

ANNUAL REPORT 2018-19

KNOWLEDGE TRANSFER OFFICE
HKBU





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EXECUTIVE SUMMARY



HKBU has launched our Strategic Plan 2018-28 and is now embarking on a developmental journey with a refreshed vision. Our goal is to become a leading liberal arts university in Asia, delivering academic excellence in a caring, creative and global culture. In the coming decade, the University will be investing resources heavily in three research clusters: Creative Media/Practice, Health and Drug Discovery, and Data Analytics and Artificial Intelligence. A comprehensive action plan including the Talent100 initiative has been launched to foster world-class interdisciplinary research that impacts public thinking and policy making.

Thanks to the support of the University Grants Committee (UGC), the Knowledge Transfer Office (KTO) has been able to strengthen HKBU's capabilities in the creation of impactful technologies and entrepreneurship activities. Some of the milestones include a multitude of awards won at the 47th International Exhibition of Inventions of Geneva, Emtch Asia and TechConnect World Innovation Conference & Expo, as well as the great response received from faculty staff and alumni at the HKBU Entrepreneurship Bootcamp. With the help of Matching Proof-of-Concept Fund (MPCF), a furniture and jewellery collection designed by an HKBU scholar from the Academy of Visual Arts has scored two medals at the Geneva event - an unprecedented achievement for a non-science faculty.

UGC's recurrent funding for knowledge transfer continues to enable HKBU to forge global collaborations, gain growth momentum and realise its three strategic priorities, namely student experience, research excellence and capacity building. Through the partnership programme with UC Berkeley, HKBU students acquired a comprehensive online and offline entrepreneurship education that helps them magnify the impact of their career paths. By participating in the flagship HKBU Entrepreneurship Bootcamp together with members from the University of Oxford, UC Berkeley, Nanjing University and South China University of Technology, HKBU budding entrepreneurs adopted the mindsets and skillsets required to make their creative ventures successful. KTO

offered a Startup Semester Programme wherein seven HKBU student were sent to UC Berkeley for one semester to advance their knowledge and skills in entrepreneurship, as well as a series of online training courses designed by UC Berkeley entrepreneurship consultants.

Moreover, the Technology Support Scheme for Universities (TSSSU) funded by the Innovation and Technology Commission (ITC) has enabled HKBU to strengthen its innovation and entrepreneurship ecosystem. The scheme has fostered research excellence in many areas, particularly health and biotechnology. HKBU spin-off companies have also gained recognition from the international community by winning top awards at startup competitions, including the "Top 10 Regional MIT Technology Review Innovators Under 35" competition.

KTO has for several years provided the Knowledge Transfer Partnership Seed Fund to support knowledge transfer activities aimed at engaging the wider public and solving community problems. In continuation of this strategy, a new funding called Research Impact Support and Enhancement (RISE) fund was made available for researchers to apply. The goal of this new funding is to deepen and broaden the impact of research beyond academia. In this report, we will showcase five projects supported by the Seed Fund and two other knowledge transfer projects.

Last but not least, HKBU held the inaugural Global University Film Awards (GUFA) Award Presentation Ceremony in November last year. The university played host to hundreds of budding filmmakers and seminal talents from around the world, showcasing their creative talents and ideas. HKBU is well-known for being the cradle of creativity, and many of its graduates have had great success in the film industry over the years. Through the GUFA Award Presentation Ceremony, HKBU has expanded its mission of advancing the film industry, recognising the global excellence of film production, and fostering creative exchange among university students.

CREATIVE MEDIA/PRACTICE

The OH Furniture × OHO Jewellery Collection



Mr Andrea Ingrassia, a lecturer from the Academy of Visual Arts of HKBU, has created a series of furniture and jewellery pieces featuring a unique interlocking design. The invention is a first for the non-science faculty to be granted patents both in the United States and mainland China. The interlocking design is applicable not only on furniture and jewellery, but also a variety of daily-use products.

Funded by the Matching Proof-of-Concept Fund (MPCF)¹, the OH furniture × OHO jewellery collection has already won a gold and silver medal at the 47th

International Exhibition of Inventions Geneva that was held in Switzerland from 10 to 14 April 2019. These medals were two of only several non-science and non-medical awards that were given out at the event. For details, please see [Annex 1](#).

1. The Matching Proof-of-Concept Fund (MPCF) was launched in 2013-14 and has been operating for over six years. The fund aims to bridge the gap between the intellectual property of HKBU and the commercialisation of technologies. In 2018-19, HKBU initiated a total of three MPCF projects. For details, please see [Annex 2](#).

The Global University Film Awards (GUFA)



The **Global University Film Awards (GUFA)** organised by the Academy of Film at HKBU's School of Communication was officially launched in November 2018. The Awards aim to recognise the global excellence of films produced by university students from across the world by connecting international film communities with their audiences through outstanding works and ground-breaking ideas.

GUFA strives to promote emerging filmmakers, foster creativity among students and build synergy between regional young talents and the film production industry. It is a global platform for showcasing talents, exchanging ideas and developing network. For details, please see [Annex 3](#).

Creative Practice of Youth Career Development



The "Career and Life Adventure Planning Project for Youth" (CLAP) that was funded by The Hong Kong Jockey Club Charities Trust (HKJC) in 2015 is nearing its end. Prof Victor Wong Cheong-wing from HKBU's Department of Social Work has been leading a Community-Based Team (CBT) and working with five District Service Teams (DSTs) run by five respective NGOs including The Boys' & Girls' Clubs Association of Hong Kong, Hong Kong Young Women's Christian Association, Hong Kong Christian Service, Hong Kong Children & Youth Services and Evangelical Lutheran Church Social Service (Hong Kong). The CBT has

achieved huge societal impact. Under the leadership of Prof Wong, the CBT is responsible for designing the career intervention model for working with young people aged 15-21 who are "Not in Education, Employment or Training" (NEET) or at risk of becoming so in community settings, and conducting evaluation-and-research work and impact study of career guidance and programmes delivered by the five DSTs accordingly. Underpinned by a novel framework called "Expanded Notion Of Work - Values, Attitudes, Skills and Knowledge" (ENOW-VASK) that was originated by Prof Wong, CLAP demonstrates that personal qualities and values gained from both paid and unpaid work experiences and life experiences in building one's personal qualities are all transferrable to different life theatres including the employment world.

Over 84% of youth said that they had positive growth, enhanced self-motivation and clearer life goals after CLAP participation. Employers also praised the usefulness of the programme in talent matching during recruitment. Lastly, many government bodies, including Education Bureau, Labour and Welfare Bureau, Home Affairs Bureau, Youth Development Commission and Employees Retraining Board, have affirmed that the goals of CLAP are aligned with theirs and are open to future collaboration. To recognise CLAP's outstanding achievements, Prof Wong was conferred with the HKBU Knowledge Transfer Award in 2019. For details, please see [Annex 4](#).

Empowering Students to Become Better Language Learners

Dr Anita Poon Yuk-kang, Prof Sandy Li Siu-cheung and Mr Tony Lai Kwok-hung from HKBU's Department of Education Studies are set to bring radical changes to the assessment culture of English learning in Hong Kong.

The team developed an online assessment framework called Learning, Teaching and Assessment (LTA) for solving common problems found in English classes, such as learner diversity and limited class time. They also developed an e-assessment package for providing instantaneous feedback and annotations to students, as well as a professional development programme for enhancing the literacy, assessment knowledge and pedagogical skills of teachers. The e-assessment package was implemented in the Association of Directors & Former Directors of Pok Oi Hospital Limited (AD & FD POHL) Mrs Cheng Yam On School. The survey showed that students who used LTA became much more motivated and self-directed in English learning, reading and writing. For details, please see [Annex 5](#).



A New Pedagogy to Enhance Teaching and Study of Ethical Reasoning in Hong Kong Secondary Education

Teaching or study ethical reasoning in Hong Kong can be difficult due to the discrepancy between eastern and western cultures, as well as problems associated with local ethical issues. Prof Chan Shun-hing from HKBU's Department of Religion and Philosophy is now tackling this problem by applying news stories from local context to the teaching materials.

Prof Chan, in collaboration with the Education Bureau, developed a teaching kit that includes past ethics articles written by HKBU students. Each article is accompanied by a detailed analysis of the author's standpoints and arguments designed to make the teaching of ethical reasoning a lot easier. The teaching kit has been distributed to 90 secondary schools for use in the curriculum of Ethics and Religious Studies. Teachers and students praised the teaching kit for its facilitation in the study of ethical issues. Reportedly, students also increased their sense of citizenship. For details, please see [Annex 6](#). Video: <https://www.youtube.com/watch?v=YbXrFuPDbHE&feature=youtu.be>



Fostering Students' Creativity through Music and Arts

Prof Ho Wai-chung from HKBU's Department of Music has developed an innovative pedagogy for fostering creativity in Hong Kong secondary schools. The new pedagogy is designed to enrich cultural activities among young people through music and arts.

A teaching kit was produced as a result of the project. Exchange sessions to share the experiences of implementing this new pedagogy have been organised in both Hong Kong and Changsha. Participating schools have since adopted the new pedagogy in their curriculum. The teaching kit was well received by both teachers and students. For details, please see [Annex 7](#).



Shining Bright at the 38th Hong Kong Film Awards

HKBU Alumni Mr Felix Chong Man-keung and Ms Oliver Chan Siu-kuen have been awarded multiple prizes at the 38th Hong Kong Film Awards.

Mr Chong, who graduated from the School of Communication in 1993, won Best Director for his film *Project Gutenberg*. Ms Chan, who received Master degree of Fine Arts in Film, TV and Digital Media from HKBU in 2015, won Best New Director for her film *Still Human*.



In addition to the tremendous achievements made by these two alumni, HKBU staff also scored two nominations at the 38th Hong Kong Film Awards. Mr Ying Liang, a part-time lecturer from the Master of Fine Arts in Film, Television and Digital Media programme, was nominated Best Screenplay for the co-written movie *A Family Tour*. Mr Saville Chan, a part-time lecturer from the Higher Diploma in Creative Film Production programme, was nominated Best Original Film Song for two songs he wrote lyrics for. For details, please see [Annex 8](#).

A Graduation Artwork Showcase



HKBU's Academy of Visual Arts (AVA) held an exhibition showcasing 128 art pieces created by graduating students at Kai Tak Campus from 25 May to 9 June 2019. This exhibition provided an opportunity for the public to learn about our students' innate potential, undiscovered power, as well as their yearning and aspirations. The event marks a new chapter in their life journey, and we anticipate that many brilliant ideas and art pieces are to come.

Young Creative Entrepreneur (YCE) Award 2018

Established in 2014 by HKBU's Academy of Visual Arts (AVA), the Young Creative Entrepreneur (YCE) Award seeks to encourage students and graduates to turn innovative ideas into business ventures. Funded by Mr. Brandon T.C. Liu, JP and organised by Kai Tak Centre for Research and Development, this annual business startup competition provides entrants with the funding opportunity needed to build prototypes and kick-start their businesses.

Miss Cheuk Wing-nam from VVing Studio — a 2015 graduate of Master of Visual Arts in Studio Art & Extended Media — was awarded Business Startup Award and a cash prize of HK\$50,000 in 2018. Her winning project titled "DMXuino" combines the communication standard DMX512 with Arduino and/or Raspberry Pi single-board computers to form a device that enables visual artists of various disciplinary backgrounds to easily control lighting, sounds, motors, and/or other electronic functions.

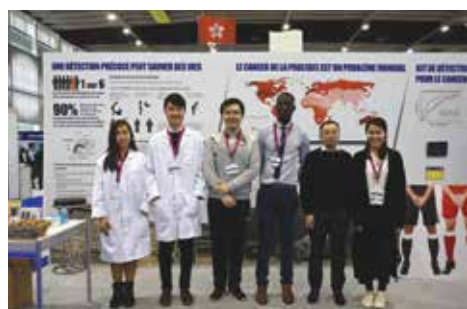


The support provided by the Award does not end after competition. Starting from 2015, previous winners of the YCE Award who have successfully set up their businesses may submit a follow-up proposal to apply for an interest-free *Business Development Loan* of up to HK\$100,000 for expansion purpose.

The YCE Award provides participants with a valuable entrepreneurship experience and serves as a platform for aspiring AVA entrepreneurs to actualise their creative ideas. Participants who are unsure of their career path can make good use of this opportunity to step out of their comfort zone and try something out of the box. For other campus-wide entrepreneurship training activities and events, please see [Annex 9](#).

HEALTH AND DRUG DISCOVERY

An Urine-based Detection Kit for Prostate Cancer



Prostate cancer is the third most common cancers in Hong Kong and the fifth most fatal cancer worldwide. It is estimated that one in six men will develop prostate cancer during their lifetimes. If detected early, however, the disease can be treated with minimal side effects.

Prof Gary Wong Ka-leung from HKBU's Department of Chemistry has developed a simple, non-invasive urine-based detection kit for detecting early prostate cancer. The device detects biomarkers that are affected by cancer cells and has an accuracy of up to 90%. The invention won the Gold Medal



Highlight Video

with the Congratulations of Jury and the Thailand Award for the Best International Invention at the 47th International Exhibition of Inventions of Geneva. To recognise the outstanding impacts of his research, Prof Wong was awarded the HKBU Innovationem Award in 2019. For details, please see [Annex 10](#).
Video: https://youtu.be/f841yC_TSjA

Promotion of the Family Doctor Healthcare Model

According to the Census and Statistics Department, only 41% of Hong Kong residents have a regular family doctor. To increase public awareness and adoption of the family doctor healthcare model, Dr Timothy Fung Kai-fung from HKBU's Department of Communication Studies worked with the Primary Care Office of the Department of Health to design health messages for promotion.

Based on the health communication theories of narrative persuasion and counterfactual thinking, Dr Fung and his team produced a 30-second announcement in the public interest and a three-minute micro movie to promote the family doctor healthcare model to parents of young children. Furthermore, to strengthen the public image of family doctor, Dr Fung and his team designed a "Family Doctor" logo for promotional use. The logo has been adopted by the Primary Care Office for the following purposes: (1) designing the front page of the primary care directory, which is an electronic database for the public to search for a primary care service provider; (2) creating a door signage to indicate the physicians in private sector, who provide primary care services; and (3) outdoor advertising. This project has reached large beneficiaries in the Hong Kong community, particularly parents of young children, to adopt the family doctor healthcare model. Therefore, it has been shortlisted as a candidate for the HKBU Knowledge Transfer Award in 2019. For details, please see *Annex 11*. Promotional videos: <https://www.youtube.com/watch?v=8bGFSd0UI8Y> and <https://youtu.be/qpfO235Dgtw>.



Micro movie

Bridging the Digital Divide

Many senior citizens are socially excluded from the digital world. The technological divide poses threats to their quality of life. Dr Sam Yu Wai-kam from HKBU's Department of Social Work is keen to address these issues by helping seniors embrace technology. Working alongside colleagues from the Neighbourhood and Worker's Service Centre, Dr Yu recruited a group of volunteers to assist both middle-aged and elderly (aged 45 and above) to use mobile phones to organise their lives. In the process, the team and the volunteers learned more about the obstacles and struggles seniors face every day in the digital world.



The project has not only provided seniors with the digital literacy they needed, but also gave the team insights into the means of enhancing defamilisation. Defamilisation involves increasing individuals' freedom to determine whether or not they organise lives more independently of their family through seeking support from the non-family sectors in smart city. To share his experience of promoting defamilisation with local communities, Dr Yu discussed some of the ideas learned from this project in major academic journals. For details, please see *Annex 12*.

Healthy Ageing through Smart Elderly Care Services

Hong Kong is facing the challenges of an ageing society, much like other well-developed countries such as Japan, Singapore and the United Kingdom. The Elderly Commission² estimates that the number of people aged 65 and above was 759,200 in 2000, and that elderly people occupied over 46% of hospital day-beds. Given that the number of people aged 65 and above will increase to 1,322,500 by 2021, the shortage of hospital day-beds is set to become a public health crisis.

In light of this, the Hong Kong Baptist University-Jockey Club Chinese Medicine Disease Prevention and Health Management Centre has launched the Elderly Sponsorship Programme to promote the concept of healthy ageing among elderly people. The rationale behind the idea is that a large proportion of chronic diseases are preventable through regular body check-ups and increased health awareness. By encouraging elderly people to take on a proactive stance towards health management, the programme aims to prevent chronic diseases before they develop.

Through the Elderly Sponsorship Programme, Recipients of the Comprehensive Social Security Assistance (CSSA) Scheme will be subsidised for up to six Chinese medicine consultation visits at the Centre within a half year. A maximum of HK\$550 will be granted per visit to cover consultation fees and examination/treatment charges. Non-CSSA recipients can also enjoy a half subsidy. The Programme is expected to benefit 63,000 persons.



² <https://www.elderlycommission.gov.hk/en/library/Ex-sum.htm>

Harvesting Neural Stem Cells for Ultimate Cure



Over 100 million people around the world are diagnosed with neurodegenerative diseases each year. Despite their growing prevalence, however, many neurodegenerative diseases presently have no cure. Prof Ken Yung Kin-lam and Dr Cathy Lui Nga-ping from HKBU's Department of Biology and Dr Li Hung-wing from HKBU's Department of Chemistry have jointly developed a technology for harvesting autologous neural stem cells (i.e., neural stem cells from patient's own body). The technology uses special magnetic nanoparticles to extract active adult neural stem cells from the brain. The harvested stem cells are better tolerated by the immune system and can be used to treat stroke as well as neurodegenerative diseases.

The stem-cell harvest technology is now a licensed technology of OPER Technology Limited, an HKBU spin-off company founded by Prof Yung and Dr Lui. This year, Dr Lui was picked by MIT Technology Review as one of top ten 'innovators under 35' in the Asia-Pacific region³. After receiving this honour, Dr Lui has been invited to join the global 'innovator under 35' list.

³ *Innovators Under 35 Asia Pacific is an annual campaign organised by MIT Technology Review that honours young innovators under the age of 35 whose invention or research is changing the world.*

Going Growth Factor-free



Conventional methods for cultivating neural stem cells requires the addition of growth factors and organic compounds. These chemicals are used to promote cell division and cell development, but can also stimulate the growth of cancer cells and tumours in patients after transplantation.

A team led by Prof Ken Yung Kin-lam and Dr Jeffrey Huang Zhi-feng from HKBU's Department of Biology and Department of Physics, respectively, has now developed a scaffold that can be used to cultivate neural stem cells without the need of growth factors. The so-called inorganic sculptured extracellular nanomatrix, or iSECnM,

uses nanoscopic surface structures to promote cell division and cell development. A short video is available for viewing at <https://youtu.be/Fyja7zZ9ppU>. The technology has been licensed to the HKBU startup company Mat-A-Cell Limited.

The invention was awarded the Global Innovation Award at the TechConnect World Innovation Conference & Expo (TCWI) held in the United States from 17 to 19 June 2019. Only the top 15% of submitted technologies as ranked by the TechConnect Corporate & Investment Partner Committee are given this award. Another four HKBU projects showcased at TCWI are:



Highlight Video

- (i) A Non-invasive, Point-of-care Detection Assay for Alzheimer's Disease. For more details, please see [Annex 2](#).
- (ii) Harvesting Neural Stem Cell for Ultimate Cure
- (iii) Early Detection of Circulating Tumour Cells
- (iv) An Anti-scratch Coating

For details of (iii) and (iv), please see [Annex 13](#).

Boulevard of Crafted Dreams



Apart from physical health, HKBU cares about the mental health and well-being of people. To raise the awareness of social inclusion, the Knowledge Transfer Office has invited Mr Koh Seng-choon, the Founder and Executive Director of Dignity Kitchen (廚尊), to share his startup stories. Dignity Kitchen is Singapore's first hawker training school for disabled and disadvantaged people. It provides on-the-job training and job opportunities by operating a fully functional, regular food court open to the public. The food court is the first of its kind in the world and has attained the ISO 22000 certificate for food safety management. It has trained over

300 trainees and received four awards including the President's Challenge Social Enterprise Award (Singapore). In the seminar, Mr Koh shared his social innovation stories filled with challenges and trials with students and staff. The audience learned the importance and role of vocational training in changing the society's perceptions towards the less fortunate.

HKBU Technology Startup Support Scheme for Universities

HKBU faculty staff, students and alumni looking to form startup companies and commercialise their technologies are encouraged to apply for the Technology Startup Support Scheme for Universities (TSSSU). In 2018-19, TSSSU supported four spin-off companies focussed on health and biomedicine. This number is set to increase to seven in 2019-20.

The Knowledge Transfer Office is dedicated to providing entrepreneurship training, legal advice, investment matching and external liaison for startup companies. One of the successful stories of investment matching is New Life Medicine Technology Limited. The HKBU spin-off company has been invited to establish a research centre at Zhongshan Health Technology Park, as well as received funding to further develop the prostate cancer detection kit in the Greater Bay Area.

TSSSU-funded companies may join the HKBU Entrepreneurship Bootcamp so as to better equip themselves in their venture journey. For details regarding the Bootcamp, please see [Annex 14](#). For details regarding HKBU spin-off companies' exposures and opportunities, please see [Annex 15](#). For details regarding HKBU spin-off companies' recognition and achievements, please see [Annex 16](#).



DATA ANALYTICS AND ARTIFICIAL INTELLIGENCE

Speed Training for Artificial Intelligence

Scientists strive to make artificial intelligence that can be trained up quickly. However, this greater speed typically comes at the price of reduced accuracy.

In collaboration with Tencent's machine learning team, Prof Chu Xiao-wen and his PhD student Shi Shao-huai from HKBU's Department of Computer Science have now developed an algorithm that can train artificial intelligence at a much faster speed without compromising accuracy. They measured how long it took deep neural networks to learn visual recognition tasks and found that the new algorithm was two to three times faster than the best known algorithm.



The new algorithm processes small pieces of data and then combines them into larger pieces. Since data transmission is affected by the size of data blocks, the team was able to achieve record-breaking time in the training of artificial intelligence. For details, please see [Annex 17](#).

Traditional Chinese Medicine in the Digital Age

The Chinese Medicine Digital Project (CMDP) is a collaborative effort between HKBU's School of Chinese Medicine and the University Library that aims to share, track and disseminate traditional Chinese medicine (TCM) information that has undergone rigorous scientific testing. It comprises five image databases and one game-based exercise designed to support teaching, learning and research activities. Launched in 2018, the Chinese Medicine Formulae Images Database is the latest addition to this impressive line-up. Since its inception in 2012, the CMDP website has been the crown jewels among the HKBU's digital offerings. Approximately 72% of users accessing the databases are from countries and regions outside Hong Kong. For this reason, the CMDP has been an excellent example of creating global healthcare impact using novel data analytics. It has been shortlisted as a candidate for the HKBU Knowledge Transfer Award in 2019. For details, please see [Annex 18](#).



Typing without Keyboard



Mr Cheung Sai-ho, a student from HKBU's Master of Science in Advanced Information Systems programme, has been recognised by the Regeneration Society as one of the Top Ten Regeneration Warriors in 2013-14.

Mr Cheung was born with cerebral palsy and can type using one finger only. On the keyboard, he could produce only one Chinese character every few minutes. To tackle this problem, Mr Cheung developed a voice-controlled computer software called CP2Joy — short for Cerebral Palsy to Joy — that enables severely disabled people to use computer without keyboard. The invention can also be applied on patients with tetraplegia and muscular atrophy. For details, please see [Annex 19](#).

Promoting Big Data and Artificial Intelligence among Campus

The Knowledge Transfer Office has introduced several programmes and activities to promote the use of big data and artificial intelligence among HKBU students.



Cyberport University Partnership Programme 2018

Two HKBU teams participated in the Fintech-focused Cyberport University Partnership Programme (CUPP) 2018 where they had the chance to unleash their full potential and gain insights into the global market. Through a series of intensive training and mentorship sessions given by industry elites, as well as a one-week bootcamp at the world-renowned University of Chicago Booth School of Business and Polsky Center for Entrepreneurship and Innovation, students learned about Fintech-associated business models, marketing strategies, artificial intelligence, blockchains and big data. Nineteen teams from six local universities pitched at the CUPP 2018 Demo Day on 23 October 2018 to present their Fintech business prototypes before a judge panel. Due to their outstanding performance, the HKBU teams received a seed funding worth HK\$100,000 from Cyberport Creative Micro Fund and a fast-track interview opportunity through the Cyberport Incubation Programme.



Techathon 2019

The Hong Kong Techathon 2019 — a three-day competition jointly organised by Hong Kong Baptist University, Hong Kong Polytechnic University, the City University of Hong Kong and Hong Kong Science and Technology Parks Corporation — has successfully concluded on 25 November 2018. The event provided a platform for programmers, engineers, designers, marketers and entrepreneurs to meet like-minded people and make use of artificial intelligence and big data for venture creation. Forty-seven teams comprising 300 participants rivalled on four tracks titled Smart City, Fintech, Education/Social Technology and Medical/Healthcare Technology. Teams pitched their innovative ideas to the judge panel and competed for attractive awards, including a seed fund worth HK\$350,000 with the acceptance into an incubation programme, as well as cash prizes worth HK\$13,500. Mr Christopher Zhang Cheng-xin, a fourth year student from HKBU's Computer Science programme, and his team won the contest in the healthcare category. For more details, please see [Annex 16](#).

Knowledge Transfer Awards 2019 Winners

INNOVATIONEM AWARD

Project Title	A non-invasive and fast screening method towards prostate cancer
First Inventor	Prof Gary Wong Ka-leung, Professor and Head, Department of Chemistry

Prof Wong and his team have developed a type of smart nanoparticles that can detect prostate cancer with up to 90% accuracy. He won the Gold Medal with the Congratulations of Jury and the Thailand Award for the Best International Invention at the 47th International Exhibition of Inventions of Geneva.



KNOWLEDGE TRANSFER AWARD

Project Title	Career and life adventure planning for youth-at-risk in community settings
Principal Investigator	Prof Victor Wong Cheong-wing, Professor, Department of Social Work
External Partners	<ol style="list-style-type: none">1. The Hong Kong Jockey Club Charities Trust2. The Chinese University of Hong Kong3. Hong Kong Association of Career Masters and Guidance Masters Limited4. The Hong Kong Council of Social Services5. The Boys' & Girls' Clubs Association of Hong Kong6. Evangelical Lutheran Church Social Service - Hong Kong7. Hong Kong Christian Service8. Hong Kong Children & Youth Services9. Hong Kong Young Women's Christian Association10. Generation Hong Kong11. ISS Facility Services Limited12. Pricerite Home Limited



Underpinned by his novel Expanded Notion of Work (ENOW) model, Prof Wong has initiated a five-year project on designing, delivering and evaluating career services for youth. It is an excellent example of high-quality research creating significant and far-reaching impact beyond academia.

HKBU KNOWLEDGE TRANSFER AWARDS



Innovationem Award



Knowledge Transfer Award

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Annex 1

The OH Furniture × OHO Jewellery Collection



Can you imagine a chair that is stackable yet can be converted into a coffee table? The OH Furniture collection does just that by featuring a unique interlock mechanism that enables easy assembly and disassembly. The design not only addresses the customisation needs of modern consumers, but also combines understated elegance and affordable luxury into one product.

The ring, necklace and earrings of the OHO Jewellery collection, which have beautiful gemstones and sterling silver connected by the same interlock mechanism, can be modified and adjusted to fit the mood or needs of the occasion. The product gives customers the versatility to go from casual wear to sophisticated look, anywhere, anytime. The OHO Jewellery Collection is sure to bring a modern chic to every girl's day-to-day look.

Annex 2

Targeting Cancer via the EBNA1 Viral Protein

Epstein-Barr virus (EBV) is a common human herpes virus that can spread through saliva. Children that are infected at a young age may not experience any symptoms. As a result, EBV can lie dormant inside the host without causing complications until the host becomes older.

Studies have found that latent infection of EBV can increase a person's risk for cancers, such as nasopharyngeal cancer and gastric cancer. With the support of the Matching Proof-of-Concept Fund (MPCF), Prof Gary Wong Ka-leung from HKBU's Department of Chemistry and Dr Lung Hong-lok from HKBU's Department of Biology have now developed an imaging probe that not only highlights EBV-infected areas but also suppresses EBV-associated tumours.

The 'dual-function' probe specifically binds Epstein-Barr nuclear antigen 1 (EBNA1), a viral protein widely found in the nucleus of EBV-infected cells. It can be used to increase the contrast of EBV-associated tumours under magnetic resonance imaging or positron-emission tomography. Tests show that the probe can effectively inhibit tumour where conventional treatment has had little success. Currently, highly sensitive imaging probes for revealing EBV-associated tumours are rare. The findings therefore have important implications for cancer therapy and biomedical studies.

A Non-invasive, Point-of-care Detection Assay for Alzheimer's disease

Alzheimer's disease is set to become an epidemic as the world's ageing population continues to grow. The medical condition affects approximately 47 million people worldwide, with 10 million new cases being added each year. Although there is no cure for Alzheimer's disease, early detection and treatment can delay the onset of symptoms and disease progression.

Currently, the presence of Alzheimer's disease is detected by analysing cerebrospinal fluid (the colourless body fluid found in the brain and spinal cord) with established biomarkers, such as amyloid beta protein and tau protein. The method is highly accurate, but the extraction process is invasive.

With the support of the MPCF, HKBU researchers have developed a detection assay for Alzheimer's disease that works on serum, blood, saliva and urine. The device uses magnetic fluorescent nanoprobe to capture established biomarkers and is 100 times more sensitive than conventional biochemical assays. In addition, the detection assay requires only minute amounts of sample — in the order of a few microliters — and is fast and inexpensive. It is perfect for use in point-of-care diagnosis. The technology has now been licensed to the HKBU spin-off company Mind and Tech Limited.

Annex 3

Global University Film Awards (GUFA)

The first GUFA Award Presentation Ceremony was held on 9 November 2018. The Gold Award went to the University of Music and Performing Arts Vienna, while the Best Documentary went to the Film and Television Institute of India. The event attracted over 1,800 entries from nearly 100 countries, including the United States, Europe and Asia to compete for Best Short Film in one of five categories: narrative, narrative (Chinese), documentary, animation and experimental.

An overwhelming number of distinguished guests helped present at the GUFA Award Presentation Ceremony. They include Mr Tim Yip Kam-tim, the winner of Academy Award for Best Production Design; Mr Johnnie To Kei-fung, the renowned film director; Ms Angie Chan On-kei, the documentary filmmaker; Mr Raman Hui Shing-ngai, the animation filmmaker; Mr Jonathan Wong Chee-hynn and Ms Fala Chen Fat-lai, Hong Kong artists; Ms Shi Nan-sun, the film producer; Mr Patrick Tam Kar-ming and Mr Steve Chan Chi-fat, film directors; and Dr Allan Zeman, the Chairman of Lan Kwai Fong Group.

Creative Practice of Youth Career Development

1. Underpinning research

Inspired by Prof Victor Wong Cheong-wing's research on "Expanded Notion of Work" (ENOW), CLAP argues that having a wide spectrum of paid and unpaid work experience is beneficial to youth employment in post-industrial societies such as Hong Kong [2.1]. It provides a basis for social workers to engage with young people and recognise their interests. Through experiential learning, young people can develop their Values, Attitudes, Skills, and Knowledge (VASK) in line with ENOW's objectives [2.2]. In Hong Kong, academic achievements and paid work are generally considered to be valuable experiences, whereas unpaid work such as volunteering, domestic/neighbourhood provisioning and leisure activities, are viewed as a distraction [2.3]. These conventional views pose significant challenges for young people, especially those "Not in Education, Employment or Training" (NEET) and NEET-at risk of doing so [2.4].

In this respect, the ENOW-VASK framework provides a springboard for NEET youth to find their interests and strengthen their self-confidence. VASK helps young people improve their career readiness and move out of the NEET status and step into a brighter career future. The process also encourages young people to engage with society with a better sense of autonomy through better decision making, identity building and pursuit of aspirations [2.5-2.6].

2. References to the research

Publications

1. Wong, V. (2015). 'Youth transition to work in an age of uncertainty and insecurity: Towards an expanded notion of work for insight and innovation', *Journal of Applied Youth Studies*, 1(1): 21-41.
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3. Details of the impact

3.1 Facilitating youth in career and life planning

CV360 is an expanded functional curriculum vitae that captures VASK from youth's ENOW experiences. It helps youth build up self-confidence and recognise their achievements besides academic performance. The project team encourages university students to use CV360 in conjunction with job searching platforms such as JobsDB.com and Moovup.hk. Over 600 business partners, including McDonald's, Pricerite Home, Bauhaus, First Ferry, JC Club House and YMCA Hotel, participated in the CLAP project. As of July 2019, 9,011 youth clients aged 15-21 were served and the general response to CV360 has been very positive. Over 85% of the users agreed that CV360 enhanced their self-confidence, self-understanding and career development.

over 84%
NEETs with positive growth

In the following areas:

- Mastering the knowledge of CLAP
- Identifying one's interests and strengths
- Enhancing one's motivation
- Decreasing undesirable / anti-social behavior

over 87%
NEETs receive meaningful

Engagement in education, employment or training through CLAP



The CLAP team has reached out to **9,011** of the **9,400** youth in the community.

Employers noted that CV360 was useful in sourcing hidden talents in the labour market. It also helped them evaluate talents from a new angle by acknowledging both paid and unpaid work experiences. Furthermore, employers agreed that CV360 facilitated the matching of talents with job positions.

672

Business Partners

Engaged by providing work placements, visits, and other collaboration programmes



93%

Business partners were open and willing to support youth on their career roadmap

Several business partners participated in the One-Stop Workplace Learning Programme. The event provided an opportunity for young people to gather information on career and life planning (89.4%), identify their interests (85.1%) and enhance their strengths (89.4%). Most participants agreed that the activities were useful for career planning (82.5%).

Some CV360 users also used the ENOW-VASK card sorting function to help identify VASK and share experiences. Two versions of manuals are being developed; one for career practitioners and another for human resource practitioners.



consisted of a total of 90 hours is structured into three levels plus elective seminars and workshops delivered by international scholars. The first two levels are open to aforementioned helping professionals, and the remaining one restricted to CLAP's colleagues.

90%

Social workers or youth work practitioners gained insights in career intervention

1,557

Youth Workers



over 96%

Social workers or youth work practitioners enhanced abilities in planning, promoting, and reviewing CLAP services

Participants who took up the course generally agreed that it helped improve their professional knowledge and abilities in providing career and life education. These practitioners also affirmed that they will apply the skills learned in their work and introduce the concepts to their co-workers.



Prof Victor Wong Cheong-wing was introducing CV360 to social workers and youth workers.

3.2 Training youth service practitioners

The Professional Development Framework (PDF) is a professional career training that aims to support social workers, youth workers and teaching professionals in their delivery of career services to NEETs, NEETs-at-risk and young people in general. The course



Highlight Video



Highlight Video

VASK explanation video:

<https://youtu.be/9gMoyHwmmqg>

CV360 explanation video:

<https://youtu.be/yuv7C9yexVo>

Annex 5

Empowering Students to Become Better Language Learners

1. Underpinning research

Dr Anita Poon Yuk-kang's research focuses on English language education and policy. She found that the teaching method adopted in Hong Kong's English class is very traditional and boring, even though numerous initiatives pertaining to teaching had been advocated [2.1]. Dr Poon proposed an unconventional teaching method called the Integrative-Narrative Method for making the class more interesting and improving students' listening proficiency. The new method also helps English teachers change their teaching methodology and grow professionally [2.2]. Compared to traditional learning

using a prescribed textbook, the Integrative-Narrative Method is more effective in training students' listening, speaking and writing skills [2.3]. Dr Poon argues that such an alternative teaching method underpinning the e-package can help students remove their psychological block in the process of learning a second language.

Prof Sandy Li Siu-cheung has published widely in the field of Information and Communication Technology, particular on the topics of ubiquitous learning and leadership. His research showed that group collaboration between students is conducive to fostering high-level

cognitive and metacognitive activities in an online social annotation environment [2.4]. In addition, parental support, permeation of technology in student learning and teacher empowerment are pivotal to successful teaching and learning [2.5]. Based on these findings, Prof Li suggests that learning through ICT, for example tablet PC, may help students effectively participate in the emerging global knowledge economy [2.6].

2. References to the research

Publications

1. Poon, Anita Y.K. (2011). Integrative-narrative method: The role of narratives, integrated skills and cognitive strategies in the teaching of English listening in Hong Kong. *The Asia-Pacific Education Research*, 11(3), 477-488.
2. Poon, Anita Y.K. (2008). How action research can complement formal language teacher education. *The Asia-Pacific Education Researcher*, 17 (1), 43-62.
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6. Li, S.C., Pow, J.W.C., Wong, E.M.L. & Fung, A.C.W. (2010). Empowering Student Learning through Tablet PCs: A Case Study. *Education and Information Technologies*, 15(3), pp. 171-180.

3. Details of the impact

3.1 Stimulating students' interest in reading and creative writing

Students who participated in the project said that the e-package was interesting and interactive. They preferred assessment tasks on the e-platform to traditional textbooks because drilling was unnecessary. The assessment helped students gain confidence and independence in English reading and creative writing.

3.2 Enhancing teachers' assessment literacy and teaching skills

The e-platform and e-package helped teachers enhance their English knowledge and teaching skills. The way to assess students was totally changed. Teachers were able to analyse feedback from students in real time using new tools. The assessment would then help students develop self-directed learning.

3.3 Improving the assessment culture

The education system in Hong Kong has long been criticised for being examination-oriented. Although the Hong Kong Education Bureau has tried to promote “assessment for learning” (i.e. teachers using assessment results as a feedback on how to improve teaching and learning) and “assessment as learning” (i.e. students using assessment as part of their learning), the latter was not popularised due to the poor design of assessment tasks. Because of this, Dr Poon and her team developed an e-platform and an assessment package for assessing the reading and writing skills of primary school students. The team adopted a task-based language learning approach in the design of assessment tasks. In this approach, students perform small tasks in order to acquire the knowledge of vocabulary and grammar as well as reading and writing skills. This project is set to bring changes to the assessment culture in Hong Kong.

Annex 6

A New Pedagogy to Enhance Teaching and Study of Ethical Reasoning in Hong Kong Secondary Education

1. Underpinning research

Prof Chan Shun-hing advocated a pedagogical practice emphasising the use of indigenous religions and local materials for teaching Ethics and Religious Studies. He employed the four steps of action research, namely initial reflection, planning, action, and observation, to refine the teaching materials. The results were remarkable [2.1]. His research showed that using local materials not

only enhanced students' learning motivation, but also facilitated their understanding of Western social theories [2.2]. Underpinned by these researches, he proposed the use of his revised teaching materials in teaching Ethics and Religious Studies at Hong Kong secondary education. A new programme for teaching ethical reasoning to Form 4-6 students was also developed.

2. References to the research

Publications

1. **Chan, Shun-hing.** (2001). Western Theory, Indigenous Religion, and Local Material: Enhancing Learning Motivation among Students of Religious Studies in the Asian Context. *Teaching Theology and Religion*, 4(1): 32-39.
2. **Chan, Shun-hing.** (2001). Religious Inquiry as Existential Question in Context: An Action Research in Religious Education. In *The Compendium of Selected Teaching Development Grants Projects*, 107-119. Hong Kong: Hong Kong Baptist University.

3. Details of the impact

3.1 Enhancing students' knowledge and skills of ethical reasoning

Six secondary school teachers have been recruited by the project team and Education Bureau (EDB) to develop a teaching kit comprising 17 lesson plans for use in Ethics and Religious Studies. The teaching kit contains reflection essays on ethical reasoning written by HKBU students. A 289-page teaching kit entitled *Resource Booklet of Ethical Reasoning* was published by EDB and distributed to 90 secondary schools that offered Ethics and Religious Studies as a subject.

The teaching kit is designed to help students formulate arguments and counterarguments in moral and ethical discussions. The effectiveness of the kit was corroborated by significantly improved academic results of the students. In different interviews, the teachers and students affirmed that the programme was useful in advancing their knowledge and skills in ethical reasoning.

In a Knowledge Enrichment Seminar organised by EDB, Prof Chan explained that the concepts behind the new pedagogical practice to 70 secondary school teachers. After the seminar, over 90% of attendees said that they will share the new pedagogy with other people. Over 80% rated the seminar “satisfactory” or “very satisfactory”.

Mr John Chong Kee-ann, Coordinator of Net 1 of the New Joint School Collaboration Committee (NJSCC) of the Hong Kong Catholic Church on Ethics and Religious Studies, corroborated the impact of the project. He said, “We acknowledge the tremendous contribution of the project. Students could acquire the skills of moral reasoning through the Resource Booklet. The booklet also provides rich materials for students to use when facing moral issues in life.” He also affirmed that NJSCC would use the materials to enhance students' ethical reasoning.

3.2 Nurturing citizenship via ethical reasoning

The educational value of this project was premised on the belief that understanding ethical reasoning is the basis for nurturing responsible citizens. The new teaching kit not only facilitates students' learning but also nurtures citizenship of the next generation. Mr Eric Yip Cheong-man, Curriculum Development Officer of the EDB corroborated that Prof Chan's work brought remarkable impact to the domain of ethics education in secondary schools. He affirmed that the project will nurture generations of informed, reasonable, responsible and contributive citizens. In different interviews, students said that the programme enhanced their sense of citizenship.

3.3 Facilitating teaching for ethical reasoning

Many teachers find it difficult to provide daily-life examples in explaining western ethical theories. The teaching kit alleviated this problem. Mr Leung Yat-sum, Manager of Ethics and Religious Studies at the Hong Kong Examination and Assessment Authority (HKEAA) commented that the project has greatly helped the teacher community by providing a booklet containing numerous useful examples. He believed that the pedagogy will bring positive impacts to secondary schools regarding promotion of rational dialogue, social awareness and learning motivation. The *Resource Booklet of Ethical Reasoning* was adopted in a teachers' training programme organised by the HKEAA in 2018. Mr Fung Cheung, President of the Hong Kong Association of Ethics and Religious Education (HKaERE) remarked, “The positive influence of the project has reached many students and teachers during Ethical lessons as well as School Assemblies...I identify the need of enriching students' ability in moral reasoning with reference to multiple perspectives. The project demonstrates a very good teaching materials and references for both student and teacher development.”

Fostering Students' Creativity through Music and Arts

1. Underpinning research

Prof Ho Wai-chung used empirical research methods to investigate the relationship between school music education and students' musical experiences in Hong Kong [2.1]. Her analysis showed that music and arts education are beneficial to youngsters' overall development [2.2]. It is vital to facilitate youngsters' creativity development as it helps sustain socio-cultural development. Therefore, new knowledge, ideas and skills are needed to foster creativity in youngsters [2.3]. Prof Ho also found that the music curriculum of Hong Kong secondary schools is not flexible enough to adapt to global, national and local trends. Therefore, it is necessary for teachers to rethink and redesign the current curriculum in order to enhance students' learning. She proposed implementing information technology in music learning to help students approach music-based activities such as composing, listening and performing with greater appreciation and deeper understanding [2.4].

2. References to the research

Publications

1. Ho, W.C. (2006). Challenges to values education in Hong Kong school music education. *Asia Pacific Journal of Education*, 26(2), 225-241.
2. Ho, W.C. (2009). A study of Hong Kong young students' music participation in and out of school. *Research in Education*, 82, 28-46.
3. Ho, W.C. (2017). Developing creativity and cultural and social awareness in general education: A case study of higher education in Hong Kong. *Journal of Youth Studies*, 20(1), 172-188.
4. Ho, W.C. (2007). Students' experience of music learning in Hong Kong's secondary schools. *International Journal of Music Education*, 25(1), 31-48.

3. Details of the impact

To improve the current curriculum design, Prof Ho has developed a new pedagogy for training students' creativity in the use of arts, music and information technology. Two secondary schools were chosen as case studies for the empirical inquiry of present-day problems under real-life circumstances.

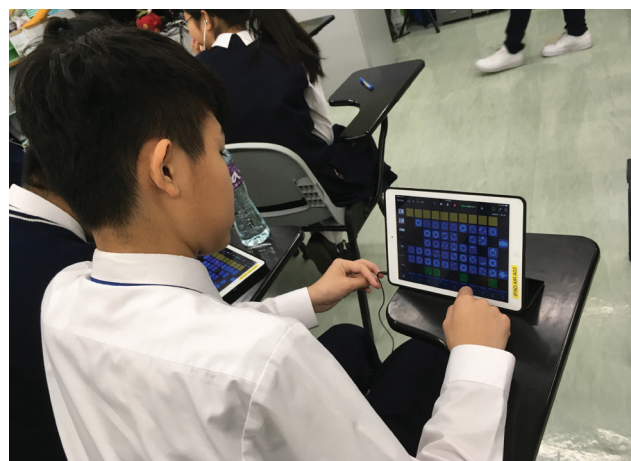
The educational value of this project was premised on the belief that there is potential value in promoting creativity and cultural awareness in school education, as students can apply creativity to cultural appreciation and understanding in various means and on a multitude of levels.

3.1 The effective integration of creativity and arts education in learning

Around 300 secondary school students were involved in this project. The effectiveness of the new pedagogy was examined via survey questionnaires, reflective papers and interviews with students before and after the project. The results showed that arts, creative arts and music are vital to students and their community. Music and arts education helped foster creativity, open-mindedness and future visions. The new pedagogy also enhanced their critical thinking and communication skills. Many students corroborated that the exposure to different music styles and music cultures enhanced their creativity. The study also found that the creative use of arts and music in teaching encourages student participation and the development of self-confidence.

3.2 Facilitating teachers on creativity training

Teachers who had little experiences with creativity training were given professional advices on the use of visual arts, music and technology in teaching. They corroborated that the new pedagogy enhanced students' participation in music lessons and creativity. They also agreed that new technology helped engage students in music creation in a more broadly conceived and culturally responsive way.



3.3 To nurture creativity through creative music and arts training in Hong Kong and Mainland China

To sustain the impacts of the project, a teaching kit was produced to help teachers, educators, and policymakers reconsider the roles of music, arts education and arts-integrated learning in fostering students' creativity, expression and responses to problems. An audience-building programme was organised with around 150 school music teachers

and music practitioners attended. The event was well received. In-depth interviews with 22 seminar participants were conducted. The participants learned new viewpoints in creative music teaching and were inspired by the use of music technology in cultivating creativity. Having attended the programme, many school music teachers said that they will integrate music and other creative arts into their teaching lessons.

Another public seminar on creativity, music, and arts education was conducted in Central South University (CSU), Changsha. The research coordinator Dr Wang Miao corroborated that teachers and students benefited from the hands-on experiences shared in the seminar. Moreover, Dr Wang affirmed that CSU will continue to apply the materials developed by Prof Ho in their future training. Dr Wang and participants believed that the project impact will have a sustainable, constructive influence on school and community education in Changsha, as well as other parts of China.

Annex 8

Alumni and Teachers Shine Bright at the 38th Hong Kong Film Awards

The film *Project Gutenberg*, written and directed by HKBU alumnus Mr Felix Chong Man-keung, received the highest number of nominations at the 38th Hong Kong Film Awards. It snatched seven prizes, including Best Film, Best Director, Best Screenplay, Best Cinematography, Best Film Editing, Best Art Direction, as well as Best Costume and Make Up Design. This film also became the second-most nominated film in the history of the Hong Kong Film Awards.

The film *Still Human*, directed by HKBU alumna Ms Oliver Chan Siu-kuen also won Best Actor and Best New Performer at the 38th Hong Kong Film Awards.

President and Vice-Chancellor Prof Roland Chin Tai-hong congratulated the winning alumni. He said, “It is very encouraging to see the dedication, creativity and hard work of our enthusiastic film professionals recognised at these prestigious awards. Such critical acclaim also shows that Hong Kong is full of film talents. HKBU will continue to nurture more creative young people, providing them with an excellent cinematic arts and creative media education which will enable them to reach their potential.”

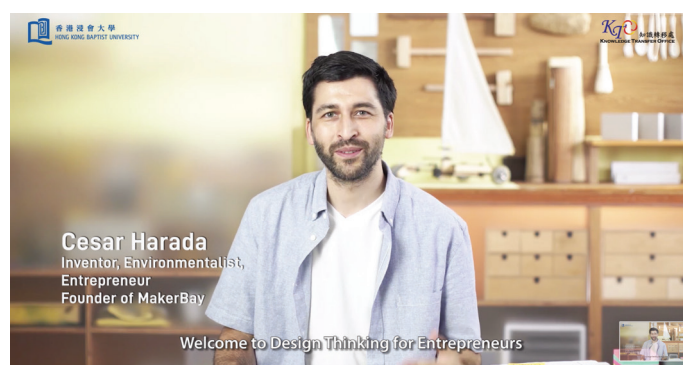
Annex 9

Online and Offline Entrepreneurial Training for HKBU Budding Entrepreneurs

KTO BEST is dedicated to cultivating an entrepreneurial atmosphere across the HKBU campus. It also provides experiential training for HKBU spin-off companies and students so to equip them with a can-do attitude, business acumen, and entrepreneurial spirit. The following are the online and offline training sessions held in the past year.

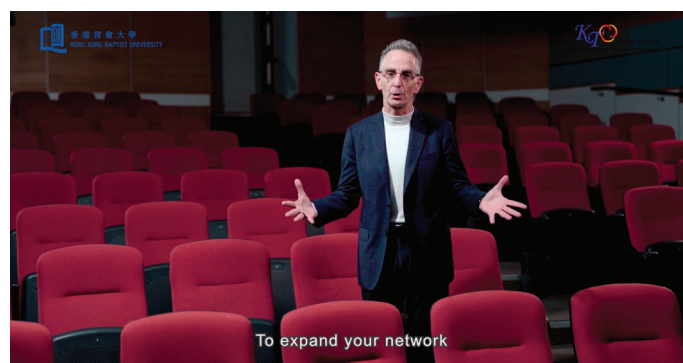
Online Training — BEST 1002 and 1003

Following the overwhelming response from ‘BEST 1001 — Berkeley Method of Entrepreneurship in Hong Kong’, two new online modules called ‘BEST 1002 — Design Thinking Fundamentals for Entrepreneurs’ and ‘BEST 1003 — Aha! That’s How You Network’ were launched on HKBU Moodle in May 2019.



‘BEST 1002 — Design Thinking Fundamentals for Entrepreneurs’ by Mr Cesar Jung-Harada, Director of MakerBay Limited

Design thinking is an iterative process wherein participants generate creative solutions by understanding users’ needs holistically. It is commonly used in the development of new products and services, as well as the brainstorming of solutions to social problems.



‘BEST 1003 — Aha! That’s How You Network’ by Mr Nathan Gold, Chief Coach of The Demo Coach

Participants will learn networking tips, tricks and techniques in this online module on how they can better their networking skills and stand out from the crowd.

Distinguished Lecture Series

To better equip our budding entrepreneurs with knowledge, skills and mindsets, KTO organised not only online training but also different offline lectures during 2018-19.

Ten Proven Ways to Connect Emotionally with Your Audience by Mr Nathan Gold, Chief Coach of The Demo Coach



Nathan hosted a workshop on the art of persuasion on 23 October 2018 and shared techniques used by some of the most powerful and memorable presenters in history with more than 100 enthusiastic participants. His tips and insights on how to connect with the audience on an emotional level were well received.

Design Thinking Fundamentals by Mr Cesar Jung-Harada, Director of MakerBay Limited



Over 130 staff and students attended Design Thinking Fundamentals, a seminar on how to brainstorm creative solutions, on 29 January 2019. Participants were able to learn more about how “Design Thinking” could help with their everyday work and study.

Startup Semester Programme

The programme, organised by Sutardja Center for Entrepreneurship and Technology (SCET) of University of California, Berkeley, provides a rare opportunity for students to learn from serial entrepreneurs who had start-up companies in Silicon Valley. HKBU students can apply for unit transfer once they complete the programme as it is recognised by HKBU programme directors.



With the generous support from donors and their respective academic units, a team of seven HKBU students successfully completed one-semester courses from August to December 2018.



This year, a total of 28 applications were received from students of six different academic units. Eight students were selected by the judging panel to join the Startup Semester Programme Fall 2019. These students were (on the first row from left to right) Judy Li Chen, Crystal Gao Jia-ying, Khor Mi-jing, (back row) Sophie Han Jia-tong, Sherril Wang Xue-meng, Thomas Wu Ho-hoi, Francis Lin Tong and Rhona Lyu Chen-yu. With the kind support from donors, each eligible HKBU student was given a US\$4,000 tuition subsidy.

Annex 10

An Urine-based Detection Kit for Prostate Cancer

1. Summary of the impact

This is a health and economic impact case. It is estimated that one in six men would develop prostate cancer in their lifetime. Although the incidence rate increases exponentially with age, 78% of men aged > 40 do not receive any prostate examination. There is a 95% chance of treatment success if prostate cancer is detected early. Unfortunately, current screening methods have a high false-positive rate. Prof Gary Wong Ka-leung invented a fast and accurate screening method for prostate cancer to address the issues. He also founded a start-up company to develop a non-invasive detection kit with a Hong Kong-listed pharmaceutical company.

2. Underpinning research

Prostate cancer brings momentous public health impact in many developed countries. It is estimated that one in six men would get this disease, and that the incidence rate increases exponentially with age for men aged over 40. In Hong Kong, prostate cancer is ranked the third most common cancer in men and fifth most fatal cancer. Regrettably, men generally lack the knowledge of prostate cancer and do not undergo prostate examination. Stage 2 prostate cancer has a 95% chance of survival 15 years after treatment. However, the rate drops to 30% if the prostate cancer is discovered at a late stage.

At present, the two most common screening methods for prostate cancer are prostate-specific antigen (PSA) screening and digital rectal examination (DRE). However, the results can be inaccurate or inconclusive,

which may lead to unnecessary treatment or follow-up tests such as transrectal ultrasound prostatic biopsy (TRUSPB), CT and MRI scan.

In late 1960s, Russell's group reported a key enzyme involved in polyamine production that is associated with the development of several cancers such as leukaemia. Recently, it has been reported that dysregulation of this enzyme can lead to prostate cancer. Some studies also suggest that the enzyme may serve as a target for prostate cancer therapy, and that urinary polyamine concentration may serve as a mean for prostate cancer diagnosis. However, research on this has had limited progress.

Prof Wong's team has invented a nanoparticle-based aptasensor for sensing prostate cancer in a convenient and fast manner. They conducted a pilot study to determine the levels of various urinary polyamines in patients with known clinicopathological characteristics by monitoring the urinary levels with ultra-high performance liquid chromatography mass spectrometer [3.1]. Urine-based assays present a significant area for PCa biomarker research since its collection is non-invasive and readily available; more importantly, it affords the sample detection for either malignancy-related metabolites excreted in urine, directly exfoliated cancer cells or prostatic products secreted into the genitourinary tract. Therefore, it is ideal for PCa biomarker investigation. In this study, urinary spermine was demonstrated to have an exceptionally good diagnostic performance to distinguish the PCa patients from non-cancerous cases which is consistent with the clinical standard of TRUSPB results. The area-under-curve value of 0.83 ± 0.03 implied that the specificity could reach around 60% at 90% sensitivity in their selected patient cohort when it acts as a secondary test to supplement the serum PSA test. The finding of a drop in urinary spermine level was also consistent with literatures. Thus, it serves as a novel PCa diagnostic biomarker to solve the problem of the current serum PSA test where its specificity is only around 27% at 90% sensitivity. It indicates that around 60% of the unnecessary invasive TRUSPB tests can be avoided [3.2-3.5].

3. References to the research

Publications

1. Tsoi T.H., Chan C.F., Chan W.L., Chiu K.F., Wong W.T., Ng C.F. & **Wong K.L.** Urinary Polyamines: A Pilot Study on Their Roles as Prostate Cancer Detection Biomarkers. *PLoS One* 11(9), e0162217 (2016).
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Patents

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2. **Wong K.L.** "Urinary Polyamines as Prostate Cancer Detection Biomarkers". US Patent Application No. 15/953,572, filed on 16 April 2018.
3. **Wong K.L.** "作為前列腺癌偵測生物標記之尿聚胺". Taiwan Patent Application No. 106135636, filed on 17 October 2017.
4. **Wong K.L.** "作為前列腺癌偵測生物標記的尿液聚胺". Taiwan Patent Application No. 107112944, filed on 16 April 2018.
5. **Wong K.L.** "Urinary Polyamines as Prostate Cancer Detection Biomarkers". PCT Patent Application No. PCT/CN2018/083241, filed on 16 April 2018.

4. Details of the impact

Prostate Cancer (PCa) is one of the most common non-skin male-related cancers in the world, and it is one of the leading causes of mortality and momentous public health impact in many developed countries, like most western European nations and the United States. Hong Kong cannot be exempted in this public health issue. With reference to the statistics of Hong Kong Cancer Registry, Hospital Authority, PCa ranked the 3rd in the most common cancers in men and 5th in the most fatal cancers. Given the latency of early, treatable PCa and the lethality in its late and discernible stage, there is an urgent demand for more sensitive and accurate diagnostic methods to detect early PCa so that the treatment outcome can be significantly improved and more lives can be saved.

Current diagnosis of PCa relied mainly on the clinical suspiciousness raised by digital rectal examination (DRE) and prostate specific antigen (PSA) test, followed by transrectal ultrasound prostatic biopsy (TRUSPB) confirmation. Although DRE is a simple procedure, it brings discomfort to patients. It is also a strongly-investigator-dependent technique, showing poor accuracy for PCa diagnosis. In particular, DRE is not a good tool for the early detection of PCa because most DRE positive PCa results are of advanced staging. While PSA test is also a simple and popular test with good sensitivity to detect early cancer; however, elevated PSA levels had also been observed in patients with Benign Prostatic Hyperplasia (BPH) and prostatitis, etc., which means it has a poor specificity towards PCa. For reference, within the grey zone of 4-10ng/ml, the positive-predictive value has a small mean value of 21%. Nevertheless, very few reports focused on detecting the

effects of PCa on urinary polyamines levels, which in turn might provide a potential diagnostic tool for this increasingly common cancer.

Acknowledging its risen prevalence in both China and Hong Kong in recent years, the Centre for Health Protection, Government of HKSAR is also working hard to educate and deliver more health information on this concerning health topic to the public. It can be foreseen more and more men aged > 40 will be eager to receive an early PCa screening and therefore early treatment if needed. However, the high false-positive rate brought by the current tests would lead to more and more unnecessary biopsy treatment or follow-up. On one hand, it brings negative consequences like haematuria and prolongs worrying to patients and on the other hand, which is more serious, it will place a huge burden on the Hong Kong medical system. Together with the rapid population growth, the lack of fast, responsive and accurate PCa screening methods for providing conclusive hints on making further proper decisions of medical treatment will finally be a threat on both ends.

Prof Wong and his team have developed smart nanoparticles which can detect PCa. In their pilot study, through a well validated chromatographic method, urinary spermine had been shown to possess usefulness in differentiating PCa from non-cancerous cases including benign prostatic hyperplasia, and it could help to act as a secondary screening tool to PSA test to address its high false-positive rate when using 4.0ng/ml as a cut-off point. Their invention can inspire the scientists to study the exact mechanism by analytical means.

Prof Wong has received a three-year funding worth HK\$2.95 million from the HKBU Technology Start-up Support Scheme for Universities (TSSSU), which is financed by the Innovation and Technology Commission (ITC). They set up the startup company New Life Medicine Technology in 2017 [5.1]. At present, the company has four technical staff, including a business development manager, a chief scientific officer and two research assistants. Within one year of its establishment, the company has received a major investment. The patents have been exclusively licensed to a Hong Kong-listed pharmaceutical company for further product development and regulatory approval.

The invention won a gold medal with the Congratulations of Jury and the Thailand Award for the Best International Invention at the 47th International Exhibition of Inventions of Geneva held in Switzerland. [5.2-9] To recognise the outstanding impacts of the project, Prof Wong was awarded the HKBU Innovation Award 2019 [5.10].

5. Sources to corroborate the impact

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2. HKBU eNews (13 April 2019), “HKBU scholars’ inventions win four awards at International Exhibition of Inventions of Geneva”
3. HK01 (14 April 2019), 「理大、中大、浸大科研揚威日內瓦發明展 共奪35個獎項」
4. Sing Tao Daily (星島日報) (14 April 2019), 「港研發鋰電池技術 奪國際發明展大獎」
5. Hkcd (香港商報) (14 April 2019), 「日內瓦國際發明展勇奪56金53銀 港發明再膺最高榮」
6. Hkej (信報) (14 April 2019), 「浸大日內瓦發明展報捷 三參展項目奪三獎」
7. Wen Wei Po (香港文匯報) (14 April 2019), 「浸大革新測試工具 驗前列腺癌九成準」
8. Ta Kung Pao (大公報) (14 April 2019), 「港研發新電池技術解環保災難」
9. On.cc (東網) (14 April 2019), 「港初創公司奪國際發明展全場大獎」
10. HKBU eNews (27 May 2019), “HKBU honours distinguished staff for excellence in teaching, scholarly work and services”

Annex 11

Promotion of the Family Doctor Healthcare Model

1. Underpinning research

Dr Timothy Fung Kai-fung has extensive research experience in health communication and persuasion. His research [2.1] shows that parents of young children are more likely to adopt the family doctor healthcare model because they perceive their children to be more vulnerable to physical, developmental, and socio-psychological health threats. Therefore, Dr Fung and his team selected parents who have children aged 0 to 6 years as the target audience in this health communication intervention. Built on his award-winning research [2.2-2.3], Dr Fung applied the communication theories of narrative persuasion and counterfactual thinking to design the persuasive message in the Announcement in the Public Interest (API) and the micro movie to promote the concept of family doctor in Hong Kong [2.4].

2. References to the research

Publications

1. **Fung, Timothy K.F.**, Yuen, Y.Y., Wong, L. K. (August 2017). Factors influencing the adoption of family doctors among young adults: A focus group study. A Commissioned Research for Primary Care Office, Department of Health, Hong Kong Special Administrative Region Government.
2. **Fung, Timothy K.F.** The role of counterfactual thinking in narrative persuasion: Its impact on patients' adherence to treatment regimen. Paper presented at the annual conference of Association for Education in Journalism and Mass Communication, Washington, D.C., August 6-9, 2018. [Top Conference Paper Award]
3. **Fung, Timothy K.F.** (In press). The role of counterfactual thinking in narrative persuasion: Its impact on patients' adherence to treatment regimen. Health Communication. doi: 10.1080/10410236.2018.1500432.
4. **Fung, Timothy K.F.** & Chun, W. T. (2018). Intervention evaluation report for "My Family Doctor" promotional video. A Commissioned Research for Primary Care Office, Department of Health, Hong Kong Special Administrative Region Government.

3. Details of the impact

3.1. Addressing parents' and children's health needs

Dr Fung's project addressed the parents' and children's health needs by persuading parents not only to adopt but also to develop a long-term partnership with the family doctor. The children and their parents would then enjoy a better health status because of the comprehensive, patient-centred healthcare.



New "Family Doctor" logo adopted by the Department of Health

3.2. Promoting the family doctor concept

The project outputs (an API, a micro movie and a logo) were used extensively to promote the family doctor concept in Hong Kong. For example, from 2018 to 2019, the API has been broadcast on free-to-air television networks (RTHK, TVB, ViuTV and Hong Kong Open TV) and on-demand television networks (Cable TV and Now TV). The micro movie has been broadcast at about 200 private clinics and ten dental clinics within the private clinic network. The API and the micro movie have been broadcast on TV kiosks in 187 public housing estates, 20 Home Affairs Enquiry Centres and two locations managed by the Leisure and Cultural Services Department. They were also posted on the websites of the Department of Health (Primary Care Office) and the Education Bureau (Smart Parents).



New "Family Doctor" logo on clinic signage

3.3. Improving the family doctor healthcare promotional practices

The family doctor represents the first level of care (primary care) in a healthcare system. A new "Family Doctor" logo, designed by Dr Fung and his team, was adopted by the Primary Care Office and used in the Primary Care Directory (www.pcdirectory.gov.hk). It was also printed onto an open/closed signage and then distributed to primary care service providers. As of 28 February 2018, a total of 151 physicians have received the open/closed signage, and 1,864 physicians have acquired the e-copy. The project was advertised on buses during the public holidays in Hong Kong (e.g. Chinese New Year, Christmas, Easter). As indicated by the testimonial letters from the Department of Health and the College of Family Physicians, Dr Fung's work has made significant changes to health promotion practices based on communication theory-driven message design. As a result, this project facilitates the understanding of the importance of the family doctor healthcare model and persuades parents of young children to adopt the family doctor healthcare model.

Bridging the Digital Divide

1. Underpinning research

It has been the long-term research interest of Dr Sam Yu Wai-kam to study how disadvantaged groups (such as non-heterosexual, family carers, older people and migrants) respond to *defamilisation* and *familisation* issues. He has three research foci. The first is to explore different ways for conceptualising and reconceptualising the notion of defamilisation and familisation [2.1]. The second is to examine the difficulties in seeking the defamilisation and familisation patterns that are faced by disadvantaged groups [2.2-2.3]. The third is to find ways to reduce these difficulties [2.4-2.6]. Dr Yu seeks to use the project outcomes to further demonstrate the empirical significance of defamilisation, familisation and the adult worker model as suggested in his publications.

2. References to the research

Publications

1. Yu, Sam W.K. (2018), The Contributions of Welfare Typologies to International Social Work Practices, *Asian Social Work Policy Review*, 1 (9), p. 1-9. DOI: 10.1111/aswp.12139.
2. Yu, Sam W.K., Liu, E, Lo, I (2018), The Difficulties faced by Lolas in China in Securing Defamilisation and Familisation, *International Journal of Sociology and Social Policy*, <http://doi.org/10.1108/IJSSP-05-2018.0080>.
3. Yu, Sam W.K., Chau, Ruby C.M. and Kuhner, S. (2018), Defamilisation and familisation risk, adult worker models, and pro-employment/decommodification measures for women: the case of Hong Kong, *Journal of International and Comparative Social Policy*, <http://doi.org/10.1080/1699763.2018.1526699>.
4. Chau, Ruby C.M., Foster, Liam and Yu, Sam W.K. (2017), Defamilisation and leave policies - a comparative study of 14 East Asian and non-East Asian countries, *Journal of Asian Public Policy*, 10 (3), 318-333, DOI: 10.1080/17516234.2017.1322286.
5. Chau, Ruby C.M., Foster, Liam and Yu, Sam W.K. (2016), Defamilisation and familisation measures: Can they reduce the adverse effects of pro-market pension reforms on women in Hong Kong and the UK? *Critical Social Policy*, Vol. 36 (2), p. 205-224. DOI: 10.1177/0261018315621989.
6. Chau, Ruby C.M. and Yu, Sam W.K. (2013), Defamilisation of Twenty-Two countries: Its Implications for the study of East Asian Welfare Regime, *Social Policy and Society*, Vol. 12 (issue 3), pp. 355-367, DOI: 10.1017/S1474746412000577.

3. Details of the impact

3.1 Empowering the middle aged and elderly to master mobile technologies

Three series of training programmes were held in 2018. The training covered basic mobile phone skills, such as the use of communication, navigation and transportation applications. It gave participants more freedom to choose whether and how to use mobile phone more independently. With a stronger sense of ownership, selective participants were asked to become “bridge people” and to teach others how to use mobile phone.

3.2 Reactivating the family roles of the middle aged and elderly

The project enabled the middle aged and elderly to claim a more active role in the family and rekindle relationships. They became more proactive in communicating with family members using mobile applications. This in turn helped them be valued and be respected diligently. Certain participants were selected to shoot tutorial videos, which are available on Youtube. The videos were watched with great feedback by the members of the Lai Yin Association, a charity in the United Kingdom that aims to improve the well-being of Chinese women and their families.

3.3 Understanding the importance of defamilisation/familisation in modern society

Given the positive results and feedback of this project, the external partner, Neighbourhood and Worker's Service Centre, was awarded additional funding in 2018 by the Chinese Temples Committee to train work-injured people to act as bridge people. It shows that defamilisation and familisation are treasured as the importance of concepts was well demonstrated in this project. As these concepts are getting more valued in future, the public can learn how to handle dependency, inter-dependency and autonomy under different contexts.

Early Detection of Circulating Tumour Cells

Prof Ken Yung Kin-lam and Dr Cathy Lui Nga-ping from HKBU's Department of Biology have developed a novel type of magnetic nanoparticles that can be used as contrast agents for magnetic resonance imaging. The technology enables the real-time visualization and tracking of neural stem cells, which have important implications for neurodegenerative diseases. When used in combination with the commercially available fluorescence *in situ* hybridization (FISH) kit, the nanoparticles can be used to detect circulating tumour cells — rare cancer cells released from tumours into the bloodstream that are thought to have a key role in cancer metastasis.

The invention may help restore health, extend the life of patients with incurable diseases and reduce the medical burden to the society. It may also advance medicine and inspire researchers to find innovative solutions for treating other incurable diseases.

An Anti-scratch Coating

Hard coating has always been a hot topic in the field of surface engineering due to its potential to improve product durability and robustness. Currently, there are several well established methods to form hard coatings such as diamond-like carbon and silicon nitride. However, these coatings have one drawback — they can only be applied on certain products due to their non-transparency, size limitation and huge capital investment.

Sapphire, the second hardest material in the world, is transparent and can provide excellent protection against scratch. Unfortunately, the material is heavy, brittle and expensive to process or mass-produced.

Prof Cheah Kok-wai and his team have now used physical vapor deposition (PVD) — a simple, inexpensive technique used by the industry for making thin films — to coat sapphire onto almost any product. The coating made is highly transparent, so it does not affect the original properties or appearance of the deposited substrate.



HKBU Entrepreneurship Bootcamp 2019 – Let the Game Begin!



The Knowledge Transfer Office, in collaboration with the Hong Kong Trade Development Council, hosted the third HKBU Entrepreneurship Bootcamp from 24 to 27 May 2019. The four-day intensive programme is dedicated to supporting students from around the world to pursue their entrepreneurial endeavours, as well as to expand HKBU's entrepreneurship ecosystem with our global partners. This year, the bootcamp attracted over 100 participants from various tertiary education, including University of Oxford, University of California, Berkeley, Nanjing University and South China University of Technology. The programme is set to pave the way for many successful entrepreneurs.



The HKBU Entrepreneur Day Opening Ceremony for HKBU Entrepreneurship Bootcamp cum HKBU TSSSU Companies Innovation Showcase was held on 24 May 2019. Officiating the ceremony were Dr Clement Chen Cheng-jen, Chairman of the Council and the Court of Hong Kong Baptist University; Dr David Chung Wai-keung, Under Secretary for Innovation and Technology of Innovation and Technology Bureau; and Mr Stephen Liang, Assistant Executive Director of the Hong Kong Trade Development Council.



Nine outstanding HKBU spin-off companies received a total of HK\$8 million under the Technology Start-up Support Scheme for Universities (TSSSU). Together they fostered a group of budding entrepreneurs and cultivated the entrepreneurial environment at HKBU.

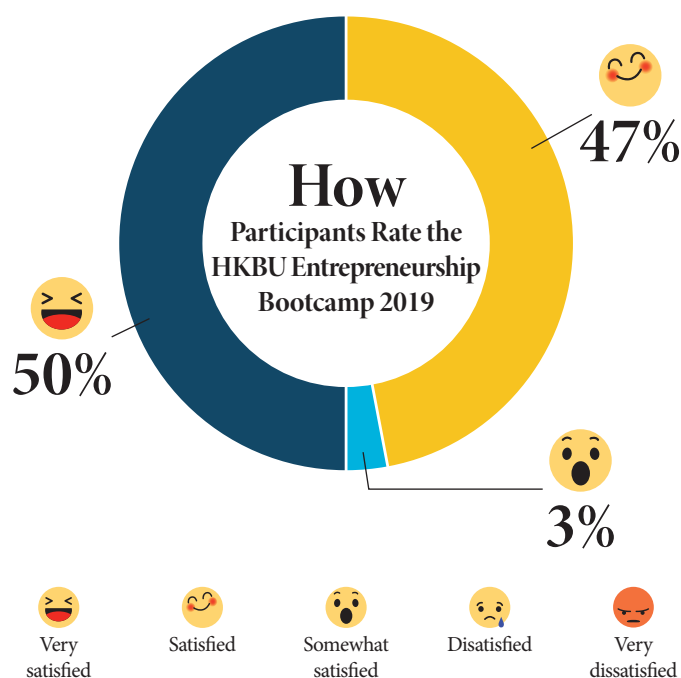
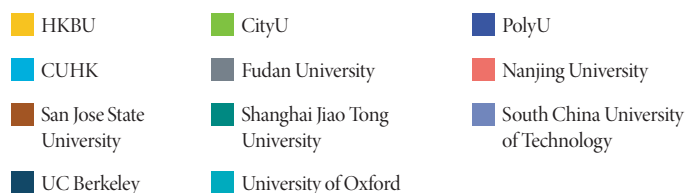
Members of TSSSU 2019-20 companies were invited to join the bootcamp.



"This bootcamp has given me an opportunity to meet people from diverse backgrounds, I have learned a lot from them, especially my teammates from UC Berkeley and University of Oxford. I had the best team ever. I have also benefitted from the seminars, these have given me ideas on how to develop business plan and reach the customers. The sharing sessions were also great where I was able to learn from successful entrepreneurs and to hear their stories of success." — Ashley Ho, CEO of MIND and Tech Limited (Third person from the left)



"I am very happy to be one of the participants of this bootcamp. This four-day bootcamp has provided me with useful entrepreneurship skillsets and valuable memories. I met a lot of new friends from around the world and learned from them. I was impressed by UC Berkeley consultants' sharing on venture creation and presentation skills. I am going to share my story in future business pitching events." — Cherry Li, Project Manager of Hong Kong Authentication Centre of Dendrobii Officinalis Caulis (first person on the right)



Bootcamp Video:
<https://youtu.be/ijyU0EXPRAW>

Highlight Video

Exposure and Opportunities

The Knowledge Transfer Office has organised the following BEST events for HKBU spin-off companies -

2019



29 June – 1 July 2019 ▶

Greater Bay Festival — Two HKBU start-up TSSSU companies Gihon Biotech Limited and Hong Kong Authentication Centre of Dendrobii Officinalis Caulis showcased their products at the exhibition.



19 December 2018 ▶

Signing Ceremony for the Establishment of the New Life Research Centre — New Life Medicine Technology Company Limited has established a research

centre in the Healthcare Technology Park of Zhongshan, Greater Bay Area of China. The signing ceremony was officiated by Mr Cheng Yan-kee, former Chairman of the Council and Court of HKBU, and Mr Wei Wei-han, Deputy Secretary of Zhongshan Municipal People's Government and Mayor of Zhongshan.



26 October 2018 ▶

Elevator Pitch Competition — Organised by HKSTP, the Competition was held at sky100 of the International Commerce Centre. The HKBU spin-off company Gihon Biotech Limited participated in the event and made it to the top one hundred! The finalists pitched their ideas in a one-minute elevator ride and the winner was awarded a US\$190,000 investment fund.



◀ 16 – 17 May 2019

HKTDC Entrepreneur Day

— Six HKBU start-up TSSSU companies, namely CD133 Innovation Limited, Crimson Vision Technology Limited, Gihon Biotech Limited, Hong Kong Authentication Centre of Dendrobii Officinalis Caulis, Mat-A-Cell Limited, and MIND and Tech Limited participated in the event. They shared their technologies with the audience and joined matching sessions to seek funding and collaboration with other parties during the two-day exhibition.



◀ 6 November 2018

Fourth China College Students 'Internet Plus' Innovation and Entrepreneurship Competition

— Two HKBU start-up teams, which were selected to represent Hong Kong for the first time, won prestigious awards at two of the largest entrepreneurship competitions in mainland China. The startup Mat-A-Cell Limited received the Silver Award at the Fourth China College Students' 'Internet Plus' Innovation and Entrepreneurship Competition organised by Xiamen University for their innovation cell culture nanomaterials. Another startup Gihon Biotech Limited received the Bronze Award at the China College Students' Entrepreneurship Competition organised by Zhejiang University for their use of Chinese medicine in cosmetics.



2018



BEST Networking Club — The event provides training workshops to HKBU spin-off companies and students. These workshops include 'Design Thinking Workshop' by Mr Cesar Jung-Harada, Director of MakerBay Limited, and 'How to Harness your Speaking Anxiety' by Mr Nathan Gold, Chief Coach of The Demo Coach. The workshops not only inspired the participants but also enhanced their entrepreneurial skills.

Achievements of HKBU Students and Spin-off Companies

Name of Team/ Winner	Competition / Programme	Achievement
Cathy Lui Nga-ping, alumna	EmTech Asia 2019	MIT Technology Review Innovators Under 35 Asia Pacific
<u>Nano Spray of Phytonutrients for Fibrous Skin</u> Lam Chu-shing , first year master student, School of Chinese Medicine Tsang Nga-yi , third year PhD student, School of Chinese Medicine Tsoi Hong-kit , third year undergraduate student, School of Chinese Medicine	Fifth Hong Kong University Students Innovation and Entrepreneurship Competition	Second Prize in Entrepreneurship Proposal (Technology) Category
<u>Miliusol K1 - a kind of Anticancer Drug with Unique Mechanism</u> Xie Wen-jian , second year PhD student, School of Chinese Medicine	Fifth Hong Kong University Students Innovation and Entrepreneurship Competition	Merit Prize in Life Sciences Category
<u>AI Phoenix</u> Lyu Jia-you , fourth year undergraduate student, Faculty of Science Wang Shi-hao , fourth year undergraduate student, Faculty of Science Zeng Xuan , fourth year undergraduate student, Faculty of Science Xu Chen , fourth year undergraduate student, Faculty of Science Xu Zhou-ming , alumnus Xu Fang-fei , alumna Ma Xue-di , alumna	Fifth Hong Kong University Students Innovation and Entrepreneurship Competition	Third Prize in Startup (Technology) Category
<u>AI Phoenix</u> Wang Shi-hao , fourth year undergraduate student, Faculty of Science Lyu Jia-you , fourth year undergraduate student, Faculty of Science Zeng Xuan , fourth year undergraduate student, Faculty of Science Xu Chen , fourth year undergraduate student, Faculty of Science Xu Zhou-ming , alumnus	Huawei Cloud AI Developer Contest	Silver Medal
<u>AI Phoenix</u> Lyu Jia-you , fourth year undergraduate student, Faculty of Science Zeng Xuan , fourth year undergraduate student, Faculty of Science Wang Shi-hao , fourth year undergraduate student, Faculty of Science Xu Chen , fourth year undergraduate student, Faculty of Science Xu Zhou-ming , alumnus Xu Fang-fei , alumnus	Innovator Tribank Fintech Challenge 2019	Third Prize

Name of Team/ Winner	Competition / Programme	Achievement
<u>Elderly Care Service Industry Proposal</u> Cai Shuang-long , third year undergraduate student, School of Communication Zhang Yu-zhi , third year undergraduate student, School of Communication Fung Chi-in , third year undergraduate student, School of Communication Gao Jia-ying , third year undergraduate student, School of Business	Young Business Talents Competition in the Greater Bay Area	Champion and Scholarship Award amounting to RMB 40,000 Cash Prize
Christopher Zhang Cheng-xin , fourth year undergraduate student, Faculty of Science	Hong Kong Techathon 2019	Winner of the Medical/Healthcare Technology Category
<u>ivi</u> Charisse Mok Nga-ching , fourth year undergraduate student, Faculty of Arts Thomas Huang , first year master student, School of Business Zakson Feng Zhen , fourth year undergraduate student, School of Business	Cyberport University Partnership Programme (CUPP) 2018	Cyberport Creative Micro Fund of HK\$100,000
<u>OsteoTarget</u> Chen Jie-li , fifth year undergraduate student, School of Chinese Medicine Luo Jing-yuan , fifth year undergraduate student, School of Chinese Medicine Mo Xiao-han , fifth year undergraduate student, School of Chinese Medicine Yang Hao-cheng , fifth year undergraduate student, School of Chinese Medicine Yang Si-chang , fifth year undergraduate student, School of Chinese Medicine Teng Shu-yan , fourth year undergraduate student, School of Chinese Medicine Lyu Lan-bing , third year undergraduate student, School of Communication Xu Ming-sheng , fourth year undergraduate student, School of Communication Yang Liu , fourth year undergraduate student, School of Communication	2018 International Biomolecular Design Competition (BIOMOD)	Gold Project Award and Second Prize for the Best Project Video
So Kin-fung , fourth year undergraduate student, School of Business Lee Hoi-wah , fourth year undergraduate student, School of Business Fung Sum-yi , fourth year undergraduate student, School of Business	Social Innovation+ Competition	Top Prize with HK\$30,000 Cash Award and Summer Internship Opportunities by Bank of China (Hong Kong) Limited on the Mainland or Overseas
<u>Internet of Things (IoT) Healthcare Platform</u> So Kin-fung , fourth year undergraduate student, School of Business Lee Hoi-wah , fourth year undergraduate student, School of Business	A. Entrepreneur Adventure Programme	Top Prize with HK\$50,000 Cash Prize

Name of Team/ Winner	Competition / Programme	Achievement
Thomas Wu Ho-hoi , second year undergraduate student, Faculty of Science	Innovation and Technology Scholarship Award Scheme 2019	Scholarship Award amounting to HK\$150,000
John Xu , third year undergraduate student, School of Business	2019 Huawei Sales Elite Challenge Competition	Best Planner Award
New Life Medicine Technology Company Limited (HKBU spin-off company)	The 47 th International Exhibition of Inventions of Geneva	Gold Medal with the Congratulations of Jury and Thailand Award for the Best International Invention
Mat-A-Cell Limited (HKBU spin-off company)	Fourth China College Students' 'Internet Plus' Innovation and Entrepreneurship Competition	Silver Award
Gihon Biotech Limited (HKBU spin-off company)	China College Students' Entrepreneurship Competition	Bronze Award
	Eighth Hong Kong Innovation Technology Achievement Award	Silver Asia International Innovation Invention Award

HKBU and Tencent Partnered to Create a World Record in AI Training

Artificial intelligence (AI) are learning machines. They can self-learn from a set of mathematical operations and data. An efficient algorithm can enable AI to perform complex visual recognition tasks, such as machine translation and natural language processing, which have important implications for human-computer interactions, medical imaging and online multiplayer games.

The so-called 'tensor fusion' technique developed by Prof Chu Xiao-wen's team and the Tencent Machine Learning team (the Project Team) replaces the traditional computational method 'FP32' with a simpler method 'FP16', which makes computation faster and more accurate.

In an experiment, two popular deep neural networks called AlexNet and ResNet-50 were trained by the Project Team to label a large set of photos on ImageNet. AlexNet and ResNet-50 networks were trained using FP16 took 4 minutes and 6.6 minutes, respectively, to recognize the set of photos. In comparison, AlexNet and ResNet-50 networks using FP32 took 11 minutes and 15 minutes, respectively, to recognize the same set of images in the past. The results showed that the new algorithm has successfully overcome two hurdles: computing time and communication time. The output efficiency was increased without compromising accuracy.

Traditional Chinese Medicine in the Digital Age

Underpinning Research

The newly launched Chinese Medicine Formulae Images Database documents 182 commonly used Chinese medical formulae. Each formula is accompanied by images, detailed descriptions, formula compositions, processing forms, functions, indications and usages. The public can learn more about Chinese medical formulae over the database. This, in turn, promotes the development of Chinese medicine worldwide.

Meanwhile, the Medicinal Plant Images Database comprises over 1,000 medicinal plants systematically consolidated and summarised in the form of plant images and annotations. The Chinese Medicinal Material Images Database documents over 420 commonly used crude drugs and provides drug information including source, origin, description, quality, taste and clinical information. The Phytochemical Images Database provides comprehensive information on bioactive compounds found in medicinal herbs, including physical and chemical properties, method of analysis, sample preparation and spectral information.

The Chinese Medicine Specimen Database exhibits Chinese Materia Medica specimens that are on display in the Chinese Medicine Centre of HKBU. The Chinese Medicine Game-based Exercise utilises and integrates the data from our existing Medicinal Plant Images Database. The innovative online games help enhance interaction and communication among students studying Chinese medicine.

References to the research

Chinese Medicine Formulae Images Database

<http://library.hkbu.edu.hk/electronic/libdbs/cmfid/index.html>

Chinese Medicinal Material Images Database

<http://library.hkbu.edu.hk/electronic/libdbs/mmd/>

Medicinal Plant Images Database

<http://library.hkbu.edu.hk/electronic/libdbs/mpd>

Phytochemical Images Database

<http://library.hkbu.edu.hk/electronic/libdbs/pid>

Chinese Medicine Specimen Database

https://library.hkbu.edu.hk/electronic/libdbs/scm_specimen.html

Chinese Medicine Game-based Exercise

http://lib-nt2.hkbu.edu.hk/cmgame/user.asp?realtime_lang=chi

Details of the impact

Chinese Medicine Digital Project (CMDP) is Hong Kong's first integrated digital platform for Chinese medicine. The platform comprises six inter-related websites, advanced searching capabilities and the following features:

- High-quality photos of medicinal plants, materials and specimens;
- Unique images of phytochemical and formula analysis;
- Professional Chinese-English bilingual explanatory texts;
- Automatic Chinese medicine knowledge self-evaluation platform

The photos in the databases were compiled by Prof Chen Hu-biao, the coordinator of the project, over 30 years. Citing Prof Chen, "I am delighted that our efforts over the years are paying off. The database enables teachers, students, researchers and professionals, as well as people from different professions to acquire relevant knowledge in Chinese medicine. It is hoped that the database series can serve as a useful platform for people around the world to learn about traditional Chinese medicine." The Chinese Medical Formulae Images Database could further strengthen and advance the Chinese Medicine Digital Project, and promote the application and internationalisation of Chinese medicine research.

Launched in 2012, CMDP has generated more than 1.33 million views from over 200 countries and regions. Moreover, the project also won the Presidential Citations for Innovative International Library Projects Award 2012 of the American Library Association (ALA), which is the oldest and largest library association in the world. The award aims to recognise innovative projects that have made a difference to the lives of citizens and connected the international community in new ways. It is the only award given out by ALA on an annual basis and is highly prestigious. Citing ALA press release, “CMDP is available in Chinese and English. This is the first time this information has been available in English. While the databases were designed to improve teaching methods and the effective use of plants and herbs, making this information available for free via the Internet has historic and limitless benefits for medical providers and researchers across the globe.”

The impacts of CMDP include:

- The provision of supporting information for teaching, learning and research activities and a user-friendly searching and resource-sharing tool;
- The comprehensive use of expertise and strengths through a multi-disciplinary collaborative approach;
- The increased awareness on the variety, authenticity and effective use of Chinese Medicine;
- The promotion of open access, information exchange, and resource sharing with institutions worldwide

CMDP is the first and only digital project in Hong Kong winning this prestigious international award.

Alternative medicine, especially Chinese medicine, has become a research area of increasing growth in Hong Kong and around the world. The project team strives to continue and strengthen the impact of Chinese medicine by transferring essential and much-used knowledge to the public for many years to come.

According to Google Analytics, CMDP had 7,117,621 pageviews and was visited by 1,161,706 users in 2012-18. Of all the users, 27.9% were from Hong Kong and 72.1% were from overseas. In 2018, the total usage and global knowledge transfer of CMDP was exceptionally impressive. The total number of pageviews was 1,165,633. Of all the users, 66.7% were from overseas.

A Voice-controlled Computer Software for Severely Disabled People

The Cerebral Palsy to Joy (CP2Joy) project is a collaborative project between the Department of Computer Science, Centre for Innovative Service-Learning and the School of Business at HKBU.

The CP2Joy software allows a user to operate the computer quickly through pre-recorded voice commands. It is extremely accurate and efficient and enables severely disabled people to use a computer without the need of a mouse.

Dr Byron Choi Koon-kau, an Associate Professor from HKBU's Department of Computer Science, said that there are different systems offered in the market for disabled people, such as on-screen keyboards, gesture control systems and eye-tracking systems. However, these systems are often too stringent and cost quite a lot. In contrast, the CP2Joy is a user-friendly software that requires few additional hardware. Only a joystick and a built-in microphone are required.

This software is the first human-computer interface developed in Hong Kong. By simply installing the CP2Joy software onto a personal computer, the severely disabled people are able to control the computer on their own using voice commands.

In order to let more people to benefit from the software, the trial run of CP2Joy will be launched at a special school through the help of HKBU Centre for Innovative Service-Learning.

PERFORMANCE INDICATORS

UGC Required Performance Indicators

Performance Indicators	2016-17	2017-18	2018-19	2019-20 (Projection)
Number of patents filed in the year (with breakdown by country and type)	Country	Country	Country	Country
	47 (US)	33 (US) ^{N1}	22 (US)	27 (US)
	6 (CN)	1 (CN)	11 (CN)	12 (CN)
	10 (PCT)	11 (PCT)	3 (PCT)	6 (PCT)
	8 (HK)	7 (HK)	2 (HK)	2 (HK)
	4 (EP)	1 (EP)	6 (EP)	7 (EP)
	6 (TW)	6 (TW)	4 (TW)	6 (TW)
	2 (JP)	1 (JP)	2 (KR)	1 (JP)
	1 (KR)	2 (MO)	1 (JP)	2 (MO)
			1 (MY)	1 (KR)
			1 (TH)	
			1 (SG)	
			2 (GB)	
			2 (MO)	
			2 (DE)	
	Type	Type	Type	Type
	8 (A47)	1 (A47)	26 (A61)	33 (A61)
	31 (A61)	36 (A61) ^{N1}	1 (A63)	1 (A63)
	1 (A63)	1 (B01)	10 (C07)	10 (C07)
	1 (B01)	1 (C05)	4 (C12)	1 (C09)
	1 (B82)	1 (C02)	1 (G01)	3 (C12)
	1 (C02)	5 (C07)	1 (G06)	1 (G01)
	10 (C07)	2 (C09)	17 (H01)	3 (G06)
	1 (C09)	4 (G06)		12 (H01)
	2 (C12)	11 (H01)		
	7 (G01)			
	4 (G06)			
	17 (H01)			
Number of patents granted in the year (with breakdown by country and type)	Country	Country	Country	Country
	18 (US)	24 (US)	19 (US)	25 (US)
	11 (CN) ^{N1}	7 (CN) ^{N1}	8 (CN)	10 (CN)
	1 (HK)	5 (HK)	3 (HK)	4 (HK)
	1 (TW)	1 (TW)	2 (EP)	2 (EP)
		2 (JP) ^{N1}	2 (DE)	5 (TW)
		1 (MO)	2 (GB)	1 (MO)
			5 (TW)	1 (JP)
			1 (KR)	
			3 (MO)	
	Type	Type	Type	Type
	26 (A61) ^{N1}	26 (A61) ^{N1}	2 (A47)	25 (A61)
	2 (B82)	1 (B82)	18 (A61)	1 (A63)
	1 (G01)	2 (C02)	2 (A63)	1 (C02)
	1 (G06)	1 (C07)	2 (C02)	10 (C07)
	1 (H01)	3 (G01)	7 (C07)	1 (G01)
		2 (G06)	3 (G01)	1 (G06)
		3 (H01) ^{N1}	2 (G02)	9 (H01)
		1 (A47)	9 (H01)	
		1 (A63)		
Number of licenses granted (with breakdown by type)	38 (Royalty)	43 (Royalty)	64 (Royalty)	69 (Royalty)

Notes:

N1: The data of 2016-17 and 2017-18 were amended due to late reporting of patent firm, or joint patent applications between HKBU and other institutions (lead parties).

Performance Indicators	2016-17	2017-18	2018-19	2019-20 (Projection)
Income (on cash basis) generated from intellectual property rights (including the income retained at start-ups)	HK\$8,818,504	HK\$4,708,521	HK\$3,258,829 ^{N1}	HK\$3,584,712
Expenditure involved in generating income from intellectual property rights	HK\$5,287,043	HK\$4,811,035	HK\$3,213,485	HK\$3,534,834
Number of economically start-up companies	3 ^{N2 & N3}	3 ^{N2 & N3}	2 ^{N2 & N3}	2 ^{N2 & N3}
Net income generated (or net loss arising) from start-ups	HK\$245,600	(HK\$496,000)	HK\$75,100 ^{N4}	HK\$82,610
Number of collaborative researches, and income thereby generated	26 HK\$14,575,453	18 HK\$15,605,590	18 HK\$9,841,836 ^{N5}	20 HK\$10,826,020
Number of contract researches (excluding collaborative researches), and income thereby generated	77 HK\$42,548,507	51 HK\$37,949,350	69 ^{N6} HK\$23,506,616 ^{N7}	76 HK\$25,857,278
Number of consultancies, and income thereby generated	194 HK\$18,891,329	146 HK\$14,554,464	141 ^{N8} HK\$18,150,796 ^{N8}	155 HK\$19,965,876
Number of student contact hours in short courses or e-learning programmes specially tailored to meet business or Continuing Professional Development (CPD) needs	69,611	42,253	34,242 ^{N9}	37,666
Number of equipment and facilities service agreements, and income thereby generated	209 ^{N10} HK\$6,672,609	205 ^{N10} HK\$6,814,595	218 ^{N10} HK\$6,803,860	240 HK\$7,484,246
Income received from CPD courses (excluding the courses provided by its subsidiaries and/or self-financing arms)	HK\$2,698,865	HK\$3,173,540	HK\$1,239,860	HK\$1,363,846
Number of public lectures / symposiums / exhibitions and speeches to a community audience	583	554	670 ^{N11}	737
Number of performances and exhibitions of creative works by staff or students	87	103	114	125
Number of staff engaged as members of external advisory bodies including professional, industry, government, statutory or non-statutory bodies	108	108	123	135

Notes:

N1: The decrease was due to no business activity from the Institute for the Advancement of Chinese Medicine Ltd. (IACM) since July 2018.

N2: Company with some institutional ownership and using intellectual property from the institution.

N3: Breakdown of the start-up companies:

Institute for the Advancement of Chinese Medicine Ltd. (IACM)

- Year of establishment: 1999.
- Size of employment: all contracted out to third party for the experts and professionals required.
- Nature of business: no operation since July 2018

HKBU Science Consultancy Company Ltd.

- Year of establishment: 2011.
- Size of employment: All contracted out to HKBU for the experts and professionals required.
- Nature of business: Provision of consultancy projects on science disciplines.

HKBU R&D Licensing Ltd.

- Year of establishment: 2014.
- Size of employment: 1 (administrated by KTO).
- Nature of business: Intellectual properties commercialisation and trading.

N4: The product licenses and manufacturing of IACM have been licensed to the third party. The Company only received royalty income from intellectual properties licensing.

N5: The decrease was due to the income generated from some of the collaborative research projects was partially received in this academic year.

N6: There were more contract researches conducted by the staff from Faculty of Social Sciences and School of Chinese Medicine.

N7: Although the number of contract research increase, the income received decreased. This was because the income of new projects was partially received in this academic year.

N8: Although there was a decrease in the number of consultancies, the income received increased. This was because the funding amount per project was increased.

N9: The decrease was due to closing of some courses.

N10: This number included data from Jockey Club Creative Arts Centre (JCCAC) and the Academic Community Hall.

N11: The increase was due to more public lectures and seminars being conducted by the Schools of Communication, Chinese Medicine and Faculty of Science.

HKBU Specific Key Performance Indicators

Performance Indicators	2017-18	2018-19	2019-20 (Projection)
Yearly running average patent grant rate: ^{M1}			
- HKBU running average of patent grant rate	55.3% [#] (2017)	58.0% (2018)	59.1% (2019)
- Hong Kong running average of patent grant rate	37.0% (2017)	37.7% (2018)	38.4% (2019)
Number of performances and exhibitions of creative works, public lectures, symposia, exhibitions and speeches per hundred academic staff ^{M2}	180	219 ^{M3}	221
Number of entrepreneurship activities	19	31	33
Number of student participation in entrepreneurship activities	6,779	6,830	7,000
Overall students' satisfaction of entrepreneurship activities (%)	99.60%	99.55%	99.58%
Total income from knowledge transfer via the provision of research and business services: ^{M4}			
- Cumulative value of collaborative research and contract research ^{M5}	HK\$97,708,923	HK\$112,825,757	HK\$124,108,333
- Consultancy ^{M6}	HK\$14,554,464	HK\$18,150,796	HK\$19,965,876
- CPD courses ^{M6 & M7}	HK\$41,153,794	HK\$34,060,188	HK\$37,466,207
Total income from knowledge transfer as innovative activity: ^{M8}			
- Total intellectual property income received by the university proper	HK\$2,011,804	HK\$3,083,777	HK\$3,392,155
- Net income (or net loss) from start-ups ^{M9}	HK\$3,424,973	(HK\$3,664,414) ^{M9}	HK\$3,596,222
Expenditure on public engagement activities ^{M10}	HK\$5,122,076	HK\$14,136,624 ^{M11}	HK\$15,550,287
Expenditure on CPD courses ^{M7}	HK\$41,493,857	HK\$33,441,756	HK\$36,785,932

Notes:

- M1 The yearly running average patent grant rate is calculated based on the calendar year of a period from 1 January to 31 December.
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. 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.
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>
- M2 Academic staff refers to full-time senior and junior academic staff.
- M3 The data was extracted as of 30 June 2019.
- M4 Income from collaborative research and contract research refers to the annual income of research contracts received by the university proper, irrespective of the funding source (e.g. UGC, RGC, HKSAR Government, private funds, non-local sources, etc.). Research grants (e.g. block grants, RGC research grants under various research schemes) are not included.
This performance indicator covers new and on-going research projects in a particular financial year ending 30 June. On-going projects include projects that were completed, suspended or discontinued within that financial year.
- M5 In line with the prevailing reporting practice of the UGC, the value of annual research income refers to the cumulative income received instead of the total value of the research projects (i.e. excluding funds of particular research contracts which are not yet received by the university).
- M6 Income from consultancy and CPD courses refer to the income received during the particular financial year.
- M7 For this performance indicator, CPD courses cover courses organised by the university group, including the university proper, its subsidiaries and/or self-financing arms, e.g. School of Continuing Education.
- M8 This performance indicator is based on data of total intellectual property income received by the university proper which are regularly collected through CDCF and net income from start-ups according to their financial statements which are new data collected through CDCF.
- M9 The net loss is due to the records of lower income and higher expenditure from two start-ups. For this KPI, start-ups include:
- Hong Kong Organic Resource Centre Certification Ltd.
 - HKBU Science Consultancy Company Ltd.
 - BUCM Ltd.
 - HKBU R&D Licensing Ltd.
 - Institute for Research and Continuing Education (IRACE)
 - BU Consultancy (Shenzhen) Ltd.
- M10 Public engagement activities include public lectures, performance arts, exhibitions and others KT activities as defined by UGC.
For this performance indicator, expenditure refers to the direct cost arising from the reported activities. Overhead expenses incurred regardless of the occurrence of the reported activities are not included.
- M11 The increase of expenditure was due to the new programme launched by School of Chinese Medicine and the first Global University Film Awards ceremony conducted by School of Communication of HKBU.

[#] The discrepancy between the data of 2017-18 and the data submitted to UGC was due to late reporting of a granted patent from patent firm.

Awards 2019

The 47th International Exhibition of Inventions Geneva

Invention

“Non-invasive, Urine-based Prostate Cancer Detection Kit”

Prof Gary Wong

Head, Department of Chemistry,
Hong Kong Baptist University



**Gold Medal with
the Congratulations
of Jury
in the Medicine Category**

Invention

“The OH Furniture & OHO Jewellery Collection”

Mr Andrea Ingrassia

Lecturer, the Academy of Visual Arts,
Hong Kong Baptist University



**Gold Medal
in the Interior Architecture
Category**



**Thailand Award for
the Best International
Invention**



**Silver Medal
in the Jewellery Category**