, impaired lung functions, depression, etc. To address this, the interdisciplinary team has developed a treatment programme that combines cardiorespiratory exercise, resistance training and inspiratory muscle training along with Chinese herbal medicines to improve systemic metabolic and immune function, as well as pulmonary problem-related clinical symptoms which are evident in discharged COVID-19 patients.

To assess the results of the rehabilitation programme, the team will deploy biochemical tests to assess functional improvements in whole-body metabolism and the gut microbiota of the participants after patients have undergone cardiorespiratory exercise, resistance training and inspiratory muscle training, and / or taken Chinese herbal medicines. The quality of improvements and recovery will also be assessed.

Inviting participation of discharged COVID-19 patients

The team plans to recruit around 170 discharged COVID-19 patients for a free-of-charge, 12-week intervention programme, which will run until December 2022. The primary focus is on discharged COVID-19 patients with pulmonary problems, associated co-morbidities and mental health issues that are secondary to COVID-19.

Participants will be arranged to undergo rehabilitation programmes with different treatment combinations. HKBU's health professionals will instruct the participants to do the exercises through an online real-time platform, whereas the Chinese medicine practitioners will prescribe a Chinese herbal formula to the participants that will nourish yin and moisten the lungs. All participants will be followed up at 12 weeks and three functional assessments, including blood, urine and faecal tests, will be carried out.

Rehabilitation programme with global impact

Prof Guo said: "While medical resources have been directed predominantly to the screening, detection, and treatment of patients infected with COVID-19, as well as the development of vaccines, one important aspect – patient rehabilitation – has been overlooked. This novel rehabilitation approach is the first-of-its-kind programme to benefit coronavirus sufferers around the world in a holistic and effective manner."

The launch of HKBU's Rehabilitation Programme marks the establishment of the first clinically-validated rehabilitation programme for COVID-19. It is designed to reduce symptoms, optimise functional status, and reduce healthcare costs by stabilising or reversing systemic manifestations of the disease. The success of the Programme will have a significant impact on the world and its battle with COVID-19.

Discharged COVID-19 patients who are interested in participating in the Programme can call 3411 2019 or email covidreh@hkbu.edu.hk for enquiries.

Further details and registration information can be found on the Programme webpage: https://research.hkbu.edu.hk/whats-on/covid-19-rehabilitation.

Annex 8

HKBU International Symposium Initiates Global Dialogue on the Role of Culture in the COVID-19 Pandemic

The symposium included seven discussion panels for speakers to exchange ideas on selected themes of interest. Spanning across four major areas, the themes ranged from "crisis communications" and "science and conscience" to "death and survival" and "individual interests versus collective welfare".

Five keynote speakers also shared their insights with participants. On 15 September, Prof Cui Zhanfeng, Director of the Oxford Centre for Tissue Engineering and Bioprocessing, University of Oxford, UK, addressed the topic "Rapid and Affordable Viral Test for COVID-19 – a Potential Game Changer"; Prof Zhang Wenhong, Head of the Centre of Infectious Diseases, Huashan Hospital of Fudan University, mainland China, spoke on the topic "Eliminating COVID-19: Challenge and Opportunity"; and Ms Zain Verjee, journalist and CEO of the Zain Verjee Group, Kenya, discussed the topic "Coronavirus in Africa: The Impact and Adjustments on the Continent".

On 16 September, Dr George Hong, Professor, Graduate School of Religion and Religious Education, Fordham University, USA, talked about "Balancing Predicament of Propriety in Combatting COVID-19 Pandemic: Comparative Cases of China and the United States"; and Prof Zhang Zuofeng, Professor of Epidemiology, UCLA, USA, spoke about "COVID-19 Pandemic: epidemiology and future trends".

The symposium brought together over 30 prominent speakers who are renowned academics and experts from the fields of epidemiology, philosophy, medical humanities, cultural and film studies, as well as art and design. The speakers came from different countries and regions around the world, including Australia, Canada, mainland China, Hong Kong, Denmark, France, Ireland, Japan, Kenya, South Africa, the UK and the USA.

Annex 9

Online Entrepreneurship Learning Resources under the New Normal

1. Webinar - 12 Ways to Captivate Your Audience When Presenting Online

More and more presentations are made virtually online, especially during COVID-19. However, just because we are using the same deck, that does not mean we are making the same presentation when web conferencing and meeting tools like Zoom, GoToMeeting, Skype etc. are involved.

BEST Community industry fellow Mr Nathan Gold was invited by the Knowledge Transfer Office to give a webinar on 20 March 2020 to share his 12 practical tips and tools everyone could use to be more effective at presenting online.

2. Holistic Startup Training Programme

Holistic Startup Training Programme comprises of online courses, offline seminars and one-on-one tailor-made consultations. Participants can develop techniques to amplify impacts of their ideas, validate the commercial values, and carry out their unique path to impact under the guidance of our international and local experts. There are 4 training modules in total:

1. HSTP1001: Building a Winning Team and Successful Ventures
2. HSTP1002: Ideation & Business Modelling
3. HSTP1003: How to Captivate Any Audience and Connect Emotionally with Your Audience
4. HSTP1004: Intellectual Property Rights for Innovators and Entrepreneurs

The first module ***HSTP 1001 Building a Winning Team and Successful Ventures*** was successfully carried out in November 2019. Prof Ikhlaq Sidhu flew all the way from UC Berkeley to be the facilitator and consultant for our first HSTP module. Over 30 participants joined the module where they learnt about how to form and maintain a winning team and create a successful venture. There were also clinic sessions for each team so they could have a close encounter with Prof Sidhu for consultation and further advice.

Eleven participants from our spin-off companies joined the second module ***HSTP1002 Ideation & Business Modelling*** in March 2020 at MakerBay. This 3-day module allowed the participants to take their ideas and inventions through the design thinking process, to review and rethink or even recreate their business canvas so that they were able to identify the right solution for the right problem.

This programme started with a Masterclass which was held on 14 March 2020. Under the guidance of Mr Cesar Jung Harada, Director of MakerBay Limited, the participants went through the cycle of design thinking for the first time as a team by brainstorming, prototyping and presenting their project ideas.

After attending the Masterclass, teams underwent the design thinking process again in their own time. To refine and rethink their business canvas with the feedback they had received, and the new ideas that emerged during the Masterclass. They learnt to use design thinking as a tool to identify the blind spots and the unexplored areas in their businesses.

We also introduced our new online training module ***BEST1005 – How to Captivate any Audience and Connect Emotionally with Your Audience*** (please refer to **BEST1005** below for details) as the HSTP1003 module. Participants could acquire the tips, tricks and some very important techniques they can use immediately during presentation to captivate audience. After the training, they could submit their presentation videos to the instructor, Mr Nathan Gold, for further advice. Clinic sessions providing consultations on pitching for research impact will be available soon.

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

3. BEST1005 – How to Captivate any Audience and Connect Emotionally with Your Audience

"Everyone you talk with is an investor simply because they are investing time in listening to you!" said Mr Nathan Gold, Chief Coach of The Demo Coach. Knowledge Transfer Office launched a brand new online module, ***BEST1005 – How to Captivate any Audience and Connect Emotionally with Your Audience***, on the O2O Entrepreneurship Training Platform in March 2020. This online module will help anyone to be more effective whenever they need to communicate, present, or speak. The reason is simple: there are times that you need to pitch for resources, build your start-up, sell your product or service, lecture a class, or perhaps you are going to face an important interview for a promotion opportunity. Mr Nathan Gold shares with you the proven techniques that will level up your presentation and speaking effectiveness. For details, please visit http://kto.hkbu.edu.hk/o2o/.

4. Innovation and Entrepreneurship Promotion on HKBU Campus

A key performance indicator (KPI) under the University Strategic Plan 2018-2028 is: **"Learning opportunities in innovation and entrepreneurship to be available by 2023 to every student who wishes to avail herself or himself of such opportunities"**. To help the University achieve this KPI and make such information more easily accessible to all students, an e-book with relevant programmes, activities and opportunities offered by different faculties, departments and offices at HKBU was compiled and shared with the HKBU community in last September. By 30 June 2020, this e-book has already been accessed for over 800 times. The content of the e-book is updated regularly so that students will not miss out on any valuable opportunities.

Access to the e-book: https://kto.hkbu.edu.hk/publication/IE1920/#p=1

Other KT Activities

HKBU Hosts "Copyright & Patents: In Simple Words" Webinar to Promote Understanding of Copyright and Patents

Speakers of IP Webinar: Mr Frederick Kwok (the left); Prof Alice Lee (the middle) & Ms Phoebe Lee (the right)

The Knowledge Transfer Office and the University Library of HKBU, together with the Hong Kong Productivity Council co-organised The "Copyright & Patents: In simple words" webinar on 6 May 2020 to address various intellectual property issues faced by the public, especially during the COVID-19 pandemic. Hosted by the University, the webinar drew over 270 online attendees, including faculty members, students, librarians as well as industries and startup entrepreneurs anxious to learn about the valuable insights provided by renowned experts in intellectual property issues.

Broadcast at Inno Space of the Hong Kong Productivity Council, the webinar aimed to present copyright and patent issues in a straightforward way, with a particular focus on copyright in an online environment to meet the increasing needs arising from remote teaching and learning during the coronavirus outbreak.

At the webinar, Prof Alice Lee, Associate Dean (Academic Affairs) and Associate Professor from the Faculty of Law of The University of Hong Kong; Mr Frederick Kwok, Senior Solicitor from the Intellectual Property Department of the Government of the Hong Kong SAR; and Ms Phoebe Lee, consultant of the Intellectual Property Management from Hong Kong Productivity Council, shared their expertise.

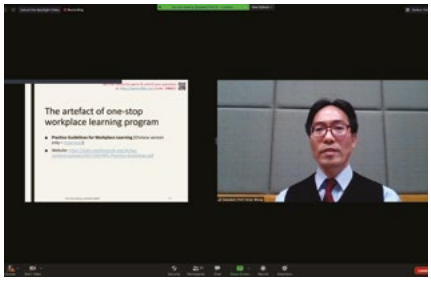
Cultivating Impact Culture on Campus – Pathways to Impact Seminar & Research Impact Training Series

The growing importance of research impact is reflected in the "Pathways to Impact" requirement of various funding schemes of the Research Grants Council (RGC), including the General Research Fund (GRF), the Early Career Scheme (ECS) and the Research Impact Fund (RIF). Inevitably, "Pathways to Impact" is becoming a compulsory and essential element in grant applications. To help our academic staff better understand this topic, KTO invited two speakers to share their experience and tips on building and capturing research impact.

Dr Mary Ho, Impact Officer and HK Representative of Vertigo Ventures, spoke about "Pathways to Impact – The Importance of Being Prepared" at the sharing session held on 28 October 2019 which attracted a full house.

Dr Mary Ho speaking on research impact during the sharing session on 28 October 2019

Through the session, participants learned tips on impact planning, capturing and reporting. Dr Ho gave deep insights on what good impact is; how to create and present impact plans for GRF/ECS/RIF schemes; how to identify potential beneficiaries and stakeholders; how to collect evidence for impact reporting; and how to improve the reach and significance in the long run. The session was well received by the attending academic staff.



Prof Victor Wong speaking on his research project during the webinar on 29 April 2020

In view of the overwhelming response, KTO invited Prof Victor Wong from the Department of Social Work to give a talk on increasing the visibility and impact of research, in the form of a webinar on 29 April 2020. The webinar, titled "The Success of CLAP for Youth - How to Build Your Research Impact", was well received and attended by 55 staff members.

Underpinned by his original Expanded Notion of Work (ENOW) model which recognises both paid and unpaid work experiences, Prof Wong has developed a five-year "Career and Life Adventure Planning for Youth-at-Risk in Community Settings (CLAP for Youth@JC)"project that aims to design, deliver and evaluate career services for young people. To recognise Prof Wong's knowledge transfer endeavour as an excellent example of high-quality research that creates outstanding impact beyond academia, he was awarded the Knowledge Transfer Award 2019.

List of HKBU TSSSU Awarded Companies 2019-20

	Name of Academics	Company Name	Company Description
1	Dr Lung Hong Lok, Assistant Professor of the 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 focuses on inventing different therapeutic molecules for cancers. A series of molecules for nasopharyngeal cancer have been developed and are undergoing preclinical trials. Other therapies for bladder cancer, prostate cancer and liver cancer are in the drug discovery stage.
2	Prof Ken Yung Kin Lam, 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 healthcare and clinical practices, which target to restore health and extend the life of patients with incurable diseases.
3	Prof Gary Wong Ka Leung, Head of the Department of Chemistry, Faculty of Science	New Life Medicine Technology Company Limited	New Life Medicine Technology Company Limited engages in the development of frontier technology for medicine and healthcare applications for the community. The company is dedicated to innovating and developing medical technologies that provide cost-effective, more accurate and faster diagnosis techniques for determining and treating human diseases.
4	Prof Ricky Wong Man Shing, Professor of the Department of Chemistry, Faculty of Science Dr Li Hung Wing, Associate Professor of the Department of Chemistry, Faculty of Science	MIND and Tech Limited	MIND and Tech Limited is an innovative technology company that develops novel nanoparticle-based tools for Medical Imaging and Nano Diagnostics. It provides a cost-effective, simple, direct yet sensitive platform for early neurodegenerative diseases detection and diagnostics.
5	Dr Jeffery Huang Zhifeng, Associate Professor of the Department of Physics, Faculty of Science Prof Ken Yung Kin Lam, Associate Head of the Department of Biology, Faculty of Science	Mat-A-Cell Limited	Mat-A-Cell Limited has obtained scientific research result namely, Mat A® Culture Nanomatrices, which is a biological cell culture substrate coated with a patent-filed nanostructured layer. It is used for the proliferation and specific differentiation of neural stem cells ("NSCs") in vitro without additional growth factors, minimising the potential risk of carcinogenesis. The goal of the company is to provide cost-effective and safe material foundations for all research and industrial production that require stem cells, and to serve as a platform for the benefit of consumers around the world.
6	Prof Zhu Fu Rong, Professor of the Department of Physics, Faculty of Science	Crimson Vision Technology Limited	Crimson Vision Technology Limited is a technology company dedicated to developing visualisation of near-infrared (NIR) light for fast and portable detection. The company aims to foster innovative, economically viable and environmentally friendly applications through the related patents and core NIR visualising technologies.

	Name of Academics	Company Name	Company Description
7	Prof Zhang Hongjie, Director and Professor of the Teaching and Research Division, School of Chinese Medicine	Gihon Biotech Limited	Gihon Biotech Limited is a green biopharmaceutical company that formulates avant-garde skin-lightening and skin-protecting cosmeceuticals enriched with Chinese Medicine ingredients. Gihon Biotech aims to provide high-quality cosmeceuticals for female and male customers who pay attention to skin care and the health of their skin.
8	Dr Simon Han Quanbin, Associate Professor of the School of Chinese Medicine	Hong Kong Authentication Centre of Dendrobii Officinalis Caulis Limited	Hong Kong Authentication Centre of Dendrobii Officinalis Caulis Limited specialises in patented, quick, accurate quality control technologies for Chinese medicines for local retailers, wholesalers, and planting bases in mainland China.
9	Mr Pan Zhiqi, Year 4 student, Department of Computer Science, Faculty of Science	Smilie Technology Limited	Smilie Technology Limited is vying to straighten teeth at a lower cost and provide a better treatment experience through its direct-to-consumer business model. By combining its 3D printing invisible aligners and AI treatment design, the company is revolutionising the 100-year old industry with its efficient and affordable orthodontic solution for the mass market.

Achievements of HKBU Students and Spin-off Companies

Name of Team / Winner	Competition / Programme	Achievement
Dr Cathy Lui, Alumna	The Women of Influence Awards 2019	• Young Achiever of the Year Award
	The Greater Bay Area Outstanding Young Women Entrepreneur Awards 2019	• Greater Bay Area Outstanding Young Women Entrepreneur Award
Flavan-3-ols and Their Oligomers as Potent Anti-Ebola Agents Tsang Ngayi, PhD student, School of Chinese Medicine Ma Xinyue, Year 3 student, School of Chinese Medicine Tian Xueying, Year 3 student, School of Chinese Medicine	The 6th Hong Kong University Students Innovation and Entrepreneurship Competition	• Second Prize in Innovation Category (Life Sciences)
PreciseMed Engine Lyu Jiayou, Year 4 student, Faculty of Science Liu Yeiwei, Alumna Ma Xuedi, Alumna	The 6th Hong Kong University Students Innovation and Entrepreneurship Competition	• Third Prize in Entrepreneurship Category (Entrepreneurship Proposal)
Dancing Rain Lin Zemao, Master's student, Faculty of Arts	The 6th Hong Kong University Students Innovation and Entrepreneurship Competition	• Merit Prize in Entrepreneurship Category (Entrepreneurship Proposal)
AI Phoenix Lyu Jiayou, Year 4 student, Faculty of Science Zhu Fenglin, Alumna Wang Shihao, Alumnus Xu Zhouming, Alumnus (startup: A.I. Phoenix Technology Company Limited)	BOCHK Hackathon 2019	• Silver Award
AcuCare Tian Jingting, Year 5 undergraduate student, School of Chinese Medicine Wang Zhichun, Postgraduate student, School of Chinese Medicine	Cyberport Creative Micro Fund	• HK$100,000 from the Cyberport Creative Micro Fund

Name of Team / Winner	Competition / Programme	Achievement
Money X Yu Yue, Year 4 student, School of Business Lyu Jiayou, Year 4 student, Faculty of Science Cheung Hui Ching, Year 4 student, School of Business	Cyberport University Partnership Programme (CUPP) 2019	• Cyberport Creative Micro Fund of HK$100,000
Lee Gong Kuen, Year 3 student, School of Business Lee Ka Chun, Year 4 student, School of Business Fung Kin Tak, Year 4 student, School of Business Tsui Chun Lok, Year 3 student, School of Business	HSBC / HKU Asia Pacific Business Case Competition	• Champion in Hong Kong Round
Koly Li, Year 2 student, School of Chinese Medicine	HKGCC Business Case Competition 2019	• Second Prize of the CLP track with HK$10,000 cash coupon
Frankie Wong, Postgraduate student, Faculty of Science	Berkeley Method of Entrepreneurship Bootcamp	• Champion
Portable Gait Analyser Booguu Co Ltd. (HKBU Spin-off Company)	2nd Asia Exhibition of Inventions Hong Kong	• Grand Award • Gold Medal
Sky Blue Biomedical Equipment Ltd., affiliate of New Life Medicine Technology Company Ltd. (HKBU Spin-off Company)	Health Technology Park in Zhongshan	• Funding awarded
Mat-A-Cell Ltd. (HKBU Spin-off Company)	8th China Innovation & Entrepreneurship Competition	• Third Prize
	6th "Creation Of Youth" China Competition	• Bronze Prize
	2nd "Creation Of Youth" GBA Competition	• Third Prize

Performance Measure- Key Performance Indicators

Performance Indicators	2018-19	2019-20	2020-21 (Target)
Number of patents filed in the year (with breakdown by country and type)	Country	Country	Country
	22 (US)	17 (US)	19 (US)
	11 (CN)	7 (CN)	8 (CN)
	3 (PCT)	2 (PCT)	3 (PCT)
	2 (HK)	3 (HK)	3 (HK)
	6 (EP)	1 (EP)	2 (EP)
	1 (JP)	1 (JP)	1 (GB)
	4 (TW)		1 (AU)
	2 (KR)		1 (JP)
	1 (MY)		
	1 (TH)		
	1 (SG)		
	2 (GB)		
	2 (MO)		
	2 (DE)		
	Type	Type	Type
	26 (A61)	9 (A61)	13 (A61)
	1 (A63)	1 (A62)	3 (B09)
	10 (C07)	2 (B09)	1 (B29)
	4 (C12)	1 (B29)	5 (C07)
	1 (G01)	2 (B32)	2 (C12)
	1 (G06)	4 (C07)	2 (C40)
	17 (H01)	1 (C12)	2 (G01)
		1 (C40)	3 (G06)
		2 (G01)	7 (H01)
		2 (G06)	
		6 (H01)	
Number of patents granted in the year (with breakdown by country and type)	Country	Country	Country
	19 (US)	12 (US)	13 (US)
	8 (CN)	5 (CN)	7 (CN)
	3 (HK)	7 (HK)	7 (HK)
	2 (EP)	2 (EP)	3 (EP)
	5 (TW)	4 (TW)	5 (TW)
	2 (GB)	1 (FR)	1 (KR)
	1 (KR)	1 (KR)	1 (JP)
	2 (DE)	2 (DE)	
	3 (MO)	1 (CH)	
	Type	Type	Type
	2 (A47)	3 (A47)	2 (A47)
	18 (A61)	16 (A61)	18 (A61)
	2 (A63)	1 (A63)	2 (B01)
	2 (C02)	1 (B01)	2 (C07)
	7 (C07)	1 (C02)	2 (C09)
	3 (G01)	2 (C07)	2 (G01)
	2 (G02)	2 (C09)	2 (G06)
	9 (H01)	1 (C12)	7 (H01)
		1 (G01)	
		1 (G06)	
		6 (H01)	
Number of licenses granted	64 (Royalty)	85 (Royalty)	88 (Royalty)
Yearly running average patent grant rate [N1]			
- HKBU running average of patent grant rate [N1, 2]	58% (2018)	60.3% (2019)	63.4% (2020)
- Hong Kong running average of patent grant rate [N1]	37.7% (2018)	TBC [N3]	TBC [N3]

Notes:

N1 The yearly running average patent grant rate is calculated based on the calendar year of a period from January to December as this is the Reporting Year of the WIPO data for Hong Kong's patent grants, which is retrieved from the WIPO IP Statistics Data Center at https://www3.wipo.int/ipstats/
A running average is an average that continually changes when more data points are collected as and when more patents are filed / granted. Definition of a running average can be found at: https://sciencing.com/calculate-running-average-6949441.html
The patents filed in a year may not be granted in the year concerned. The Yearly Running Average of Patent Grant Rate provided in the table is the best estimate to measure the degree of success in patent applications.

N2 This average is the moving average of the data available calculated from 1997 to the Year as tabulated. The year 1997 is chosen because that is the very first year HKBU filed its first patent.

N3 The figure is not be available at the WIPO IP Statistics Data Center until end of November of the next Reporting Year.

Performance Indicators	2018-19	2019-20	2020-21 (Target)
Net Income (on cash basis) generated from intellectual property rights including the income from start-ups [N1, 2]	HK$110,852,261	HK$81,456,177	HK$96,154,219
Expenditure involved in generating income from intellectual property rights	HK$701,505,447	HK$709,708,960	HK$705,600,000
Number of economically start-up companies [N2]	6	6	6
Net income generated (or net loss arising) from start-ups [N2]	(HK$3,664,414)	HK$7,530,994	HK$5,600,000
Number of collaborative researches, and income thereby generated [N3]	18 HK$9,841,836	20 HK$19,810,687	28 HK$21,756,000
Number of contract researches (other than those included in "collaborative researches" above), and income thereby generated [N4]	69 HK$23,506,616	124 HK$123,693,538	120 HK$87,024,000
Number of consultancies, and income thereby generated	141 HK$18,150,796	107 [N5] HK$15,044,187	110 HK$4,600,000
Number of student contact hours in short courses or e-learning programmes specially tailored to meet business or CPD needs [N6]	34,242	459,656 [N10]	450,000
Number of equipment and facilities service agreements, and income thereby generated [N7]	218 HK$6,803,860	139 [N11] HK$3,931,833	125 HK$3,145,466
Income received from CPD courses [N8]	HK$34,060,188 [N9]	HK$129,453,362 [N10]	HK$129,000,000
Number of public lectures / symposiums / exhibitions and speeches to a community audience	670	395 [N11]	533
Number of performances and exhibitions of creative works by staff or students	114	83 [N11]	99
Number of staff engaged as members of external advisory bodies including professional, industry, government, statutory or non-statutory bodies	123	138	140
Number of performances and exhibitions of creative works, public lectures, symposia, exhibitions and speeches per hundred academic staff	219	133 [N11]	158
Number of entrepreneurship activities [N12]	31	89	100
Number of student participation in entrepreneurship activities [N12]	6,830	8,502	9,000
Overall students' satisfaction of entrepreneurship activities (%) [N13]	99.55	92.35	93.00

Notes:

N1 Company with some institutional ownership and using intellectual property from the institution.

N2 Breakdown of the start-up companies:
- Hong Kong Organic Resource Centre Certification Ltd.
- HKBU Science Consultancy Company Ltd.
- BUCM Ltd.
- Institute for Research and Continuing Education
- HKBU R&D Licensing Ltd.
- BU Consultancy (Shenzhen) Ltd.

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

N4 Actual income received for contract research refers to the income received during the particular financial year.

N5 Income from consultancy refers to the income received during the particular financial year. Consultancy income for 2019-20 includes HK$2.9m attributed from KT income received from the Beijing Normal University-HKBU United International College.

N6 The student contact hours are defined to be the number of enrollments multiplied by the number of contact / course hours.

N7 This number includes data from Jockey Club Creative Arts Centre (JCCAC) and the Academic Community Hall.

N8 Income from CPD courses refers to the income received during the particular financial year.

N9 Income from CPD courses for 2018-19 was undervalued as it excluded taught postgraduate programs and / or part-time programs.

N10 The CPD courses are now defined to include award-bearing and credit-bearing programs (both in and outside HK) for learners already in work who are undertaking the course for purpose of professional development / upskilling / workforce development, in additon to short term non-credit bearing training programs. CPD courses income for 2019-20 included HK$0.22m attributed from CPD courses income reported from the Beijing Normal University-HKBU United International College.

N11 The number drops due to social unrest and COVID-19 pandemic issues.

N12 Data are collected from all units at HKBU. The data includes both in-person and online activities.

N13 Satisfaction rate is the average of all completed surveys received from the relevant entrepreneurship activities.

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