‘KE is the Engine Translating Research into Impact’

Professor Andy Hor is the new Vice-President and Pro-Vice-Chancellor responsible for both research and knowledge exchange (KE) at the University. It is a big portfolio but to him it is a natural combination because without KE, research will have limited impact outside academic circles.

“Knowledge exchange is essential for any modern university,” he said. “The situation is quite simple: we may do very good research, which is our primary mission, apart from teaching and learning. But the impact of that may not be clear to people in the community. KE is the engine that translates all this into impact, into something that people can feel and touch.”

Professor Hor speaks from deep experience. He is a respected researcher himself, having spent 31 years as a Chemistry academic at the National University of Singapore. For the past five years, he was seconded to the Institute of Materials Research & Engineering (IMRE) at the Agency for Science, Technology and Research (A*STAR) where, as Executive Director, he steered efforts to produce materials-based technology and innovations that could help Singapore develop its high value-added industry. In Singapore, novel research is the basis for innovative industries, which in turn create national wealth and high-value jobs for the younger generation. These create an enterprising system that supports more R&D activities.

Making the leap from research to KE is therefore not something he sees as an add-on or afterthought, and he intends to cultivate such culture at HKU. KE in the broad sense covers all kinds of public engagement activities, knowledge access, technology transfer and commercialization. “I want to see all faculties and departments doing more of all these activities, but with a focus on translation of research into impact because HKU has an excellent research base. KE is about turning research output into outcome, which is about how the community and others benefit from our work,” he said.

He wants faculties and departments to take ownership of the impact process, formulate plans on how they can create impact, and suggest how their impact should be evaluated. “I accept that not all research areas need to excel in delivering impact beyond academia. But I firmly believe that even blue-sky research can have non-academic impact – very often it is about how to articulate that and collect evidence. I want to ask all Faculty Deans how they want to be perceived and assessed by the community and how they make their faculties more competitive in the current state of open innovation. We have gone past the stage where research impact is measured by publications and citations in academic journals. Whatever we come up with in our research labs or projects, we shall find a way to translate to benefit people’s life and living. Such translation does not happen overnight, but we must have a sustained effort in doing such.”

“And I can’t emphasize enough the importance of inter-disciplinary cross-faculty research and KE, which I want to strengthen at HKU. There are so many challenges facing the world today, for example, urbanization and aging. The inherent problems, such as environment, energy, health systems, etc., are huge, complex, interwoven and multifaceted. Our researchers in different disciplines should work together and with professionals in the community to find solutions, big or small, for society,” Professor Hor advised.

KE also feeds back to research because impact may very well become a requirement for future research assessment. The UK has already taken that step and many other communities are taking the same direction. “For us to be a global university, we have to understand and respond to rising expectations. We are expected to be a hub for world-class research, not only in its quality and excellence, but very much also on its impact and community value.

“The world is changing. Not only that we should be ready for it, we should lead the change on selected fronts. Impact is not something that can be realised overnight – especially if it is determined at the fundamental level of a project. Collection of evidence to corroborate impact over a period of time is a big but meaningful challenge to a researcher,” he explained.

An entrepreneurial culture on campus is also important to translate and transfer innovations and new ideas to the marketplace. Professor Hor sees students as the starting point for promoting entrepreneurship at HKU, much as it has been at places like Stanford, Columbia, MIT and Cambridge. “Our students should become inventors, innovators and creators for society. That spirit is fuelled when they are undergraduates,” he said.

“There is a lot more to be done at HKU on innovation, entrepreneurship and translating research into impact, but I am confident that our students and faculty members can contribute in whatever ways to make this one of the most enterprising academic environment in the world.”

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Building from the Bottom Up

Architecture is all around us, yet few people in Hong Kong understand its history, evolution, technology, or impacts on such things as the environment, art and heritage. Until recently, the subject was taught only at university level to budding architects. Now, a project by the Faculty of Architecture is helping to broaden understanding and appreciation in the community.

The target is Form 4-6 secondary school students. Staff and students of the faculty have been working with schools, the Education Bureau, the Hong Kong Institute of Architects and local practicing architects to devise an award-winning teaching kit on architecture that can be applied within the existing curriculum.

Feedback on the project, which was funded by Create Hong Kong, has been highly positive. Last year the project was nominated by Hong Kong Institute of Architects for the Golden Cube award sponsored by the International Union of Architects.

In a survey of 630 teachers from local secondary schools, more than 90 per cent said the teaching kit enhanced their knowledge of architecture and they planned to use it, and more than 85 per cent said it helped them to use architecture examples in their teaching. A website to support the teaching kit has also had more than 5,200 view counts and the number is steadily increasing.

The teaching kit will also be used in the Hong Kong/Shenzhen Bi-City Biennale of Urbanism/Architecture in the coming winter to reach out to a wider audience through workshops and seminars for schools. Ms Iris Kee, the project manager, said they would also try to enhance the interactive nature of the materials. "We're also hoping that eventually primary schools and kindergartens can have knowledge of architecture, too," she said.

Inspiring Green Action

Philosophy and science have found a meeting point in a project that encourages secondary school students to appreciate Hong Kong’s biodiversity and environment more deeply, and to multiply that impact by getting their families and secondary schools to follow their lead.

The "Take Action! Youth Biodiversity Conservation Leadership Training Scheme" offers participants field trips, games and debates that encourage them to consider the complicated nature of environmental issues and how they can make a difference.

It began as an idea in the Department of Philosophy, where Dr Alexandra Cook has long been interested in green issues both personally and academically. Her MPhil student Kathleen Ho was researching the shift in environmental concerns in Hong Kong over the years, and wondered how she could contribute. When they realised KE funding was available, they spotted an opportunity to act.

Kathleen recruited two other postgraduate students, Xoni Ma from the Kadoorie Institute who was researching environmental education in secondary schools, and Li Pui-sze from the Faculty of Science, who was looking at plant systematics and could provide scientific input to their ideas. "We figured that with this combination of skills and interests, they could really do something important," said Dr Cook, who is their faculty adviser.

"Take Action!" was run in 2014 and again this year by the Kadoorie Institute and gives students first-hand experience of nature, such as visits to Tai Po Kau Nature Reserve and dolphin watching. Participants debate such things as the pros and cons of development and the impacts of overfishing and seafood consumption, and are encouraged to discuss the issues with their families.

"One thing that struck me was how the students went home and converted their families to eat sustainable fish. In the past the approach has usually been to just tell participants to eat sustainable fish. So individual people were touched by this programme beyond the immediate recipients of the training," Dr Cook said.

At the end of the programme, the students drafted and implemented conservation plans for their schools, doing such things as setting up an eco-corner, labelling tree species around their school, building a birdhouse from waste materials, and negotiating with school management for more field trips.

Some 63 Form 4-6 students from 16 secondary schools attended the programme's four full-day sessions in 2014 and about 80 students did so this year. The programme was supported by the Conservancy Association, the Agriculture, Conservation and Fisheries Department, as well as a total of 42 HKU students who assisted in running the sessions. Plans are underway to run more sessions in 2016.

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Dental Project Helps Children Gain an Identity

About one-third of births in the world are unregistered, according to the United Nations’ International Children’s Emergency Fund. In a world where governments and other providers of public services increasingly demand proof of identity, the lack of a registered identity can make it difficult for children to get an education and medical treatment and may leave them vulnerable to abuse.

It was this situation that inspired staff and students in the Faculty of Dentistry to develop and apply tools that assess age via dental development, and therefore fill in some blanks about identity.

They have brought dental age assessment and oral health education programmes to two villages in India, where nearly 60 per cent of births are unregistered. About 50 undocumented children in rural welfare homes had their ages estimated through their efforts.

Students have also visited an orphanage in Mainland China to conduct programmes on age estimation and oral health education.

In addition, about 200 dentists and forensic practitioners in India and Hong Kong have been trained in dental age assessment and a charity, the D.O.B. (Date of Birth) Foundation, has been founded, the first of its kind in the world.

Dr Hai Ming Wong has been closely involved in the work and was motivated by a desire to help children in need.

“This is a global problem,” she said. “If you don’t have an identity card to show your age, you are not protected by society. But if you want an identity card, you need a birth certificate that shows your place of birth, your parents and most important your birth date. If you lack this data it becomes impossible – you can’t make up a birth date. What we can contribute is that we have the tools and techniques to accurately determine age.”

Tooth development follows a sequential pattern that relates more closely to chronological age than other physical or psychological attributes.

However, while there has been much research on tooth development among Western populations, this has been lacking for Chinese populations. So, in addition to sharing knowledge about dental age assessment, the Faculty has also been building up a database for Chinese populations using data collected while providing oral health checks and education to teenagers in Southern District.

“This information will help to identify children in natural disasters such as earthquakes, or to help orphans,” Dr Wong said. Their work has also enabled them to join forces and build capacity with dental organisations and relief agencies in India, Mainland China and Hong Kong.

Dr Hai Ming WONG and team members - Joyakumar JAYARAMAN, Lingwei LI, Tao PD, Ling SUN, Yifeng WEN, Pat Ying Phoebe LAM, Ka Yan CHEUNG, Ka LEE and Ka Fai WONG, received the Faculty Knowledge Exchange Award 2015 of the Faculty of Dentistry for ‘Dental Development: An Aid to Give Identities and to Inform General Health’.

Shining a Spectrum of Light on Autism

How well do people in Hong Kong understand autism? A depressing answer came in the spring when a young man with autism was arrested by police over the death of an elderly man. His behaviour had sparked suspicion and he was detained for 50 hours and then charged with manslaughter before it was learned that he had been at home for the disabled at the time of the crime.

That unfortunate example illustrates the challenge for Dr Carol To of the Division of Speech and Hearing Sciences and other advocates for individuals with autism in Hong Kong. Dr To has been applying her research to help raise awareness among the public and improve diagnosis and employment opportunities for these individuals.

“Hong Kong people are educated and our economy is well-developed, but people with this invisible disability experience a lot of discrimination,” she said.

Dr To has been advocating for them in the media and in the community, giving talks and seminars on autism, and working with the Labour Department on a booklet about employees with autism.

She has also set an example by employing two young men with high-functioning autism as research and technical assistants to do data entry and simple data analysis, and she is encouraging other academics to do the same.

“Individuals with autism like repetitive work and they can manage very detailed and tedious work. They are good at things like library work where they can put things on shelves and remember the numbers. They are also not good at telling lies and they are very loyal employees,” she said.

Her understanding of individuals with autism is grounded in her research on the nature of autism. She has studied “theory of mind” skills, which enable people to understand the intentions of others’ speech and behaviour, but which are deficit in individuals with autism, as well as characteristics that are particular to Cantonese speakers with autism. The latter include such things as monotonous intonation and using vocabulary in speech that is based on the more formal written form.

These findings have been used by Dr To to develop standardised assessment tools to help specialists in Hong Kong assess Cantonese-speaking children. Previously, clinicians had to rely on informal tests and their own experience.

Ultimately, she hopes to improve treatment and reduce discrimination against individuals with autism in both Hong Kong and Mainland China. “This is an area people are becoming more aware of and I hope we can raise the profile further,” she said.

Dr Carol K.S. TO and team members - Ms Winnie K.Y. CHEUNG and Ms Carmelo C.Y. YIN, received the Faculty Knowledge Exchange Award 2015 of the Faculty of Education for ‘Serving Individuals with Autism’.
Taking the Guesswork Out of Logistics

Manufacturers have to keep track of many different things at the same time to enhance the productivity of workers, from the movement of materials through shop-floor activities to product shipments. Trying to juggle all this efficiently is a constant challenge. But a new platform developed by HKU engineers is proving remarkably successful at the task and is also saving firms’ money.

The RFID-Enabled Real-time Ubiquitous Manufacturing Platform uses smart devices, such as RFID (radio frequency identification) tags and readers as well as smartphones, to keep track of all activities, so managers and operators can get an immediate picture of their operations.

"The entire factory is transparent because the data shows everything that is happening," said Professor George Huang of the Faculty of Engineering, who has led the platform’s development. "When things are transparent and traceable, managers can monitor progress and make better shop-floor decisions. There is also less misunderstanding and teamwork can be improved."

The technology has been in development since 2007, supported by numerous research grants, and it has been adopted by several large companies in the Pearl River Delta region and Zhejiang Province.

The benefits can be seen in the example of a major paint manufacturer that used the technology to solve a problem in which orders were being dispatched until the early hours of the morning during peak time, creating extra costs because truck drivers were paid to wait on standby. A major reason for the hold-up turned out to be a delay in getting the right colours available from the warehouse for paint mixing. The technology helped to plan and streamline production and logistics, so dispatches could be done several hours earlier than before the solution was used.

An air-conditioner manufacturer used the technology to replace paper-based production orders, where the paper saving alone justifies the investment in this technology solution within two years, not to mention other benefits. An unexpected benefit was that it also enabled the firm to respond more quickly when orders changed, because managers now knew exactly where all materials were after they left the warehouse.

The technology has also been used to track the number of jobs done by workers so as to calculate their bonuses and, more recently, to bring social benefits through its application by the Hong Kong Housing Authority to plan construction work on a housing estate.

Professor Huang and his team have filed several patents, and seen the growing use of the technology, which has opened up new paths of research. "The research and KE work mutually stimulated each other," he said.

Getting a Fair Hearing

Hong Kong’s legal system is generally regarded as fair and effective, but no system is perfect as HKU’s Clinical Legal Education (CLE) programme is showing.

The programme provides free legal advice to the general public, and in exceptional situations offers further legal assistance or representation to those who might otherwise be unable to afford such help. Since its founding in 2010, it has successfully appealed more than a dozen criminal conviction cases, and helped several clients to obtain legal aid that had earlier been rejected.

"There are still some miscarriages of justice in Hong Kong, notwithstanding our legal system is by and large quite good. We still see cases go wrong," said CLE Director Eric Cheung.

The service is operated under the Faculty of Law in collaboration with the Duty Lawyer Service and involves the combined efforts of students, experienced practicing lawyers and academic staff.

Senior students do initial interviews with the users of the CLE and learn under supervision how to deal with situations that fall outside of textbooks, such as how to handle client expectations and emotions and deal with clients who may have psychiatric problems. The actual advice-giving and other follow-up is handled by academic staff and volunteer lawyers.

"The students learn that as lawyers, the important thing is not so much that you can win the case. In many cases our advice is don’t fight, don’t litigate, the law is not on your side. You have to persuade the client not to pursue a hopeless case and know how to get that message across," Mr Cheung said.

The CLE has advised more than 750 clients over the years, to great success. Ninety-five per cent of those surveyed rated their satisfaction with the service as four or five out of a total five.

The service providers themselves have also enjoyed satisfaction from helping people who would otherwise have slipped through the net. For example, one man sentenced to eight and a half years in jail was initially refused legal aid for his appeal for lack of merits and he then contacted the CLE from Stanley Prison. After reviewing his case, the CLE team helped him to successfully obtain legal aid. Thereafter they were able to obtain from the Department of Justice materials which the police had failed to disclose before trial and which show that the main prosecution witness was lying. The man eventually had his conviction quashed on appeal, though in the meantime he had already deprived of his liberty for 33 months.

"This was a clear case of miscarriage of justice," Mr Cheung said. "It’s good that students can have a realistic understanding of how the system works and to see the satisfaction that derives from helping needy clients."
Prevention is the Best Cure for Diabetes

Dr Angela Leung of the School of Nursing knows first-hand the suffering that diabetes can cause patients and their families. Her mother is a sufferer and needs to be connected to a dialysis machine at home every night. The challenge of providing care has proved daunting even for someone of Dr Leung’s expertise.

“I’m a nurse and I still had to go for seven days of training on how to care for my mother, so you can imagine how difficult it is for people who don’t know anything about diabetes,” she said.

So, Dr Leung has decided to ring the alarm to encourage people to take action before it is too late. She has set up the Helico-D programme – for Health Literacy and Communication Training in Diabetes – to raise awareness about the risks for diabetes and how to minimise them.

The programme includes a free Chinese-language app, the Diabetes Risk Score, in which people respond to questions to estimate their personal risk. The results can be taken to their doctor for discussion and treatment if necessary. More than 70,000 users have accessed the app so far in Hong Kong, the US, Canada and countries in the Asia Pacific.

“People with diabetes sometimes don’t show any symptoms until they have blood tests so this can be like an early warning system,” she said.

Physical activity is particularly important to keep diabetes at bay or under control, so she and her team have also organised a walking programme for the elderly in Western District. Workers in NGOs have been trained to get the elderly moving and a map has been produced of walking routes. More than 1,400 elderly people have participated and before-and-after assessments showed an improvement in physical health.

A third component of the programme is an illustrated book that explains to the elderly how to participate in different physical activities and keep track of their progress.

Helico-D has been developed with community partners that include Sheng Kung Hui Welfare Council, various government departments, and expert app designers and marketers. The Technology Transfer office of HKU has also provided assistance in the app development.

“The best way to treat this disease is prevention,” Dr Leung said. “I hope people can understand the symptoms and know what community resources are available and how to approach their doctor for further investigation.”

Taking the app further, at-risk users have recently been invited to the Faculty of Medicine for blood tests and assessments that they can show to their doctors. So far more than 135 people have made use of this free service.

The Diabetes Risk Score app can be downloaded on the App Store and Google Play.

Download for iPhone and iPad: https://itunes.apple.com/hk/app/hku-diabetes-risk-score-drsls/id881391534

Dr Angela Yee-man LEUNG of the School of Nursing received the Faculty Knowledge Exchange Award 2015 of the Li Ka Shing Faculty of Medicine for “Health Literacy and Communication Training Series in Diabetes (Helico-D)”. 

The Rock Stars of HKU

The Stephen Hui Geological Museum was, until recently, HKU’s hidden gem. Opened as the first geological museum in Hong Kong in 2009 on the ground and first floor of the James Hsiong Lee Science Building, it attracted mainly school groups in the past (with about 3,500 annual participants in the 2 hour long guided museum tours). But all that changed with the opening of the HKU MTR station earlier this year.

“That first week was like JUPAS open day,” said museum curator Dr Petra Bach, and it has stayed busy ever since as more individual visitors are using the easy MTR access to come to appreciate exhibits that enchant both the eye and the mind.

Jewel-coloured rocks and minerals, intricately-patterned fossils of insects and leaves (including a finger of lightning preserved in sand that melted and cooled when it struck), a 1.5-metre interactive globe, and a cluster of real dinosaur eggs that one can touch are among the displays in the two-storey museum.

Dr Bach has been the designer behind the scenes, drawing on collections that include Dr Stephen Hui’s private mineral collection, the Department of Earth Sciences’ own materials, and fossils from Hong Kong and Mainland China. The late Dr Stephen Hui was a mining geologist and philanthropist who collected samples from around the world, which now formed the core collection in the museum’s Earth Material gallery. His mineral donation and the continuous support by his family made the establishment of the Stephen Hui Geological Museum possible.

The accessible displays are intended to not only showcase ancient artefacts, but also provide an object-based learning facility for understanding the nature and evolution of our planet Earth and make it relevant to the modern day.

“We need to protect and sustain our planet Earth that provides us with all our resources, and what do you protect? Something you know and love. This is why we use a diverse range of about 1500 authentic fossils, minerals and rocks that people can see and touch, and arranged in a context of a story about the evolution of our Earth so that visitors can learn to appreciate our natural world and get that ‘wow’ factor,” she said.

The museum’s setting adds to the impression because its large windows evoke the outdoor world where earth scientists do most of their work. School children can sit by the dinosaur eggs “as if sitting in the field,” she said.

There are four main galleries – Dynamic Earth, Earth Evolution, Earth Materials and the Geological History of Hong Kong – and a new exhibit on climate change that opened this year, drawing on the department’s own research to reinforce the idea of the need to protect and sustain planet Earth.

Besides the museum tours, the museum offers loan sets for educational bodies, workshops in collaboration with Hong Kong partners as well as temporary exhibitions. Dr Bach estimated about 20,000 visitors traipsed through the museum each year.

The facility is free of charge, and also shares its information on a website http://www.earthsciences.hku.hk/shmuseum/. Dr Bach said the bilingual webpage with it’s Chinese-language pages were particularly popular because there still is limited information online in Chinese about earth sciences – thus helping to extend the museum’s impact into the virtual world.

Dr Petra BACH of the Department of Earth Sciences received the Faculty Knowledge Exchange Award 2015 of the Faculty of Science for ‘Design and Establishment of the Stephen Hui Geological Museum’.
Stories of the Gay and Grey

Homosexuality was a crime in Hong Kong until 1991. For gay men living in such an environment, it meant finding ingenious ways to act on their true feelings or, as often, suppressing those feelings.

Their stories have been hidden for years, but now they are getting an airing through the work of Dr Travis Kong of the Faculty of Social Sciences whose research on Hong Kong’s older gay men has led to, among other things, the formation of a support group, publication of a book that tells their stories, and talks and photo exhibitions about this previously neglected group.

*Older gay men are really marginal in the studies of both sexuality and ageing, there has not been much written about them,* he said. “I wanted to know more about their lives.”

Dr Kong began his research in 2009 and did 20 formal interviews with older gay men in Hong Kong, who shared a common sense of loneliness. He then decided to set up monthly yum cha gatherings so the men could talk with others like themselves about their health, their lives in the past, how they handled family pressures, and other shared concerns.

The men told him about such things as how they found like-minded men through classified ads in newspapers and public toilets. Notably, about half of them were married.

“These men suppressed same sex desire to conform to the idea of a good son, father, husband, grandfather. They were fulfilling that obligation and overriding their own sexual desires,” Dr Kong said.

The stories were featured in his Chinese-language book, *Gay and Grey: Oral Histories of Older Gay Men in Hong Kong*, that had three print runs since publication in June last year, with nearly 3,000 copies sold.

Photo exhibitions to support the book were organised in Hong Kong, Macau, Guangzhou and London, and there was extensive coverage in the media.

A group of older gay men have also now formed a self-help group, Gay and Grey, that offers peer counselling and a hotline. An organisation in Guangzhou is conducting a similar project for older gay men there.

Dr Kong hopes to extend his research to the oral histories of older Chinese gay men in London and Guangzhou. His dream, he said, would be to see Hong Kong have a gay-friendly centre for the elderly.

“The transition from pure, curiosity driven research to more participatory action research has been a most rewarding experience for me,” he added.

### Impact Workshops

Impact is a key element of the University’s KE strategy, so it is considered important to develop the capabilities to analyse and articulate the broad impacts of the University’s excellent research to society. Since 2013, the Knowledge Exchange Office (KEO) has collaborated with Faculties to organize a series of impact workshops to raise the awareness of faculty members in different disciplines about the increasing importance attached to impacts of research beyond the academia. Five workshops by overseas experts have been organized in 2015:

- “Research Impact Case Studies – An Interesting Journey” by Professor Peter Y. K. Cheung, Head, Department of Electrical and Electronic Engineering & Vice Dean, Faculty of Engineering, Imperial College London
- “The Australian Research Impact Pathway: A Case Study of Next Generation EdTech” by Professor Michael J. Jacobson, Professor and Chair of Education; Co-director, Centre for Computer Supported Learning and Cognition (CoCo), Faculty of Education and Social Work, The University of Sydney
- “Constructing Research Impact: Insights from the UK’s REF 2014” by Professor Martin Sexton, School Director of Research, School of Construction Management and Engineering, University of Reading
- “Geology and Geographical Information Science in Forensic Science” by Dr Alastair Ruffell, Reader in Physical Geography, and Dr Jennifer McKinley, Senior Lecturer in GIS and Physical Geography, School of Geography, Archaeology & Palaeoecology, Queen’s University Belfast
- “How to Analyse the Non-academic Impact of Research from 6,679 Narratives? Analysis of the UK REF 2014 Impact Case” by Dr Sabra Hinrichs-Krapels, Senior Research Fellow, The Policy Institute at King’s, King’s College London

Further details are available on the KE website (http://www.ke.hku.hk/events/impact/2015).

### Congratulations also to...

Apart from the colleagues covered in the feature stories of this issue, warm congratulations are extended to Mr David Bishop of the School of Business, who received the Faculty Knowledge Exchange Award 2015 of the Faculty of Business and Economics for the ‘Migrant Worker Advancement Project’. See his story in issue 8: http://www.ke.hku.hk/eng/newsletter/issue8/alternative

### Knowledge Exchange (KE) Funding Exercise 2015/16

The University Grants Committee (UGC) has again provided special funding allocation for KE in 2015/16 to the UGC-funded institutions to enable them to build up their capacity and broaden their endeavour in KE.

With input from the faculty representatives on the KE Working Group, the KE Executive Group awards most of the UGC’s special allocation through the KE Funding Exercise for Faculty Capacity Building and Impact Projects. Allocations for Faculty Capacity Building and Impact Projects for 2015/16 have been made.

The KE funding for Impact Projects aims to support projects that have the potential to create impact on society. Proposed projects may be technology-based or non-technology-related. Proposals are considered on a competitive basis. The list of Impact Projects supported in 2015/16 is available on the KE website (http://www.ke.hku.hk/eng/strategy/ke-office/funding-opportunities#1).
Bio International Convention 2015

The Technology Transfer Office (TTO) co-ordinated HKU’s participation in the Bio International Convention 2015, which was held in Philadelphia, USA, from June 15-18, 2015. Five projects relating to treatment of infectious diseases as well as treatment of cancer by bacterial therapy and chemical drugs were showcased at the event:

- Arsenol (Arsenic Triiodide Oral Solution)
- Bio-Engineered Bacteria for Cancer Therapy
- Combined Prokaryotic-Eukaryotic Delivery and Expression of Therapeutic Factors Through a Primed Autocatalytic Positive-Feedback Loop
- Immunotherapeutic Targets Against Staphylococcus Aureus
- Method and Compositions for Treating Cancer Using Probiotics

Moreover, some technologies relating to disease diagnosis, fluorescent probes and cancer therapeutic drugs were also introduced on this occasion and they have drawn a lot of attention from the respective industries.

For more information, please download the brochure on HKU’s frontier research in biotechnologies from the KE website: http://www.ke.hku.hk/highlights/2015/BIC2015

Furthermore, four HKU biotech companies in the business of diagnostic kits, HIV aids vaccine development, stem cells and tissue engineering were featured at the exhibition:

- Novoheart Limited
- Living Tissues Co Ltd
- Immunocure Limited
- Hybribio Limited

The HKU booth attracted many visitors. TTO and the HKU spinoff companies also took the opportunity to establish new business connections with investors, business partners and collaborators.

Nurturing Entrepreneurship

DREAMCATCHERS 2015

DreamCatchers is HKU’s newly launched Entrepreneurship series, providing a hub to inspire and nurture innovation and entrepreneurship, with forums, mixers, events, courses, marketplaces, co-workspaces and portal, covering all tech, biz, social, cultural and media spheres. It is cross-sector and inter-generational, for alumni and students with passion and determination to innovate and change the world.

The inaugural event, jointly organized by the Development and Alumni Affairs Office (DAAO), Technology Transfer Office (TTO), Centre of Development and Resources for Students (CEDARS) and Journalism and Media Studies Centre (JMSC), was held on May 31, 2015, where 67 speakers shared their experience on start-ups. Panel speakers included Mr Leong Cheung (梁亮), Executive Director, Charities and Community, The Hong Kong Jockey Club; Mr Jason Chiu (趙子麒), CEO, The CherryPicks; and Mr Antony Leung (梁思敏), CEO, Nan Fung Group. The keynote in the afternoon was delivered by Mr Pony Ma (馬化騰), Founder, Chairman and CEO of Tencent. The forum was attended by 1,000 delegates.

ENTREPRENEURSHIP ACADEMY

The popular workshop series co-organized by the Technology Transfer Office (TTO) and School of Business since 2010 on entrepreneurship was held from February to April 2015. The eight sessions cover a range of topics that focus on the skills necessary for building your first business for your research innovations:

- Innovation and Entrepreneurship - Turning Ideas into Reality
- The Making of a Business - A Network Perspective
- The 5 Dynamics of Entrepreneurship
- Know How to Count - A Crushed Course in Accounting Basics
- Creating Startup Success - Business Model Design and Entrepreneurial Leadership
- Transforming Technologists into Entrepreneurs – Do you have what it takes to become an entrepreneur?
- Entrepreneurs in Action - How to Put Everything Together and Get it Started, with Limited Resources
- Intellectual Property Protection for Creative Ideas, Innovative Inventions and Emerging Technologies

In response to high demand, this was the first time enrollment had been extended to undergraduate students, in addition to postgraduate students and researchers. There was a substantial increase in the number of attendees and over 110 people on average attended each of the ten meetings held. Apart from the workshops, TTO provides support to the participants and alumni to have networking opportunities with early stage entrepreneurs and access to CoCoon, an open co-working space for entrepreneurs.
Growing Cartilage from our Stem Cells

Living Tissues Co. Ltd. is a new start-up that has emerged from the 21st century vision of an HKU laboratory to grow new tissues from the stem cells in our bone marrow and use them to repair damaged parts of our bodies.

Over the past eight years, a team of biomedical engineers, led by Associate Professor Dr Barbara Chan in the Department of Mechanical Engineering, has been manipulating stem cells from animal bone marrow with treatments and technologies to shape them into cartilage and bone. This has then been applied to repair damaged knee joints.

The success of these experiments has been comparable to autografting (taking tissue from one part of the body and using it to repair another part), which is the gold standard for tissue repair. Except in this case, there is no need to damage healthy tissue, the stem cell-derived tissue can be developed into both cartilage and bone, and the technique can be applied to other joints besides knees.

The demand for such capability is expected to explode as populations age with a sportier life style that makes people suffer more wear and tear on their joints.

Having developed four technology platforms and 10 patents to support this capability, Dr Chan said now is the time to advance it to the next stage.

“We have come to a point where we realize that the scope and the pace of R&D in this technology would be limited if we keep them within the university laboratory. We have some of the best results and some of the best technology in this field. We need funding and the right partners to take this to clinical trial and to commercialization.”

Living Tissues was established to help make that happen. It is led by Dr Chan’s two former PhD students, Dr Daniel T.K. Chik and Dr Annie H.W. Cheng. Dr Sunny K.W. Cheng, who used to be in charge of “technopreneur” funds in the Hong Kong government and is Dr Chan’s former colleague, is the business advisor. The team has been working with orthopaedic surgeons over the years, and they are planning for the first human trial in the near future.

Dr Chan said that participating in the Living Tissues start-up was not only a way to advance their technology to the clinical setting, but also to support start-up culture in Hong Kong.

“Ten years ago it was a challenge for post-doctoral fellows and a university professor to have a company. Now the community is more open to this and the government is providing start-up funding [Living Tissues has TSSSU@HKU support]. All of these counts,” she said.

A 21st Century Learning Project

Hong Kong’s 1,000-plus primary and secondary schools will soon all be equipped with wifi and other infrastructure for e-learning. But what does that learning look like? A team of engineering graduates are about to provide the first locally-developed answer.

The HKU Univers Publishing Ltd. has been formed to market e-textbooks developed in HKU laboratories. The first two textbooks, on primary school maths and secondary school computer literacy, are nearing the final approval stage by the Education Bureau and should be on the market next year.

They are everything a modern-day young person would be familiar with – interactive, mobile, with multimedia including videos and 3D images – offered on a platform that has dramatically different capabilities to textbooks, CDs and websites. Teachers and students get the kind of immediate feedback that would have been unimaginable in the past.

For example, a student clicks on an incomplete bar chart and fills it in. The result is zinged to the teacher immediately, so he or she can check if the student has mastered the learning objective. Or, a whole class does a multiple choice quiz and the results are again immediately known, so the teacher can see where the class or individual students are having problems.

To Eric Au Yeung, one of the co-founders of HK Unifi and a 2010 Engineering graduate of HKU, this is where the e-textbooks and their supporting platform do their magic.

“The teacher can focus on problem areas more and adjust their content and teaching. Imagine how long it would otherwise take to do a quiz on paper, have it collected and marked, and then for the teacher to enter the data on an Excel sheet,” he said.

One of his collaborators, 2013 Engineering graduate Shriwan Sunderraman, agreed. “This technology uses big data mining combined with some artificial intelligence to aid both teachers and students in understanding individual student needs more easily.”

An important aspect of the project is that it is also compatible with printed textbooks. Scanning a QR code can take students to the interactive features of the e-textbook.

Finding Experts

The HKU Scholars Hub is the University’s online expertise directory, which makes HKU researchers and their research visible. It provides an expert finder for businesses, industries, social enterprises, the public sector, and interested student applicants to find HKU experts for contract research, consultancies, and postgraduate student supervision etc. Please visit the HKU Scholars Hub at http://hub.hku.hk/.

Tech Ready

For a complete list of HKU technologies that are currently available, please visit: http://www.tto.hku.hk.