

Chinese University

# BULLETIN



No.2, 2019

They Stand on the  
**SHOULDERS OF  
GIANTS**

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# They Stand on the SHOULDERS of GIANTS

Reported by *J. Lau*  
Photos by *Keith Hiro*

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*‘If I have  
seen further  
it is by standing  
on the shoulders  
of giants.’*  
.....

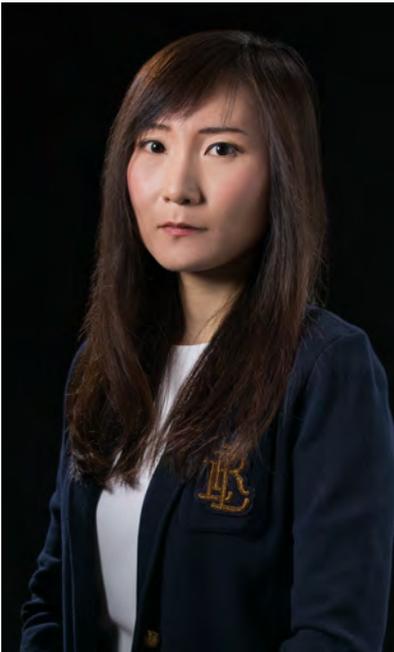
*Sir Isaac Newton (1643–1727),  
‘Letter to Robert Hooke’,  
5 February 1676*

For someone who’s just starting, the academic path is not particularly easy or imminently rewarding. In fact, it can get bumpy and lonely. Yet what has sustained generations of young men and women in their pursuit of knowledge is the unquenchable desire to see a farther and wider vista of human destiny and capability, to stand on the shoulders of giants like Newton who stood on the shoulders of other giants.

CUHK has an enviable pool of young talent and has instituted a range of policies and measures to enable and empower them to excel in their respective disciplines. One of these is the Young Researcher Award, established since 2002, with which the University gives recognition to the accomplishments of young researchers who are full-time teachers below the age of 45 and at the Assistant Professor rank or above.

The latest crop, the eight recipients of the 2018 award, received trophies, certificates and research grants at the 87th Congregation on 7 November 2019. In the following pages we will hear the stories of seven of these recipients and how their perseverance and passions led to quality outputs that address the concerns of society and the times.







Prof.  
Kwok  
Bit-chee

Department of  
Chinese Language  
and Literature,  
Faculty of Arts

# Chinese Dialectologist

Over 50 million people are native speakers of Southern Mǐn, which is mainly spoken in southeast Fujian, eastern and western Guangdong, the coastal areas of Hainan, southeast Zhejiang and Taiwan. The language is interesting in that many words can be pronounced in a colloquial or a literary way. Prof. **Kwok Bit-chee**, who has been delving into historical linguistics and Chinese dialectology, has unraveled the mysteries surrounding the two modes of pronunciation.

Professor Kwok trusts his project will benefit language education as it reveals the rules governing compound formation. It also uncovers some lesser-known features of the Mǐn languages and deepens our understanding of their speakers. He says, 'The academic freedom at CUHK is the key to the smooth progression of my research.'

Having a colloquial and a different, literary pronunciation is a common feature of the Sinitic languages. The literary mode is usually used when it comes to loanwords and literary works, while the colloquial mode is used in the vernacular. 'Since the Mǐn languages retain rich archaic features lost in their Sinitic counterparts, they are historically significant,' Professor Kwok remarks.

The phenomenon appeared after the Sui and Tang dynasties. As the central authorities spoke the northern dialects, many in southern China adopted the pronunciations of those dialects, which

*'To me, academic freedom is most important to the smooth conduct of research. I think the CUHK environment is very conducive to research.'*

eventually became literary pronunciations of their own. Accordingly, the original pronunciations became colloquial. In Southern Mǐn, over 1,500 words have both literary and colloquial readings.

In his dialect fieldwork in Shantou and Xiamen, Professor Kwok has collected several hundred compound words with literary and colloquial modes. He conducted



sociolinguistic surveys with more than 60 native speakers to measure the social factors in the compound formation process. In Shantou and Xiamen dialects, the literary elements in the compound

words are found to be pronounced differently. For instance, '飛' (fly) in '飛機' (plane) is pronounced as [hui<sup>1</sup>] (literary mode) in Xiamen Mǐn and [pue<sup>1</sup>] (colloquial mode) in Shantou Mǐn.

Sampling the right informants was a challenge at the beginning. He is grateful for the support of those who facilitated the surveys, including a former PhD student of his, who is a native speaker of Shantou dialect. He adds, 'My work wouldn't have been possible without my teacher Prof.

**Chang Song-hing**, an expert in Southern Mǐn. The vast amount of linguistic data he had collected was crucial to my fieldwork.'



Prof.  
Harold  
Chui

Department of  
Educational  
Psychology,  
Faculty of  
Education

# Nurturer of Inclusive Therapeutic Relationships

Sexual minorities are stigmatized in Hong Kong and many other places. Counsellors and psychologists working with sexual minorities need to be sensitive to the latter's struggles. In view of the paucity of research that looks into how counsellors and psychotherapists can be better prepared to serve this population, Prof. **Harold Chui** has devoted himself to examining how clinical supervision helps improve the trainees' capacities.

Trainees' personal characteristics, including sexual orientations, may influence their counselling approaches. Current supervision models, however, do not differentiate how trainees with different sexual orientations work with their sexual minority clients. As the clinical training and supervision literature mainly focuses on sexual minority trainees, Professor Chui attempts to bridge the gap by studying both heterosexual and non-heterosexual trainees who work with sexual minority clients.

He and his research team have conducted telephone interviews with psychology trainees to learn about their experiences of being supervised. The interview is semi-structured: besides answering the same set of questions, interviewees were prompted to elaborate on their responses. A follow-up interview was scheduled one week later to capture thoughts arising after the first interview.

The research team had a hard time recruiting interview participants because psychology interns typically have busy schedules in clinical work and thesis writing. Interns without a sexual minority client are also not eligible to participate in the study. The team had to go through

many agencies in order to reach a desirable sample size.

The research sheds light on how trainers of counsellors and psychologists can boost trainees' sensitivity to sexual minorities' struggles by staying attuned to trainees' personal characteristics and attitudes toward the client group. He says, 'This would hopefully contribute to a more inclusive society as service providers are better prepared to address the needs of sexual minority clients.'

*'I enjoy collaborating with like-minded colleagues, both inside and outside my department. This makes research more fun and productive.'*



'I do appreciate the openness of my department and Faculty in letting me pursue my various research interests. CUHK is very supportive of our research endeavours in terms of providing conference support

and internal funding opportunities. CUHK is also a place with many experts from different areas. I enjoy collaborating with like-minded colleagues, both inside and outside my department. This makes research more fun and productive,' says Professor Chui.

Professor Chui's research interests include counselling process and outcome, counsellor training and supervision, and teacher and student mental health. His recent projects focus on the influence of counsellors' emotions on counselling and how teachers' attitudes towards mental health issues influence their support for students in need.



Prof.  
Kevin  
Yip

Department  
of Computer  
Science and  
Engineering,  
Faculty of  
Engineering

# Revealer of DNA Secrets

Every cell in our body contains the same DNA, but why can one cell become cancerous while another does not? It partly originates from the myriad interactions between genes and the enhancer ‘switches’ that turn them on or off. Prof. **Kevin Yip** rises to the challenge to identify the target genes of the enhancers in gene regulation and explain the consequences of aberrations in the enhancers.

The human genome is represented by a string of around three billion letters. Leveraging machine learning to analyse an archive of about 1,000 samples of human cells and tissue samples and cell lines, Professor Yip created the largest enhancer-target gene resource. The large-scale public data sets were taken from the ENCODE, FANTOM5 and Roadmap Epigenomics consortia, public platforms offering data for biomedical research.

Professor Yip looked into the samples through computer models to establish connections between the genes and enhancers in the DNA from both healthy and diseased tissues of different people. This requires a vast number of calculations to establish whether the various genes within one chromosome and their many enhancers are actually interacting with each other.

‘That’s just the first level: there could be a false signal, the enhancer could be there just by chance, or it may be controlling the gene indirectly,’ Professor Yip explains.

*‘I appreciate the freedom given me at CUHK to work on any research topic. Colleagues in different Faculties are highly collaborative, too.’*

‘We try to build predictive models, so that we can make predictions for individual samples in a sample-specific manner.’

Prof. **Alfred Cheng**, a liver-cancer expert in the School of Biomedical Sciences, guided Professor Yip in his work by identifying the aberrations of enhancers



specific to liver cancer and those generally present in all types of cancers. With a focus on liver-cancer cells, Professor Yip succeeded in identifying three genes—*PSRC1*, *RBM24*

and *TERT*—that become hyperactive in that cancer due to a ‘perturbation’ or disturbance by different enhancers.

It’s possible to remove those enhancers, reversing the activation of the problematic genes. The team was able to edit the genome using CRISPR/Cas9, which allows scientists to edit a DNA sequence. Scientists may then move on to create treatments such as drugs that disrupt the activity of the enhancer.

‘I appreciate the freedom given me at CUHK to work on any research topic. Colleagues in different Faculties are highly collaborative, too,’ says Professor Yip. His findings have been published in the journal *Nature Genetics*.



Prof.  
Michelle  
Miao  
Faculty of Law

# Jurist on Harsh Punishment

Many countries around the world have long been outspoken for their stances on strict legal sanctions against all illicit drug uses and trades, particularly during the so-called ‘War on Drugs’ campaigns. Despite growing concerns about and even criticism of such punitive practices as violations of human rights standards and due process safeguards, few see the roots of the problem as derived from the political and ideological settings of respective societies. Prof. **Michelle Miao** is one of the few.

Like many legal scholars, Professor Miao has been conscious of the possible ramifications of penal excessiveness on individual rights and liberty. ‘Of the 12 countries which have actively applied the death penalty to drug offenses in recent years, seven are in East and Southeast Asia,’ she writes.

As an avid researcher on criminal law, criminal justice, and judicial politics in Asian countries, Professor Miao bridges disparate fields and generates a holistic approach in explaining why many countries have criminalized drug-related activities and imposed heavy sanctions on these offenses.

By comparing and investigating the law, policies and practices among various Asian countries concerning their punitive responses to activities involving illicit drugs, Professor Miao explains that the harsh nature of criminal sanctions, to a large extent, is a product of populist political culture and ideological ethos.

*‘The institutional links between CUHK and other universities offer opportunities for exchange of ideas and visits. Plentiful resources are available for conducting research trips as well as organizing conferences.’*

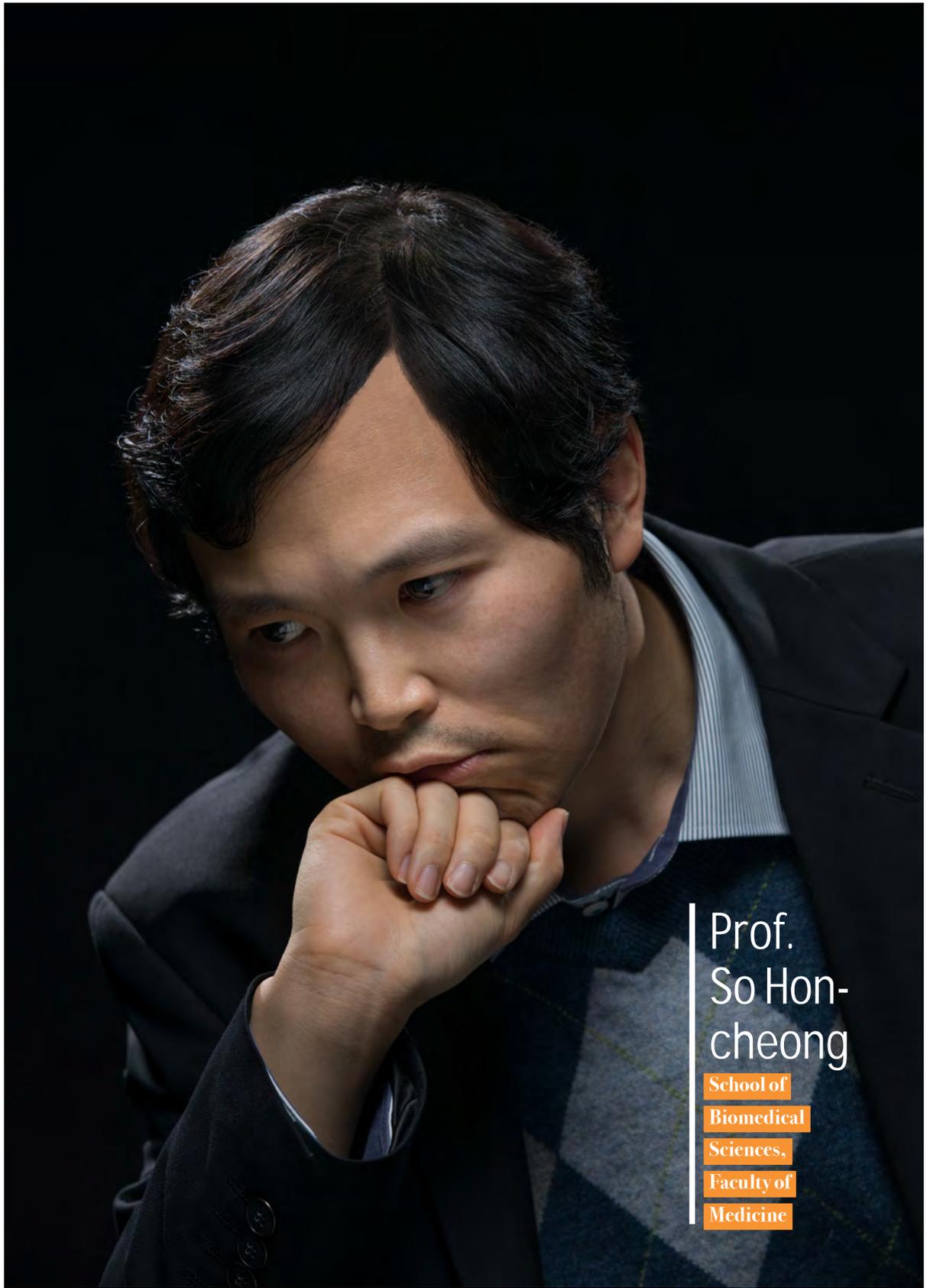
Professor Miao explains how those punitive countries aim at consolidating their political power and popularity by portraying themselves as benevolent guardians of the good majority and use rationales such as enhancing community security and protecting the vulnerable public to justify their excessive actions and policies.



She also proposes that a humane and constructive framework, rather than a draconian one, would be conducive to tackling the problem of illicit drugs. ‘Individual rights, dignity and liberties are basic fundamentals to

all—innocent persons, suspects and criminals included.’ She quotes Manila Archbishop **Luis Antonio Cardinal Tagle** in this regard: ‘Whether a person is guilty or not, life should be cared for and respected. And if a person is guilty, give him new life—the opportunity to rise from his old life.’

With the plentiful resources and academic ambience that CUHK offers, Professor Miao seeks to draw the attention of the wider public to the issue of illicit drugs, especially in the areas of criminal justice, human rights and policy agendas.



Prof.  
So Hon-  
cheong

School of  
Biomedical  
Sciences,  
Faculty of  
Medicine

# Drugs Transformer

Drug discovery requires multidisciplinary effort. To unravel the genetic bases of complex diseases, Prof. **So Hon-cheong**, a statistical geneticist and computational biologist, has been tapping into the rapid growth of genotyping technologies and genome-wide association studies (GWAS). 'There are many challenges and mysteries to solve in the field. I've benefitted from the free and collaborative atmosphere at CUHK,' he says.

Psychiatric disorders inflict a significant burden on health globally, but the current treatment strategies are far from perfect. Professor So's team focuses on drug 'repositioning' or using existing drugs for new indications, as 're-using' existing drugs can be more cost-effective and time-saving. They have identified drug candidates based on GWAS results and applied the method to various psychiatric disorders.

While many animal or cell-based models are available to decipher the molecular basis of diseases, human genomics data are still indispensable as many disease models are still inadequate. He says, 'Psychiatric disorders are very difficult to be modeled in animals, but GWAS data provide a unique opportunity to unravel the genetic basis of such disorders.'

A computational approach has been developed to find promising drugs for new indications. They estimated gene expression changes from GWAS data and compared those against the expression profiles of different drugs. Those drugs with an opposite expression pattern are

*'There are many challenges and mysteries to solve in the field. I've benefitted from the free and collaborative atmosphere at CUHK.'*

considered as candidates. For example, non-steroidal anti-inflammatory agents like aspirin and a cyclooxygenase-2 (COX-2) inhibitor are prioritized as candidates for bipolar disorder and schizophrenia.

Main challenges include conceiving ways to map GWAS results to genes, such that they can be 'matched' to drug expression data. The team verified their method by investigating whether they can rediscover some known drugs or those included in



clinical trials. The verification process isn't easy. A large number of candidates can be found, but not every candidate can be experimentally validated.

Professor So's team is also developing other methods like machine learning approaches to complement the methodology. They are collaborating with university hospitals in mainland China and planning to utilize large-scale clinical records to verify some repositioning candidates.

'Drug discovery has largely been stagnant in the past two decades. Computational drug repositioning helps to provide more medication choices for psychiatric disorders and diseases with few known treatments. Our proposed method may also help find out the efficacy of Chinese medicine and drugs on targets,' he adds.



Prof.  
Yeung  
Ying-  
yeung

Department  
of Chemistry,  
Faculty of  
Science

# Green Chemist

Many existing industrial processes rely on heavy metal catalysts, some of which may result in heavy metal contamination in the processes such as drug synthesis. Prof. **Yeung Ying-yeung** looks into the design and applications of organocatalysts to develop efficient and metal-free catalytic protocols.

‘Catalysis is the core of many chemical processes. They facilitate the development of new drugs and functional materials, which play a central role in the advancement of human life and technology in the 21st century,’ he explains.

Nature contains many catalysts such as enzymes. However, enzymes have a large molecular size and are difficult to modify for various applications. Organocatalysts are designed based on the functional fragments of enzymes and can be considered as biomimetic small molecular machines. ‘It is easier to design and synthesize those small molecular organocatalysts for various catalytic processes.’

Organocatalysis has emerged in recent years because organocatalysts can catalyze reactions similar to those of metal catalysts yet they are metal-free. Many of the protocols are nonetheless inefficient and require high catalyst loading and elevated temperature. Professor Yeung’s team has successfully developed novel zwitterionic organocatalyst systems that are highly efficient in various chemical processes.

Zwitterions are an emerging class of bifunctional organocatalysts. However, catalysis using zwitterions are underexploited, partly because of the difficulties in identifying suitable catalyst architectures and preparation of zwitterionic catalysts. The team therefore designed a new class of zwitterionic organocatalysts based on an amide anion/iminium cation

*‘The excellent reputation of CUHK also attracts internationally renowned professors to visit, which can facilitate idea exchange and collaboration.’*

pair, which were found to be applicable to the scalable synthesis of biodiesel.

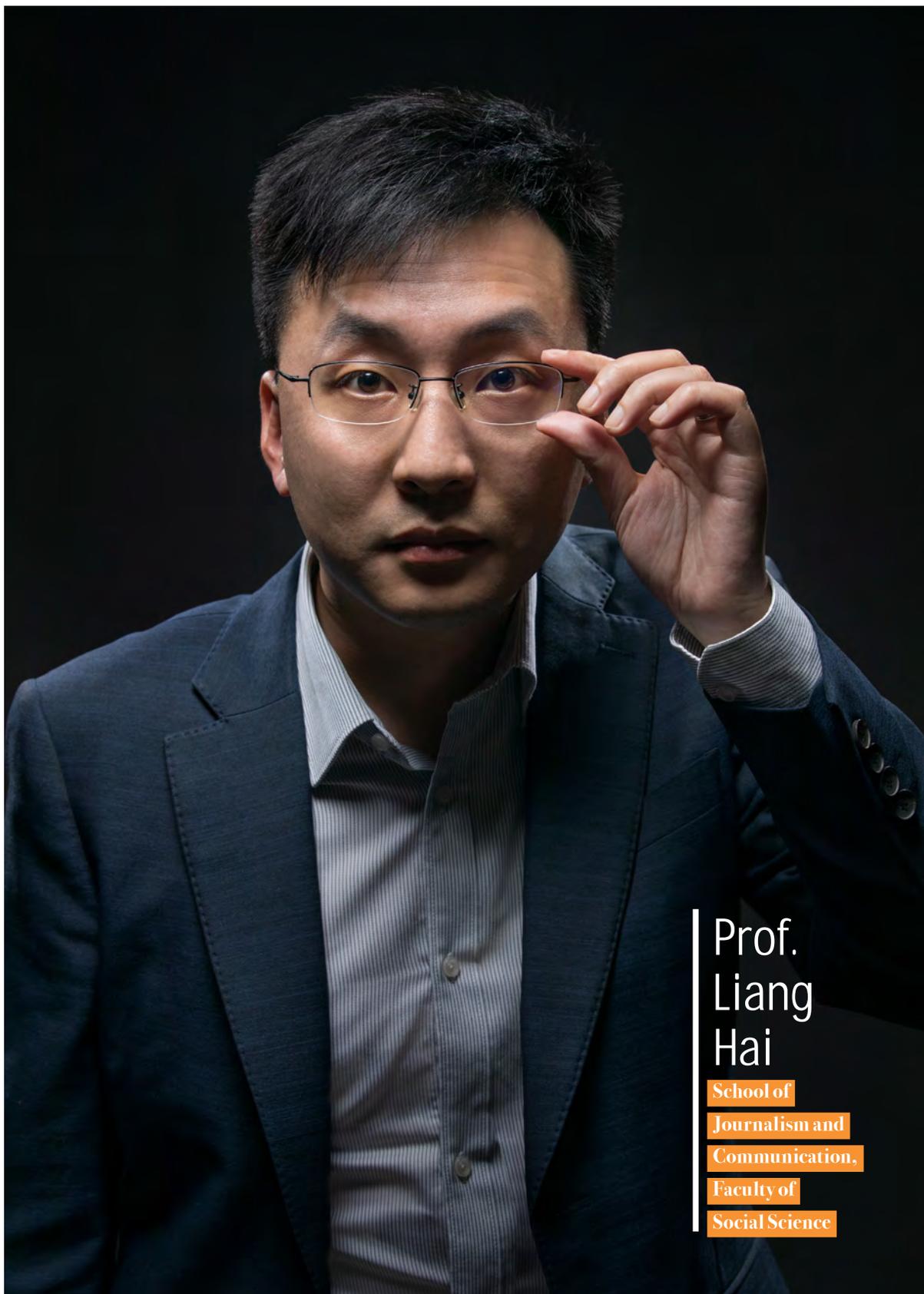
‘The most difficult part is to identify a catalyst that is stable under ambient conditions and concurrently provides sufficient catalytic activity in the designated chemical processes,’ Professor Yeung says. His team has also developed the first proof-of-concept of using the halogen bond as an organocatalyst to catalyze bromo-carbocyclization of cinnamyl substrates. The resulting halogenated tetrahydroquinolines and chromanes are valuable drug cores and natural products scaffolds.



Professor Yeung’s work on the development of halogenation reactions, catalyst design and applications and green industry is much facilitated by CUHK’s world-class research infrastructure. He

adds, ‘The excellent reputation of CUHK also attracts internationally renowned professors to visit, which can facilitate idea exchange and collaboration.’

He remarks that the ability to design elegant and economical synthesis routes is a major factor in the eventual viability and commercial success of industrial products. As a green alternative to classical metallic catalysis industrial processes, organocatalysis is attractive to chemical industry. The catalytic processes can reduce energy utility, waste production and carbon footprint, which are important elements for sustainable development.



Prof.  
Liang  
Hai

School of  
Journalism and  
Communication,  
Faculty of  
Social Science

# Analyst of Going Viral

Social media content spreads in a broadcast way (one-to-many), a viral way (person-to-person), or a combination of the two. Different diffusion patterns can influence the degree of selective sharing, or the extent to which individuals share attitude-consistent content. Instead of examining psychological mechanisms, Prof. **Liang Hai** empirically tests the relationship between diffusion patterns and the degree to which people engage in selective sharing.

Nowadays individuals are more inclined to share or retweet social media messages they identify with. Professor Liang studied a large-scale diffusion dataset from Twitter, which involves 297,566 users (942,395 retweets from 44,747 original tweets posted by 337 Congress members). These shares involve cross-ideological sharing under a viral diffusion model, which increases the recipients' exposure to diversified ideas. He explains that different diffusion patterns can influence the degree of selective sharing.

The study has integrated two mainstream research traditions in communication studies: information diffusion and selectivity. He says, 'Not many researchers have paid attention to the structure and social process of diffusion patterns.' Communication researchers have been arguing that the boundary between mass and interpersonal communication is blurring on social media, while his study demonstrates the two communication processes still have specific mechanisms and effects.

According to Professor Liang, viral diffusion, in contrast to the broadcast model of information sharing among homogenous individuals, can spread information widely across individuals with diverse backgrounds. It increases the likelihood of cross-ideological

*'It is very important to have powerful computing machines for computational social science and big data studies. The high-performance servers of the School has made my study possible.'*

sharing and thus increases political diversity on social media. He opines that senders may use the viral model to reach new audiences.

His findings contribute to the debate on whether social media are beneficial to political diversity and deliberative democracy. Compared to traditional representative democracy that involves proxy voting, deliberative democracy adopts elements of both consensus decision-making and majority rule. He says, 'Social media, which have been celebrated for facilitating person-to-person communications, are



more capable of fostering political diversity than broadcast media.'

Professor Liang focuses on the application of computational methods for answering long-standing

communication research questions, such as political deliberation, information diffusion, and health communication. His research has contributed to various aspects of human communication theories, including their content, structure, diffusion, use and comparative studies.

He finds CUHK's environment conducive to his research development. 'As I am working on computational social science and big data, it is very important to have powerful computing machines. The School of Journalism and Communication has purchased high-performance computing servers for the digital media data initiative, making my study possible.'

# Spring Flowering and Autumn Fruiting

*‘Scholarship ripens like  
a growing tree,  
flowering in the spring  
and fruiting in  
the autumn.’*

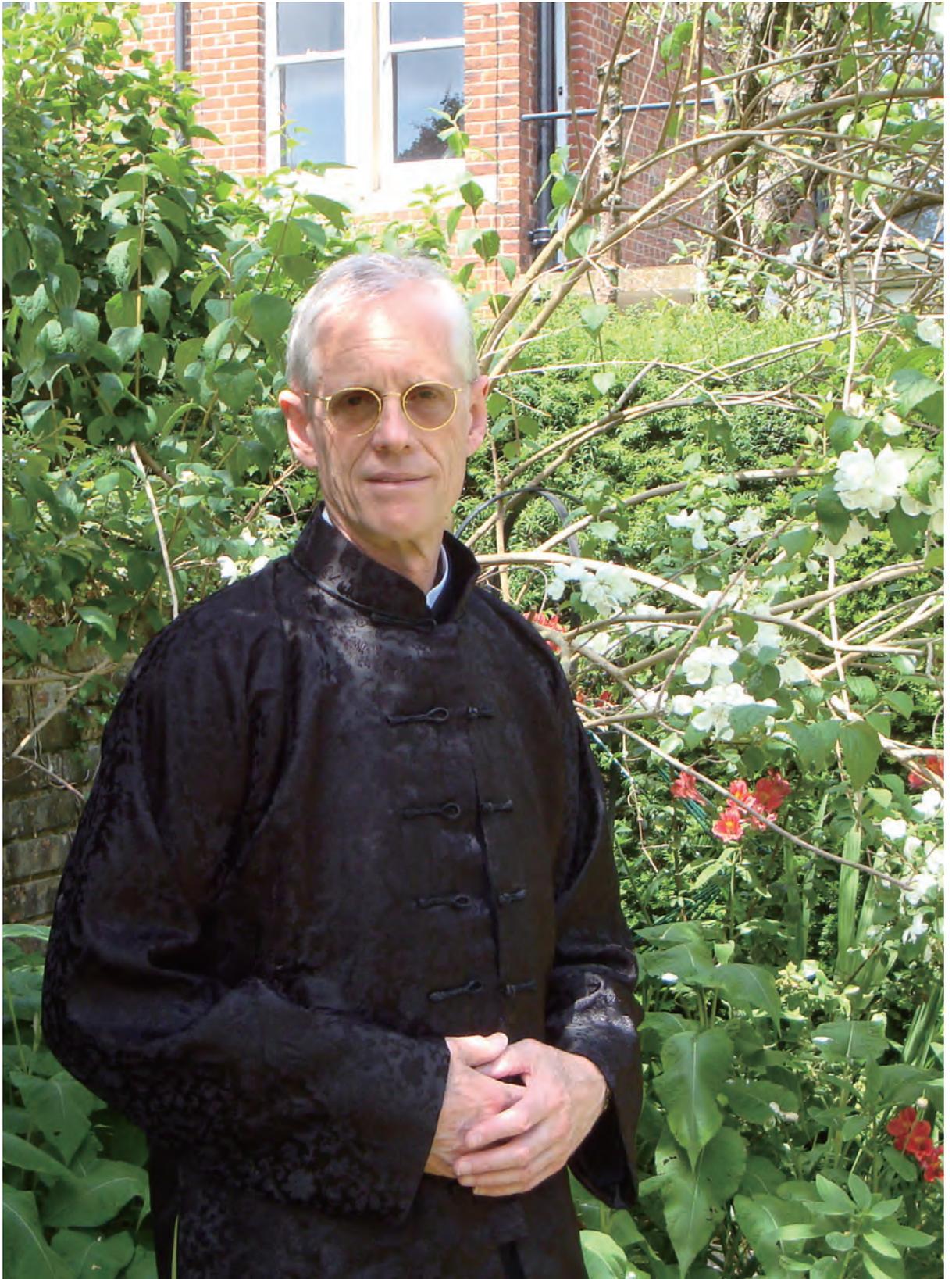
Yan Zhitui (AD 531–591), Yanshi jiaxun

Before any fruit is born, CUHK researchers, young or veteran, spare no effort in flexing their intellect and creativity in their chosen fields of endeavour and pursuing their goals to the highest standard of scholarship.

With research interests spanning a wide variety of topics, such as the comparative studies of Southern Min, the exploration of the rise of punitive anti-drug campaigns in Asia, and the genome-wide association data studies for drug positioning, the recipients of the Young Researcher Award 2018, and, for that matter, those in previous years and in years to come, have been and will be assiduous in responding to the everyday facets of human existence.

Researchers nowadays are instrumental in transforming the world, not only by creating translational knowledge but also by dedicating themselves to pushing frontiers and blazing trails. The local crop of young researchers at CUHK, whom the University is careful to nurture and proud to present, can look forward to many springs and many autumns to come. 





Dressing in *cheongsam* in his home garden in Oxford

# Master of Much

## Prof. Nicholas Rawlins



### Master of Morningside College

A distinguished neuroscientist and Oxonian, Professor Rawlins was formerly Pro-Vice-Chancellor for Development and External Affairs at Oxford University. In December of 2018, he succeeded the late Professor Sir James Mirrlees to become the second Master of Morningside College.

Prof. **Nicholas Rawlins**'s encounter with the East took place early. When he was small, his father Sir John Rawlins, a Royal Navy officer and pioneer in diving medicine, used to read to him from Arthur Waley's *Monkey*, an abridged translation of one of the masterworks of classical Chinese literature, leaving the little reader transfixed. Many years later, one of his best friends at Oxford came to Hong Kong right after graduation and went on to have a very successful career. Professor Rawlins once went to have dinner at his house, saw the black *cheongsam* his friend wore at that time and fell in love with this traditional Chinese outfit. He was won over by their stylishness, comfort and fitness for purposes both formal and informal.

With his appointment as Pro-Vice-Chancellor of Oxford in 2010 overseeing, among other things, the development team and its strategic office in Hong Kong, he visited Hong Kong three to four times a year, and came to know the city better and better. As the medical and other departments of Oxford also had research collaborations with CUHK and schools in China, it was only natural that Southeast Asia became his second home.

As an undergraduate, he was fascinated by physiological psychology and the curriculum then at Oxford allowed him to get the most out of a broad spectrum of biological sciences—medicine, psychology, physiology, biochemistry, botany, zoology. 'To try to understand behaviour in terms of what physically and chemically happens in the brain and to make sense of it in the larger context is to me a wonderful piece of detective work that is intrinsically interesting.' The neuroscientist also uncovered the causes of and solution to the Alzheimer's disease, 'The longer you've been in education, the lesser the chance you'd get Alzheimer's or if you get it you'd get it later.'

Professor Rawlins was affiliated with University College, one of the three oldest colleges in Oxford. He became attached to Wolfson College, a postgraduate college, in 2007. When he became pro-vice-chancellor

two years later, he had the chance to move back to University College but chose not to. He decided to stay on at Wolfson as an advocate for a niche college. Subsequently, he helped set up a matching scheme for postgraduate scholarships and brought in millions of pounds to enable many brilliant students to go as far as their talents took them.

'A small college does something important for the University. It provides opportunities to try out new ideas in small scale. Morningside should be an experimental hothouse for the University,' he said. In his view, Morningside is rightly proud of its general education programme which is distinctive for getting students to think independently and weigh up data. 'I always told my students to be respectful but not deferential to their professors, for their professors' opinions are only as good as their arguments. I'd love to export to my students this attitude, this approach to education, this engagement with another human being.'

At Morningside, the Master is looking to build several bridges. First, he plans to strengthen the relationship between the College and the postgraduate hostels as much benefit would result from the interaction between the undergraduates and the postgraduates. Second, if post-docs and young professionals can be invited to the College, social and professional ties would begin to blossom at an early stage. The College's supporters and sponsors are also on his radar for creating networking opportunities for the students.

A connoisseur in the culinary art himself, Professor Rawlins thinks an international food fest would go a long way to create solidarity among the international students. He's also started to invite the families of local students to come to the College and see for themselves how college education has given their children something extra in addition to academic training. He was brimming with confidence when he remarked, 'Small colleges can be little cells of Darwinian evolution.' 🍷

T.C.



# The 87th Congregation



On 7 November 2019, CUHK held its 87th Congregation for the Conferment of Degrees, awarding over 10,000 bachelor's and master's degrees in total. Presiding over the ceremony, Prof. **Rocky S. Tuan**, Vice-Chancellor and President, encouraged the graduates to serve the community and urged them not to be deterred by any failure they now suffer or content with any success they now enjoy. Lastly, quoting Albert Schweitzer, he pointed out that success comes from happiness, not the other way round. 📷



Number of  
Degrees  
Conferred in the  
87th  
Congregation

Master's

6,363

Bachelor's

4,410



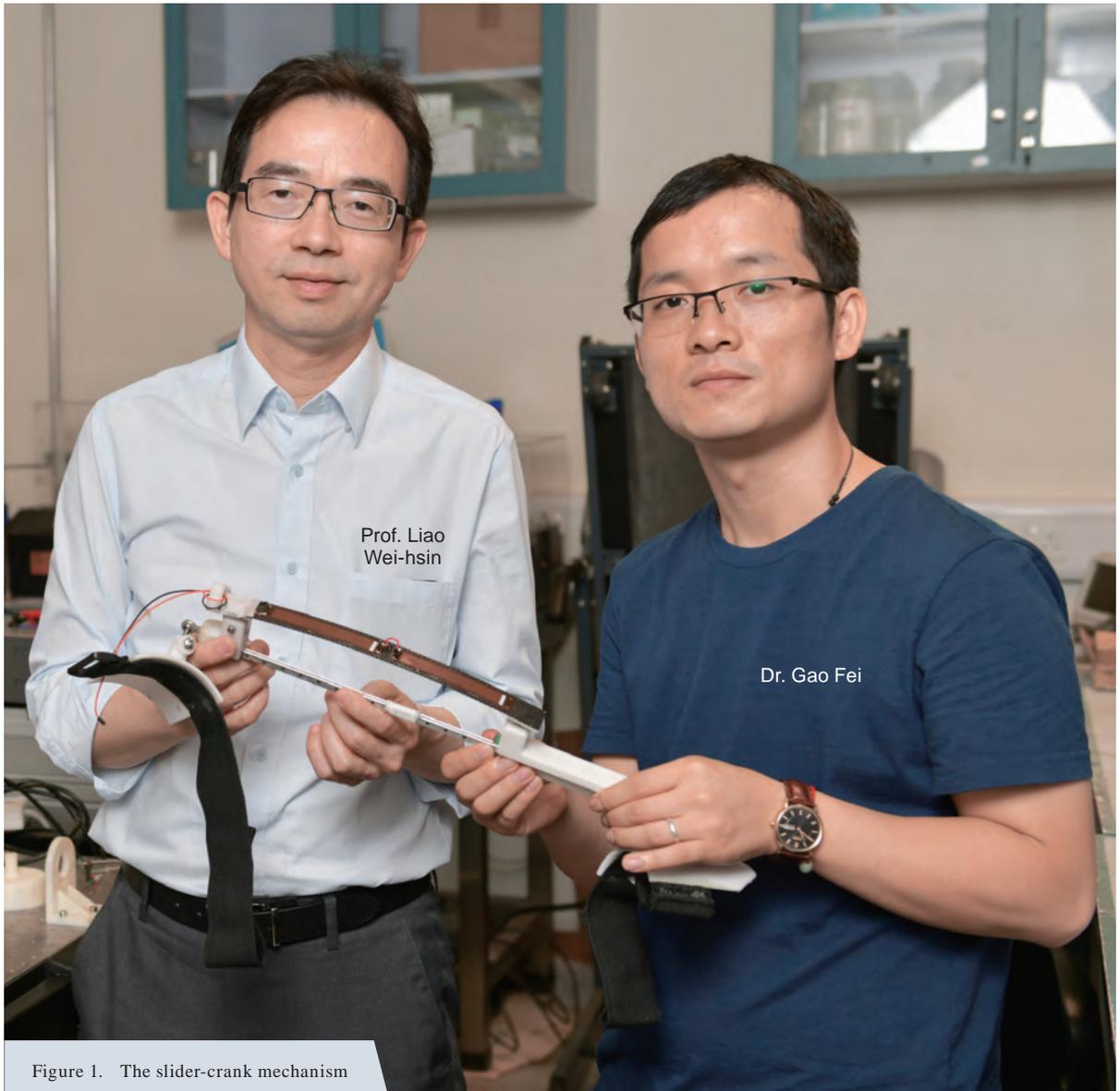
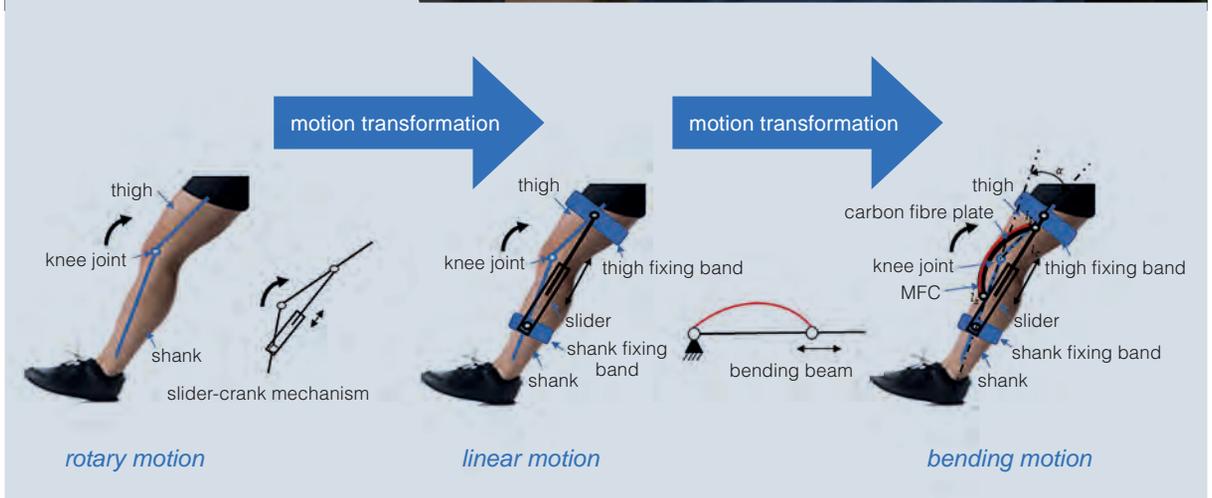


Figure 1. The slider-crank mechanism



# The Force is with Us

## Liao Wei-hsin harvests energy from human motion

Anxiety over dying battery is a syndrome of our times. Thanks to the ingenious invention by mechanical engineers led by Prof. **Liao Wei-hsin**, chairman of Department of Mechanical and Automation Engineering, our paranoia about charging will soon be cured. By donning the human knee energy harvester, we can duly capture the kinetic energy generated by the joint and power electronics simply by walking, any time any place.

‘The human body is a rich source of energy, especially kinetic energy, which can be harvested for the generation of electricity,’ remarked Dr. **Gao Fei**, Postdoctoral Fellow in the Department of Mechanical and Automation Engineering who is the main inventor.

To capture the knee’s energy and convert it into electricity, the human motion researchers fashion their human knee energy harvester after the slider-crank mechanism (*see Figure 1*). To begin with, we have two fixing bands at the thigh and shank which fasten the device to our limb. From the thigh and shank

fixing bands extend the thigh and shank links, respectively, which meet at a movable bearing at the knee. A linear guide, moreover, connects the thigh and shank links at their ends at the corresponding fixing bands, and a slider glides along it.

‘When walking, our leg flexes and extends, causing the slider to move back and forth. The rotary motion of the knee is thus transformed to linear motion along the slider,’ explained Professor Liao.

On top of the above, a carbon fibre plate with smart materials on it arches over the design, with one end of it hinged on the thigh fixing band and another on the moving slider. The slider’s movement arising from our gait would cause the carbon fibre plate to bend and the smart materials on it would deform, converting the pressure it receives into electricity.

Such smart materials are macro-fibre composite (MFC) slices that are piezoelectric in nature, meaning the materials can generate electricity once they come across pressure and deformation. At a normal walking speed of 4 km per hour, the MFC

human knee energy harvester generates 1.6 milliwatts of power, i.e., 1.6 millijoules per second. This would be sufficient to power small devices such as health monitoring equipment and GPS devices.

‘The power generated by the harvester can either be stored, or put through to other portable and wearable appliances as in the Internet of Things. It offers a good solution to the battery problem, as it allows us to utilize energy locally. In mountaineering, for example, where charging may be a problem, we do not have to rely on batteries, as we can get energy direct from our own motion. It would be good for safety and emergency purposes,’ said the professor.

Weighing only 307g, this modern-day talaria produces energy at no cost to us. The research team had performed experiments and found out it does not increase the users’ metabolic effort. Using ball joints at the bearings of the thigh and shank fixing bands, the harvester caters to all knee movements, issuing even more energy in intense activities like running and in soccer games.

Following the publication of the invention as a featured article in *Applied Physics Letters* in July, the team has been greeted with wide media and commercial interests. It is looking to improve its energy efficiency, enhance the design, increase its comfort and lower the cost, while filing patents in the US and China. In two years’ time, we will see the prototype developed into a full-fledged product in the market, soothing our nerves and affording us the boon of streaming energy at no extra effort. 

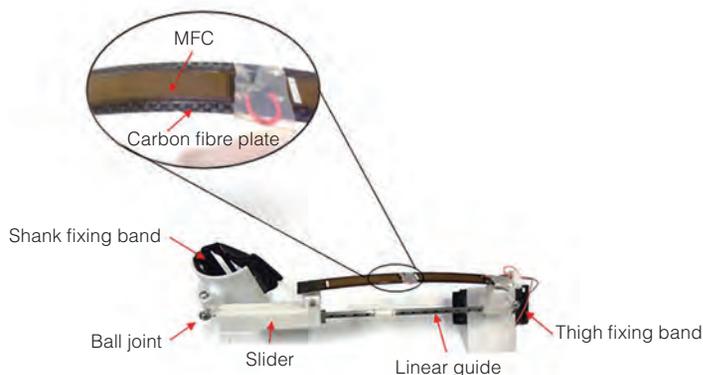


Figure 2. MFC-based human knee energy harvester

Amy L.



# Myopia Terminator

## Jason Yam safeguards the windows to the soul

It is no exaggeration to say that CUHK was the biggest winner at the Ten Outstanding Young Persons Selection 2019, with four of its eight awardees hailing from the University. Among the winners is **Jason Yam**, associate professor of the Department of Ophthalmology and Visual Sciences. He works at the Hong Kong Eye Hospital in Kowloon Tong, an affluent district dotted with capacious townhouses and elite schools. Though Yam grew up in the same area, his childhood milieu was far from affluent—the ‘Model Village’ he lived in was a squatter settlement strewn with ramshackle wooden huts.

His mother was a cleaner. Yam used to take his twin brother and younger sister to help clean the streets so their mother could finish work early. For extra money, the four of them would manufacture keychains at home. ‘We were making ends meet but were nonetheless happy.’ Yam’s father, a meat roaster at a restaurant, had only the first day of the lunar calendar as his day off throughout each year. ‘Full devotion to one’s job is a matter of course in our family. That’s why I don’t draw any line between work and non-work life either.’

Yam was an assiduous student and, since junior high school, he would stay up and study until three o’clock in the morning. He made it to the medical school of the University of Hong Kong, and after graduation chose ophthalmology as his speciality. ‘Darkness can be more frightening than death. Being an eye doctor can help blind people regain vision, making it a most rewarding profession.’

In ophthalmology, he focused on treating eye diseases in children. The visual system in children remains flexible throughout the first eight years of life. If eye diseases are detected and treated properly during these years, acute vision will return.

If vision problems are not remedied in this critical period, the consequence is a lifetime of decreased vision. ‘It is a basic right for children to have a clear view of this world. I don’t want any of them to have their future jeopardized because of eye problems.’

Seven years into serving at the public hospital, Dr. Yam began thinking beyond treating patients and prescribing medications. He imagined himself pushing back the frontiers of medicine by conducting research and finding new medical solutions, so he joined the Faculty of Medicine of CUHK in 2012 and became a researcher in childhood myopia.

Near-sightedness is far from a minor inconvenience, explained Dr. Yam. ‘Myopia is attributed to an increase in the eyeball’s length. Imagine a camera that is pulled apart and the film inside is stretched thin. The photos it takes are problematic. Likewise, when children with high myopia grow into middle and old age, they have a significantly increased risk of suffering sight-threatening conditions, such as glaucoma, macular degeneration and retinal detachment.’

In mid-2018, a research team led by Dr. Yam came up with a solution to myopia by using low-concentration atropine eye drops—by far the most effective treatment of childhood myopia in the world. The conventional 1% atropine eye drops cause pupil dilation, leading to photophobia and blurry near vision. Dr. Yam’s research showed the lower-concentration 0.05% atropine eye drops could slow myopia progression by 70% with significantly fewer side effects. The team is launching a second phase of study to explore using low-concentration atropine eye drops to nip myopia in the bud.

In Hong Kong, where the disparity between the rich and the poor is glaring, children from low-income

families are not likely to have their eye diseases detected and treated in time. The ophthalmologist rising from humble beginnings thus initiated a territory-wide eye care programme for school-age children. On weekends, they come to the CUHK Eye Centre to have their eyes comprehensively examined for free. Since 2015, more than 20,000 low-income families have benefitted from the programme. The participating doctors, nurses, opticians and medical students are all volunteers, galvanized by Dr. Yam’s selfless deeds. The programme also caught the attention of the Hong Kong Jockey Club Charities Trust, and was bestowed a large donation of HK\$ 44 million to bring in extra equipment and manpower to serve even more children. The service scheme has since been officially named CUHK Jockey Club Children’s Eye Care Programme.

As the Secretary General of the Asia-Pacific Strabismus and Paediatric Ophthalmology Society, Dr. Yam has been leading the development of vision care in children in the Asia-Pacific as a representative of Hong Kong. He has also taken up more than 20 roles in the field of ophthalmology and extended his helping hand to rural areas of Cambodia, Indonesia, Xinjiang, Yunnan and Sichuan.

In a press handout about the newly elected Outstanding Young Persons, the word ‘keychain’ is entered into where Dr. Yam has chosen to best represent himself. He explained that a keychain not only epitomizes his childhood but also hints at his greatest ambition: ‘To achieve something is like opening a door. I may not be talented enough to be the key to a problem. But I can be a keychain that strings together the community, volunteers, doctors, donors and policy makers. Through our concerted efforts, I hope the day will come when myopia disappears from the world.’ 

*Christine N.*



# Fly Me to the Moon

## Passing from death unto life with Tobias Brandner

On the ground next to Madam S.H. Ho Hall, Prof. **Tobias Brandner** rode on the bicycle that had taken him round the world and up and down the University campus over the past 23 years, cutting through late November's nascent winds with nonchalant ease. The healer that gazes compassionately into the human soul understands too well happiness and growth spring not from coercion but letting go.

Barring a sabbatical in Koh Samui in 2007, this is Professor Brandner's 24th year in Hong Kong. An ordained minister of the Swiss Reformed Church—the Protestant branch in Switzerland, he came to the city in 1996 and started to serve as a full-time prison chaplain in 1998, which also saw him teaching part-time at the Theology Division—now named Divinity School—of Chung Chi College. Starting from 2008, he has been engaged full-time with the School while paying regular visits to local prisons. He teaches the history of western Christianity and Christian missions and researches on the religion's shifting centre of gravity to the East while advocating for prisoners' rights, receiving their confidences or simply being there for them.

The theology professor's soul-searching began in late teenage, when he became a voracious reader of books on philosophy, literature, Buddhism, psychology, and psychoanalysis. One day, as he was reading on Zen Buddhism, a thought struck him. 'Why do I need to go to the Eastern religions? Quite a lot of these thoughts can be found in the Christian tradition.' From then on, he began to study Christian thoughts in depth.

By 30, Professor Brandner had finished his doctorate, worked as a part-time prison chaplain for a couple of years, been elected into the city council to push for institutional reforms and involved in an international church organization. Despite being professionally established, he felt he had run into a dead alley. And one day, the chance came. The president of the Basel Mission, on the lookout for someone to take up prison ministry in Hong Kong, presented him with such an opening and asked if he was interested. 'I immediately knew that's it,' said he, still looking thrilled. 'There was no hesitation, no discussion. My fiancée and I immediately knew we would go.'

Excitement animated the theology professor's calm, harmonious facial features as we touched on the topic of prison—his confirmed passion after three decades of service. 'Those in prison are not necessarily bad people; they are just ordinary people in extraordinary circumstances. The prison system is a place which tries to normalize people, people with somehow dissenting voices or thoughts,' observed the close reader of Michel Foucault's *Discipline and Punish*. 'I always love these guys,' he said, a tenderness coming over his voice. 'They have done seriously wrong things, but I have deep respect for them.'

As a full-time teacher now, Professor Brandner does prison visits once a week, serving male adult prisoners in Stanley Prison, Shek Pik Prison, and Siu Lam Psychiatric Centre. Once a month he takes his theology students to Shek Pik Prison for joint worship, with many of them becoming friends with the inmates. Getting through the numerous gates that insulate

the inmates from the outside world, he would begin the day by visiting different sections and workshops, greeting, nodding and shaking hands with them, doing short chats, or having longer discussions in a private room. With a whole day of engaging in dialogue, listening, and travelling back and forth from the city, a visit to prison is often a herculean voyage that exacts much from one's body and soul. As a prison chaplain, does he aim to convert the inmates?

'Never. I always warn people it is not easy—turning to Jesus Christ is always turning away from certain habits of your life. What I aim at is leading them on a path of growing ability to love and to receive love. What I do, ultimately, is to communicate God's forgiveness,' said he.

'But how can people reconcile with their brokenness? How is it possible for one to love the worst in himself?'

'Here, faith comes into play. Faith is the experience of being accepted and loved despite all our brokenness. That is why, theologically speaking, we call it a gift. It is not you who decide to be a Christian: it's really God's spirit which moves you. And this moving means receiving this amazing gift that you are accepted for the way you are.' He added, taking a light breath, 'This is a deep truth we can only grasp in faith.'

Suffering produces perseverance; perseverance, character; character, hope; thus spake the theology professor. The flickerings of hope shall guide us through long nights. When the day breaks, the sinning and the sinned against would all be free, pitied—and cast to the winds of human history. 

Amy L.

# THE BEST AND THE BRIGHTEST

## Green Champion Heads to Oxford

Geography and Resource Management graduate Natalie Chung won the Esther Yewpick Lee Millennium Scholarship to read a master's in environmental change and management at the University of Oxford. A staunch green campaigner on and off campus, Natalie founded V'air, an environmental education organization promoting low carbon local tourism, and joined the Council for Sustainable Development in Hong Kong to bring youth voices into environmental policymaking. She hopes to become an environmental leader and researcher after her study at Oxford.



## CUHK Members as Outstanding Young Persons

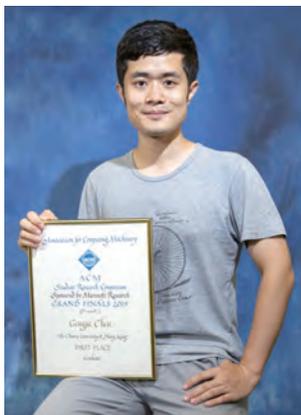
Of the eight honorees of Ten Outstanding Young Persons Selection 2019, chosen by the Junior Chamber International Hong Kong in recognition of their professional and community contributions, four are from CUHK. They are:

Award Category	Name of Awardee	Background
Education	Mr. Pasu Ng (first left)	Dissecting Laboratory Manager and Senior Embalmer of the School of Biomedical Sciences
Civil and Social Services	Mr. Arnold Chan (second left)	Alumnus of the Global Business Studies Programme
Professionals	Prof. Jason Yam (first right)	Associate Professor of the Department of Ophthalmology and Visual Sciences
Performing Arts/Sports/Culture and Arts	Ms. Louise Kwong (fourth right)	Alumna of the Department of Music



## Five Students Got Hong Kong Jockey Club Scholarships

Five undergraduates, Curtis Lin (Social Science), Tiffany Liu (Psychology), Arthur Chow (Global Business Studies), Cecilia Leung (Public Health) and Daniel Li (Sociology) were awarded The Hong Kong Jockey Club Scholarships in 2019 for their exemplary academic work and character and enthusiasm in community services.



## VLSI Routing Research Triumphs at International Contests

Chen Gengjie, PhD student from the Department of Computer Science and Engineering, landed First Place in the Association for Computing Machinery Student Research Competition Grand Finals. Supervised by Prof. Evangelina Young, Chen's team devised efficient and effective algorithms on the routing of very large scale integration (VLSI), a technology which places and connects multitudinous transistors in a fingertip-sized chip. Their research also took the Best Paper Award at the International Conference on Computer-Aided Design.



## Kudos to Budding Engineers

Two teams of Mechanical and Automation Engineering students achieved excellent results at the Guangdong-Hong Kong-Macao Undergraduate Engineering Training Integration Ability Competition 2019 held in October 2019. Team Sweeping Hero captured the First Prize and Best Cooperation Award in the 'Pick and Place' category, whereas Team CUER won the Best Cooperation Award in the 'Energy Relay' category.

## Laurelling Stars of the Year

CUHK presented the Outstanding Students Awards to 229 students in categories of Innovation and Invention, Sports, Arts, Social Service and Special Achievement.

The newly introduced 'The Most Outstanding Stars' were elected by all awardees as the most typical student or team in their respective category. Among those elected are Lou Kuan-wen, who invented a Ketone-measuring device to gauge the effectiveness of weight control measures; Hong Kong record holder for the women's long jump Yue Ya-xin; virtuoso composer Tobias Fandel; the Tree Hole facebook page management team who counsels troubled students, and Zhou Yuhang who participated in the United European Gastroenterology Week 2018 as the Hong Kong representative and won the National Scholar Award.

# NEWS IN BRIEF

## APPOINTMENTS

### Council Members

	Name	Appointment Period	 Prof. Jimmy H.M. Lee
New	Prof. Jimmy H.M. Lee	10.9.2019–31.8.2022	
Re-appointed	Prof. Dennis Y.M. Lo	10.9.2019–31.8.2022	
	Dr. Anita F.Y. Leung	1.11.2019–31.10.2022	
	Mr. Charles Y.W. Leung	30.11.2019–29.11.2022	
	Dr. Kenneth T.K. Chu	1.1.2020–31.12.2022	
	Prof. Chan Sun-on	21.1.2020–20.1.2023	
	Mr. Roger K.H. Luk	2.3.2020–1.3.2023	

### University Officers

		Name	Appointment Period
New	Provost	Prof. Chan Kam-leung Alan	1.1.2020–31.12.2024
	Dean of the Graduate School	Prof. Anthony Tak Cheung Chan	1.9.2019–31.8.2022
	Dean of the Faculty of Arts	Prof. Tang Xiaobing Max	2.9.2019–1.9.2024
	Dean of the Faculty of Business Administration	Prof. Zhou Lin	9.12.2019–8.12.2024
	Dean of the Faculty of Law	Prof. Lutz-Christian Wolff	30.9.2019–29.9.2024
	University Dean of Students	Prof. Chan Kwok-hong Raymond	31.1.2020–30.1.2024
Re-appointed	Pro-Vice-Chancellor	Prof. Fok Tai-fai	1.1.2020–31.7.2021
	Treasurer	Dr. Anthony Neoh	2.3.2020–1.3.2023
	Head of United College	Prof. Jimmy C.M. Yu	1.8.2019–31.7.2022
	Dean of the Faculty of Social Science	Prof. Chiu Chi-yue	11.11.2019–10.11.2024



Prof. Chan Kam-leung Alan



Prof. Anthony Tak Cheung Chan



Prof. Tang Xiaobing Max



Prof. Zhou Lin



Prof. Lutz-Christian Wolff



Prof. Chan Kwok-hong Raymond

## Emeritus Professors

1.8.2019



Prof. Wong Kun-chun  
Department of Cultural and Religious Studies



Prof. Pang Chi-pui  
Department of Ophthalmology and Visual Sciences



Prof. Mok Kar-leung Harold  
Department of Fine Arts



Prof. Leung Yuen-sang  
Department of History



Prof. Chan Wai-kwong Victor  
Department of Music



Prof. Xu Lei  
Department of Computer Science and Engineering



Prof. Ching Pak-chung  
Department of Electronic Engineering



Prof. Choy Chiu-sing  
Department of Electronic Engineering



Prof. Yam Yeung  
Department of Mechanical and  
Automation Engineering

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## APPOINTMENTS

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### Emeritus Professors

1.8.2019



Prof. Anil Tejbhan Ahuja  
Department of Imaging and Interventional Radiology



Prof. Tang Jinling  
The Jockey Club  
School of Public Health and Primary Care



Prof. Chen Gong George  
Department of Surgery



Prof. Poon Wai-sang  
Department of Surgery



Prof. Chan Kin-shing  
Department of Chemistry



Prof. Chu Ka-hou  
School of Life Sciences



Prof. Lin Hui  
Department of Geography and Resource Management



Prof. Ting Kwok-fai  
Department of Sociology



Prof. Gu Daqing  
School of Architecture

12.8.2019



Prof. Feng Shengli  
Department of Chinese Language and Literature

16.8.2019



Prof. Wang Qingjie  
Department of Philosophy

1.9.2019



Prof. Lee Hun-tak Thomas  
Department of Linguistics and Modern Languages

30.9.2019



Prof. Christopher Hugh Wylie Gane  
Faculty of Law

1.1.2020



Prof. Michael K.M. Hui  
Department of Marketing

2.1.2020



Prof. Wong Teng-fong  
Faculty of Science

15.1.2020



Prof. Xiao Xudong  
Department of Physics

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## HONOURS AND RECOGNITIONS

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### Six Scholars Elected into Hong Kong Young Academy of Sciences

To promote innovation and technology development in Hong Kong and arouse students' interests in science, Hong Kong Academy of Sciences elected 31 young scientists with outstanding achievements into the Hong Kong Young Academy of Sciences, among whom six are from CUHK. They are Prof. Edwin Chan (1st right) from School of Life Sciences, Prof. Raymond Tong (1st left) from the Department of Biomedical Engineering, Prof. Li Huabai from the Department of Physics, Prof. Lu Yi-chun from the Department of Mechanical and Automation Engineering, Prof. Kathy Lui (2nd right) from the Department of Chemical Pathology and Prof. Amos Tai (2nd left) from the Earth System Science Programme.

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### Robotics Team Crowned Champions at Local and Asia-Pacific Contests

Phantom Dancer, a robotics team from the Faculty of Engineering, stood out from 13 competing teams from seven local tertiary institutions and became Champion of the Robocon 2019 Hong Kong Contest, where they were challenged to build one manual and one automatic robotic prototype to execute a range of tasks within three minutes. Following the victory, the team travelled to Mongolia and was crowned champion at the Asia-Pacific Broadcasting Union Asia-Pacific Robot Contest which comprised 17 regional-winning teams from 16 countries and territories, becoming the first Hong Kong team to pick the laurels since the game's commencement in 2002.



### A World Expert in Aspirin

Prof. Francis Chan, Dean of the Faculty of Medicine, was named a world expert in aspirin by ExpertScape, a globally renowned arbiter of academic excellence in healthcare. Of over 46,000 academics indexed in PubMed, he is listed within the top 0.062% for the last decade and top in Asia. His work includes formulating clinical practice guidelines to mitigate uncertainties on aspirin usage, pinpointing a treatment for aspirin-induced small bowel bleeding and revealing how aspirin can modulate cancer risk.

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### Prof. Darwin Lau Awarded UGC Teaching Award



Prof. Darwin Lau of the Department of Mechanical and Automation Engineering received the 2019 University Grants Committee Teaching Award (Early Career Faculty Members) for his learner-centred and experience-based learning ideology. Adopting a student-teacher-experience-peer modality, he delivers hands-on lectures on robotics fundamentals which allow students to have direct contact with physical robotic arms and other learning tools.

## HONOURS AND RECOGNITIONS



### Where Honour and Life Grow in One

Vice-Chancellor Prof. Rocky S. Tuan was named a Fellow of the American Association of Anatomists (AAA) 2019 for his contributions to anatomical sciences, particularly in the field of tissue engineering and regeneration. Professor Tuan and his research team have recently integrated biotechnology with their stem cell research and successfully developed translational applications for human tissues repair and regeneration. By making use of the microbioreactor platform, they have also engineered 'microJoint', the first-ever three-dimensional joint-on-a-chip, to replicate human articular joints and test potential therapeutic agents for osteoarthritis.

### Top Innovator in Asia-Pacific

Prof. Zhou Bolei of the Department of Information Engineering was named by the *MIT Technology Review* as one of the top innovators under the age of 35 in the Asia-Pacific region in 2020. Professor Zhou has developed innovative techniques such as Class Activation Mapping and Network Dissection to help researchers and practitioners in discerning model prediction and detecting mistakes made by the AI models, which can be applied in fields including medical imaging, health care and autonomous driving.

## Nine Professors Honoured as Most Highly Cited Researchers

Nine professors have been named by Clarivate Analytics in the list of 'Highly Cited Researchers 2019'. The honour is given to researchers who produced multiple papers that rank in the top 1% worldwide by citations in their respective fields of study and year of publication.

### Clinical Medicine



Prof. Tony Mok  
Chairman of the Department of  
Clinical Oncology

### Economics and Business



Prof. David Ahlstrom  
Acting Chairman of the  
Department of Management

### Psychiatry and Psychology



Prof. Lee Sing  
Clinical Professor (Honorary) of the  
Department of Psychiatry

### Cross-Field



Prof. Chan Lik-yuen Henry  
Associate Dean (External Affairs)  
of the Faculty of Medicine



Prof. Kwan Mei-po  
Director of the Institute of Space and  
Earth Information Science



Prof. Joseph J.Y. Sung  
Mok Hing Yiu Professor of  
Medicine



Prof. Jimmy C.M. Yu  
Choh-Ming Li Professor of  
Chemistry



Prof. Wong Wai-sun Vincent  
Head of Division of Gastroenterology  
and Hepatology in the Department of  
Medicine and Therapeutics



Prof. Wong Ching-ping  
Emeritus Professor of  
the Department of Electronic  
Engineering

## The Star Gazers and Catchers

Four CUHK scholars were presented with prestigious awards from the Croucher Foundation. Prof. Wang Jianfang from the Department of Physics was awarded the Croucher Senior Research Fellowship 2020. Prof. Ronald C.W. Ma and Prof. Ng Siew-chien, both from the Department of Medicine and Therapeutics, received the Croucher Senior Medical Research Fellowships 2020. Prof. Zhou Renjie from the Department of Biomedical Engineering was awarded the Croucher Innovation Award 2019.

## Four Researchers Receive China's Excellent Young Scientists Fund

Four scientists were awarded China's Excellent Young Scientists Fund 2019 by the National Natural Science Foundation of China for their excellent basic research. The Fund would give a boost to their research endeavours.

Researcher	Department/School	Theme of Research
Prof. Lui Oi-lan Kathy	Department of Chemical Pathology	Vascular Disease and Regeneration
Prof. Tian Xiaoyu	School of Biomedical Sciences	Regulation of Vascular Homeostasis by PPAR $\delta$
Prof. Wong Hei Sunny	Department of Medicine and Therapeutics	Gut Microbiota and Serrated Polyps in Colon
Prof. Lu Yi-chun	Department of Mechanical and Automation Engineering	Electrochemical Energy Storage and Materials Interfaces

## Rural Library Project Scoops Oscar of Architecture



The Gaobu Book House, a children's library built by Prof. Peter W. Ferretto of the School of Architecture and his team Condition\_ Lab in collaboration with the College of Architecture and Urban Planning, Guangzhou University and local villagers in rural Hunan, won the 'Completed Buildings—



Civic and Community' category award at the World Architecture Festival 2019, an occasion hailed as the 'Oscars of architecture'. The project was praised by the judges as 'totally intertwined with the community—a project that goes well beyond the actual building and demonstrates excellence of process'.

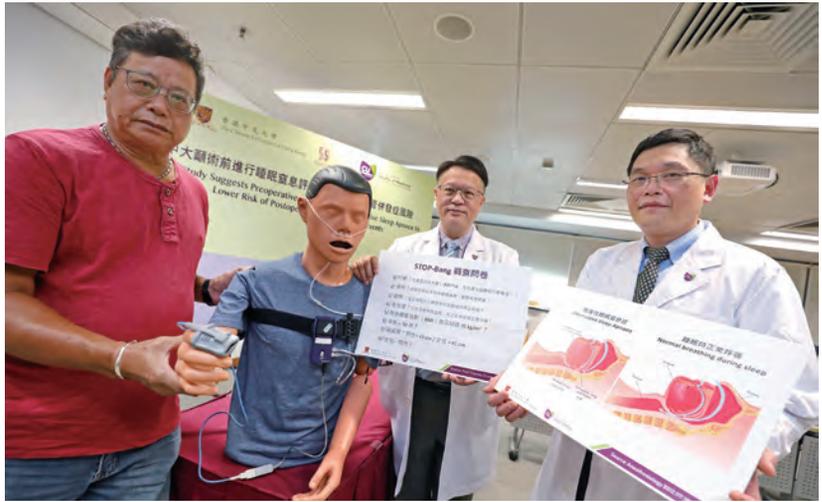
## Accolades for Medical Scientists



Prof. Dennis Lo and Prof. Rossa Chiu of the Faculty of Medicine are named two of the top 20 translational researchers of 2018 by the world-renowned scientific journal *Nature Biotechnology*. They are the only Hong Kong researchers on the list, and this is the third consecutive year for Professor Lo to receive this honour. The two professors were selected for their achievements in the areas of cancer and fetal diagnostics. Meanwhile, Professor Lo also received the fourth Fudan-Zhongzhi Science Award in December for his contribution to areas including non-invasive parental testing and circulating tumour DNA detection.

### New Link between Sleep Disorder and Heart Disease

The Faculty of Medicine conducted the world's first study to investigate the association between unrecognized obstructive sleep apnoea (OSA) and postoperative cardiovascular complications. Results showed that patients with unrecognized severe OSA have a twofold increased risk of postoperative cardiovascular complications compared to those without the disorder. The study has recently been published in the *Journal of the American Medical Association*.



### Putting the CAR-T before Cancer

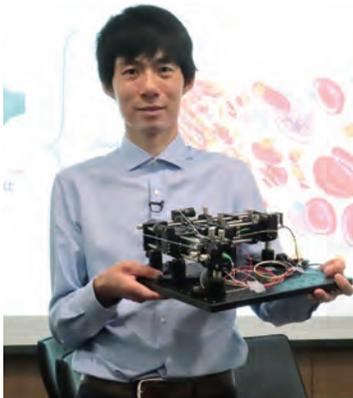


The clinical trials of Chimeric antigen receptor-T cell (CAR-T cell) therapy, a cellular therapy that targets to prolong overall survival of patients with haematological malignancies, will soon be kicked off by the Faculty of Medicine. Being an immunotherapy that harnesses the power of patient's own immune system, the CAR-T cell therapy extracts T cells, which fight infections and kill cancer cells, from the patient's blood. By modifying these cells genetically in a qualified laboratory and building in radar-like receptors on them, the T cells then recognize and attack cancer cells, including those that used to evade the immune system, upon being reinfused into the patient's body.

### Nanomaterials Made Quick and Easy

A research team led by Prof. Bian Liming of the Department of Biomedical Engineering developed a novel approach for preparing single-chain nanomaterial which boasts 20 times more in production efficiency than the traditional methods. By easing their production, the nanomaterials can now be yielded on a large scale, enabling their use in gene or drug delivery, stem cells behaviour regulation and protection.





### AI-powered Blood Tests

A research team led by Prof. Zhou Renjie of the Department of Biomedical Engineering developed a first-of-its-kind AI-enabled portable quantitative phase microscope that yields high-quality images, facilitating the differentiation between the many types of white blood cells in a healthy volunteer's blood sample and making blood tests cheaper and faster. Results can be offered in a matter of minutes with over 90% accuracy.

### Energy Harvesting with Enhanced Nanogenerator Utilization



Prof. Zi Yunlong of the Department of Mechanical and Automation Engineering and his team developed a universal standardized method for evaluating the output capacity of nanogenerators, a neoteric technology that converts thermal and mechanical energy into electricity. By improving the accuracy of output capacity measurement, the team's research facilitates the application of nanogenerators on energy harvesting.



### Augmented Test Protects Mother and Child

Improved on by CUHK, the UK Fetal Medicine Foundation (FMF) triple test for preterm preeclampsia is more effective than ever before. A disease where the placenta fails to supply enough blood, preterm preeclampsia can damage the mother's liver, kidneys and nervous system. It may also impair the fetus' growth or even lead to premature birth. Adjusted by Prof. Liona Poon of the Department of Obstetrics and Gynaecology and her team, the triple test now benefits Asian women at 11 to 13 weeks of pregnancy.

### Game-changing Nanoscale 3D Imaging and Printing Technologies

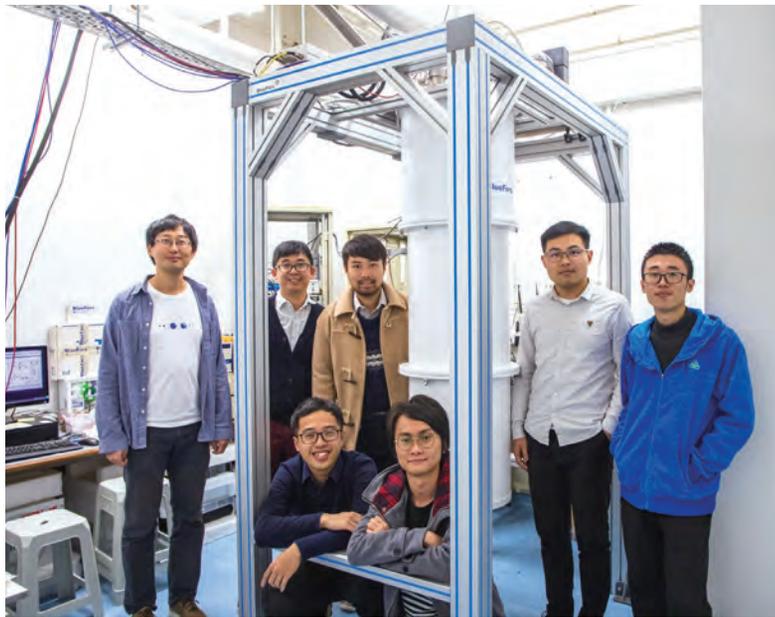
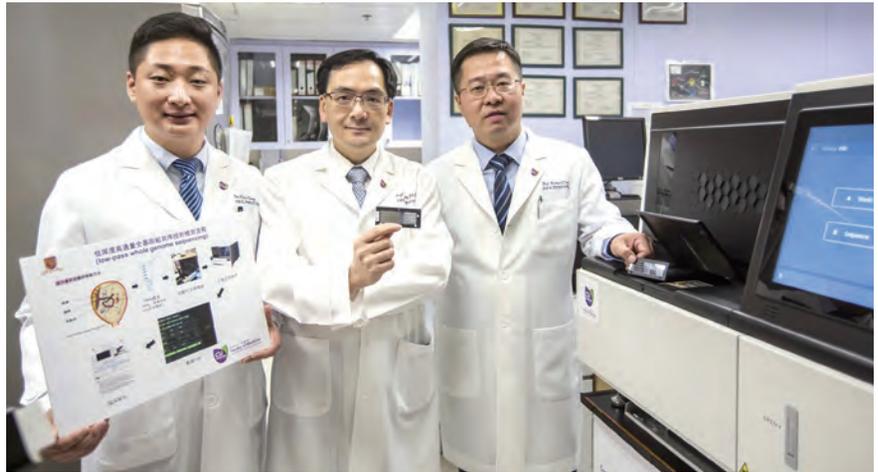
Prof. Chen Shih-chi of the Department of Mechanical and Automation Engineering and his team have developed a high-speed microscopy method. This method yields sharp 3D images in one second, working three to five times faster than conventional approaches without sacrificing quality, which is useful for observing neurons' incredibly brief activities. The solution would foster breakthroughs in areas such as optogenetics.



Further, Professor Chen has collaborated with the Lawrence Livermore National Laboratory in the US and developed the Femtosecond Projection Two-photon Lithography (FP-TPL) printing technology which brings nanoscale 3D printing into a brand new era. FP-TPL makes use of temporal focusing to project a million points simultaneously at the same focal plane for parallel nano-writing, scaling up the fabrication speed by 1,000–10,000 times. This in turn lengthens the laser lifetime extensively and indirectly reduces the average printing cost by 98%. FP-TPL benefit fields running the gamut from nanotechnology, advanced functional materials to micro-robotics and drug delivery devices, as it allows the fabrication of large-scale complex and overhanging structures.

### State-of-the-art Screening for Babies-to-be

The Department of Obstetrics and Gynaecology introduced fetal DNA sequencing at genome-wide resolution for prenatal invasive genetic diagnosis. The technique optimizes detections of microdeletions and microduplications in fetus to offer augmented accuracy in diagnosing lethal congenital disorders, such as Down syndrome.



### Diamond Quantum Sensor

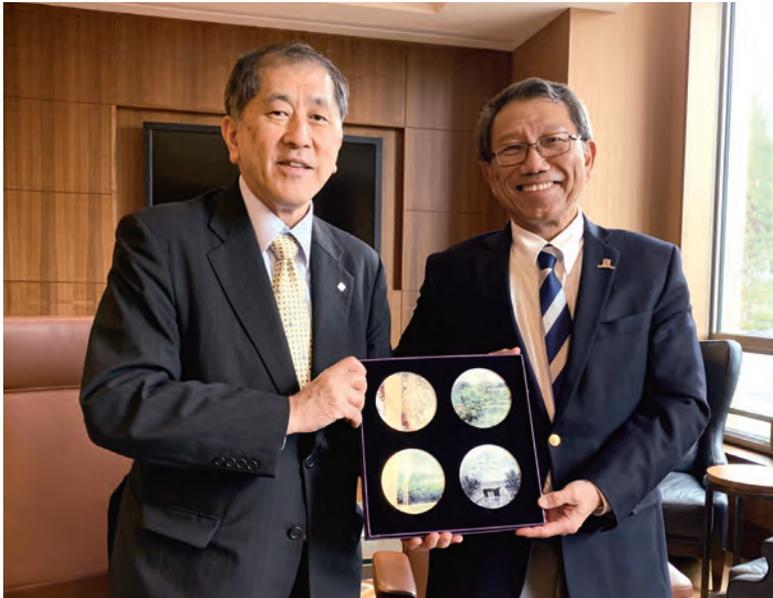
Research groups led by Prof. Goh Swee-kuan and Prof. Yang Sen of the Department of Physics have developed an observation technique for quantum materials based on nano-diamonds. Under low temperatures and high pressure, quantum materials display such interesting characteristics as becoming a superconductor. Unfortunately, it was difficult to observe these characteristics given the extreme environment. Using nano-diamonds, the research team has developed a method of sensing magnetic fields of quantum superconductors that works under extreme conditions. This method makes it easier for researchers to study and improve quantum materials, while enhancing Hong Kong's capability in the fields of metrology and high-precision instrumentation.

### Goodbye to Malicious Click Interception

A research team led by Prof. Meng Wei of the Department of Computer Science and Engineering developed a browser-based analysis framework Observer capable of detecting three different techniques for intercepting web user clicks. These include the modification of hyperlinks, the insertion of event listeners, and visual deception. The framework's source code will be released to the public to help browser vendors design defense mechanisms and put in place a more salutary web ecosystem.



### Incubating Global Leaders with Waseda University



CUHK and Waseda University established a framework to collaborate in dual degree programmes. The first programme to be launched in the academic year 2019–20 will pair the BSSc in Global Studies Programme at CUHK and the BA in Social Science—Transnational and Interdisciplinary Studies in Social Innovation at Waseda. Participating students will spend the first two years at their home institution and the last two years at the partner university. Upon satisfying graduation requirements, students will be awarded a Bachelor of Social Science degree from CUHK and a Bachelor of Arts degree from Waseda. Another dual degree programme with Waseda’s BA in International Liberal Studies Programme is now being planned.



### CUHK Welcomes Back One of its Own

The Distinguished Alumni-in-Residence Programme 2019 welcomed alumnus Norman Chan Tak-lam (1976/Chung Chi/Sociology) back to his alma mater after his retirement from the position of Chief Executive of the Hong Kong Monetary Authority. During his stay between 3 and 5 October 2019, Mr. Chan talked with engineering and business students about the innovation and challenges brought by FinTech to the financial sector and the crux for a successful career respectively. He also gave a keynote speech titled ‘Crossroads in Life’ sharing how he tackled the crises and challenges along the way.

### Maccenas’s Gift

CUHK received a HK\$100 million donation from Lo Kwee Seong Foundation to construct an Art Museum extension for fostering creation, curation and teaching of art. The extension would be named Art Museum of The Chinese University of Hong Kong–Lo Kwee Seong Pavilion in perpetuity. Targeted to be completed in 2023, it would mark a milestone of the Art Museum succeeding its golden anniversary in 2021.



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## ACTIVITIES AND EVENTS

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### Joining Forces in Legal Research and Knowledge Exchange

CUHK and the British Institute of International and Comparative Law (BIICL) established a partnership in academic and professional activities. Through this collaboration, CUHK and BIICL will cooperate in knowledge creation and exchange in various fields of law, such as international and comparative law. Both parties will co-organize events and develop professional training and continuing professional development across the legal, governmental and non-governmental communities in Hong Kong and Asia.



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### Sixth Anniversary of Climate Change Museum



The Jockey Club Museum of Climate Change celebrated its sixth anniversary on 14 December 2019. Since its inception, the museum has attracted more than 800,000 visitors. At the new exhibition ‘Climate Change: Past, Present, Future’ launched on the same occasion, visitors got a glimpse into how the climate has changed and was encouraged to think about their roles in a sustainable world.

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### Getting a Foothold in NAI



CUHK has joined the National Academy of Inventors (NAI). As an NAI member, the economic impact generated from academic discovery at CUHK will receive further recognition. It also offers CUHK researchers a direct channel of communication with others in their areas of specialization.



### Home Green Home

The CUHK Jockey Club Postgraduate Halls 2 and 3 opened their doors on 23 October 2019. The two 12-storey buildings in the vicinity of Area 39 provide close to 700 residence places. In keeping with the University’s green campus policy, the hostel building embraces greenness with sky gardens on alternate floors and landscaping on the ground. Solar panels and a windmill are installed over the rooftop to preheat water, and a rainwater recycling system uses collected rainwater for irrigation. Through the grey water treatment system, wastewater from everyday life is reused to water plants. A library, gym, billiard room and meditation room and other communal facilities are ensconced in the Central Piazza, allowing postgraduates around the globe to avail themselves of the natural environment and build a community of young intellectuals.

## When Humans and AI Come Together



The Centre for Innovation and Technology staged a conference titled ‘Enroute to the Age of Artificial Intelligence’ between 4 and 5 July 2019, drawing over 100 tech-savvy experts, researchers and government officials to rhapsodize over the thriving trends and potential applications of AI technology. AI-related projects by University members were also showcased.

## Professionalizing Chinese Medicine



Li Dak Sum Yip Yio Chin R&D Centre for Chinese Medicine has co-organized an exchange platform for Chinese medicine pharmaceutical professionals in Guangdong-Hong Kong-Macau Greater Bay Area. Comprising a series of seminars, intensive training courses and a study tour, the scheme sought to enhance safe use and quality control on Chinese medicine and pharmaceutical services. The opening ceremony of the scheme cum seminar was held on 13 July 2019.

## International Conference to Inaugurate a Global Regulatory Governance

The Department of Government and Public Administration and the Hong Kong Institute of Asia-Pacific Studies co-hosted the International Conference to Inaugurate a GloRegulatory Governance 2019 from 4 to 6 July 2019 at Cheng Yu Tung Building. The three-day conference consisted of a Round Table on Governance & Think-tanks in Hong Kong, eight parallel panel sessions and an editor’s forum to provide interaction with editors of leading academic journals.

## On Carer Support

The Intellectual Disabled Education and Advocacy League 30th Anniversary Seminar on Carer Support was held on 25 September 2019 with more than 200 participants from the field attending the event. During the Seminar, Prof. Phyllis Wong of the Department of Social Work expounded the hardships that carers faced when attending the intellectually-disabled and therewith stressed the importance of setting up a case management system.





### Experts Share Thoughts on Sustainability

The Hong Kong Chapter of the UN Sustainable Development Solutions Network (SDSN) and CUHK's Jockey Club Museum of Climate Change jointly held the forum '365 Ways to Change the World—From Creative Entrepreneurship to Antarctic Exploration' on 28 October 2019. Talks were given by Dr. Guido Schmidt-Traub, Executive Director of SDSN, and Prof. Wu Ka-ming of the Department of Cultural and Religious Studies. The speakers shared their views on conundrums like climate change and trash crisis, and highlighted universities' roles in fostering coordinated responses and realizing sustainability. Professor Wu also dealt with her expedition to Antarctica, where she discussed sustainability with other female scholars.



### Pioneer of DNA Repairing Speaks at CUHK

On 26 September 2019, Prof. Maria Jasin, Shaw Laureate in Life Science and Medicine 2019, shared her findings on 'Genome Modification by Natural and Artificial DNA Breaks', where she briefly explained the way her laboratory used artificial double-strand breaks to create genomic rearrangement, which laid the foundation for all subsequent gene editing studies.

### Glass Ceilings and the Law

The Faculty of Law presented its first Female Legal Leaders Seminar on 4 November 2019. Three distinguished female legal practitioners, Ms. Emma Davies (left), Partner of Clifford Chance, the Honourable Mrs. Justice Audrey Campbell-Moffat (centre), Judge of the Court of First Instance of the High Court of Hong Kong and Ms. Anna Wu Hung-yuk (right), former Chairman of the Equal Opportunities Commission and currently Chair of the Competition Commission of Hong Kong discussed the highlights of their careers and dealt with gender topics, ranging from the difficulties faced by female solicitors in juggling career and family, the personal leeway enjoyed by female barristers to the thrust of equal opportunities to afford equal respect to all.



### On the Crest of FinTech Wave

Hosted by the Faculty of Engineering and supported by the Centre for Financial Engineering and the Faculty of Business Administration, the 2019 CUHK Conference on Financial Technology (FinTech) took place on 4 November 2019. Close to 500 representatives from banking, technology and legal sectors, academics, government officials and regulators converged to explore the explosive FinTech development under the theme 'When Wall Street Met Main Street—Real vs Virtual Economy'. Topics discussed included AI, biometrics, crypto assets, decentralized finance, machine learning, regulatory technology, tokenization, among others. 📷







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