

Overview of Research Activities of The University of Hong Kong 2015–16

1. Institutional Policy on Research

1. Creating opportunities for excellence and impact in both research and innovation as well as to advance human knowledge for the benefit of society in Hong Kong, the wider region and the rest of the world is at the core of the mission of the University of Hong Kong (HKU). The University's vision for 2016–2025 to be **Asia's Global University** is underpinned by three pillars: teaching and learning, research and innovation, and knowledge exchange and impact. The realisation of this vision is based on (3+1)Is: *Internationalisation, Innovation* and *Interdisciplinarity*, which converge to create *Impact*.

2. HKU aims to be a world-class university with world-leading research in critical areas through knowledge creation, translation, realisation and impact. HKU's research policy aims to strengthen its capabilities in both fundamental and outcome-driven research and knowledge exchange within a culture that enables our researchers to flourish and create impact. The University emphasises innovative, high-impact and multidisciplinary research, and believes that an outstanding research culture enhances the quality of research postgraduate education and enriches career opportunities. It recognises that it must be fully accountable for the effective management of the public and private resources it deploys towards its research aims, and welcomes the opportunity to act in partnership with the wider community to generate, disseminate and apply knowledge to create social, cultural and economic impact. HKU intends to immerse itself in the open innovation system.

3. HKU's research strategies and policies are formulated by the University Research Committee (URC), which is a committee of the Senate chaired by the Vice-President and Pro-Vice-Chancellor (Research). In line with the University's vision for the coming decade, the URC has sharpened its strategies to further cultivate a supportive, dynamic environment in which staff and students can excel in research at an international level and realise their full potential in advancing and transferring knowledge. The University aims to

- (a) Focus on research quality and impact, and the translational potential and value to industry, business and the community,
- (b) Raise competitiveness towards external funding and strategic partnership,
- (c) Foster outcome-based cross-disciplinary and inter-institutional collaboration,
- (d) Promote social and technological innovation, entrepreneurial incubation and public-private partnership,
- (e) Foster international and mainland China research collaboration, and
- (f) Develop talents and build capabilities for sustainable growth.

4. Over the past decade, the University has employed a Strategic Research Themes (SRTs) initiative. Launched in 2004 and now in its third cycle, the initiative aims to identify strategic research areas and themes where interdisciplinary collaboration will offer the potential for important breakthroughs. It also serves as a platform for nurturing interdisciplinary collaborative research projects for external research grant applications.

5. Alongside its specific research strategies, the University continues to invest in the human resources necessary to sustain a research culture dedicated to excellence and

impact. This includes sustaining a proactive human resource policy and management structure to, inter alia, facilitate academic recruitment and retention, recognise performance, and enhance diversity in international staff recruitment. HKU attracts outstanding staff from around the world, bringing with them international expertise. For example, in 2015–16 around 40% of professoriate staff are from overseas, 40% from Hong Kong and 20% from mainland China.

6. Within this broad strategic framework the University continues to encourage research excellence in a number of important specific areas. It continues to fund curiosity-driven research and to incubate new research initiatives with seed-funding grants. Emphasis is also increasingly placed on the impact of its research through the translation and application of its findings and through knowledge exchange and technology transfer. The University also continues, through its research postgraduate (RPg) policies, to develop a culture of student-centred, performance-based, and shared-responsibility research.

7. The following institutional policy developments took place during the report period.

Strategic Research Areas and Themes

8. This initiative prioritises support for collaborative, interdisciplinary research. In the current third cycle, 16 themes and 5 emerging themes have been identified under five broad areas of focus: *Community, Biomedicine, Environment, Frontier Technology and China*. Neuroscience is a new theme in this round, as are the emerging themes on Food; Law, Literature, Language; and Integrative Biology. More information can be found at www.hku.hk/research/strategic-research.

9. During the reporting year, funding was awarded to the following 4 HKU-led Theme-based Research Scheme (TRS) projects related to the University’s strategic research themes:

Project	Strategic Research Theme (SRT)/ Emerging SRT (e-SRT)
Gastric cancer genomics and beyond – Moving from patient samples to 3D organoid cultures for integrative genomics analysis, drug sensitivity assays, cell biological studies and animal models	Cancer
Understanding cancer stemness in liver cancer – From regulation to translational applications	Cancer/Genomics/Stem Cell and Regenerative Medicine
Enhanced separation and sludge refinery for wastewater treatment – Solving the nexus of pollution control and resource recovery in mega cities	Clean Energy/Earth as a Habitable Planet
Learning and assessment for digital citizenship	Science of Learning

10. In reviewing the annual reports of the SRTs and e-SRTs, the URC recommended two key objectives for SRTs/e-SRTs: (i) a primary objective to develop a focused subject or programme that would be suitable for a large externally funded collaborative project and top-class publications; and (ii) a secondary objective (which is primarily for more mature themes with proven competitiveness in external funding) to incubate emerging fields within the broad theme by bringing in new people and encouraging new synergies.

The third cycle was scheduled to finish by the end of 2016; however, the University has extended this cycle to June 30, 2017. The URC has recommended recently for this scheme to be continued in a different form as a seed-funding scheme to encourage more cross-disciplinary project development.

Research Integrity

11. While achieving excellence in research, HKU aims to establish a culture among the university community of upholding research integrity. Promoting responsible academic conduct has therefore been made a top priority of the research management and is a core value of the University.

12. Professor Frederick K.S. Leung has been appointed as the Director of Education and Development for Research Integrity since June 2011. His remit includes looking into areas covering training and education for staff and students, as well as the latest developments in research and good international practice. Due to the increasing work in this area, Professor Danny Chan has been appointed as the Deputy Director of Education and Development for Research Integrity starting from January 1, 2015. The research ethics compliance continues to be handled by the relevant ethical approval bodies, namely the Human Research Ethics Committee (HREC), the Institutional Review Board of the University of Hong Kong/Hospital Authority Hong Kong West Cluster (HKU/HA HKW IRB, the “IRB”), and the Committee for the Use of Live Animals in Teaching and Research (CULATR).

13. Over the reporting year, a number of ongoing and new initiatives have been undertaken to promote responsible conduct of research (RCR). RCR seminars for staff have become a regular event at the University. Since March 2010, more than 1,900 academics at all grades – from Post-doctoral Fellows to Chair Professors – have attended the 17 RCR seminars that have been organised. Since July 2012, all new staff are required to attend an HKU RCR session/seminar within 12 months of assuming duty at the University to be eligible for internal research and conference support and research postgraduate student supervision. In February 2015, the URC decided to extend the mandatory requirement to existing staff who joined the University before July 2012 to attend an RCR seminar by June 30, 2017. During the reporting year, one regular RCR seminar was held in October 2015 and three discipline-based RCR seminars were held in May and June 2016. The discipline-based seminars were organised primarily for existing staff and the topics covered and case studies used were more relevant to the targeted disciplines. Prominent overseas speakers were invited to give keynote lectures during the discipline-based seminars, and the keynote lectures were open to academics from other local tertiary institutions to enable more people to benefit from the lectures.

14. Other measures at the University to promote research integrity include a compulsory research ethics course for RPg students, online RCR materials for self-education, and active participation in research integrity networks. The Research Integrity Funding Scheme was established in 2012–13 to encourage Faculties to tailor research integrity education and training programmes/activities for their members to promote their awareness of research integrity. A total of 19 proposals have been funded in the past four rounds.

15. To further promote research integrity in Hong Kong and the region, the University is planning to host the Asian and Pacific Rim Research Integrity (APRI) network meeting

in February 2017. It will be the first APRI network meeting to be held in Asia and will involve more than 10 other countries/regions in the Asian and Pacific Rim region.

Research Assessment Exercise (RAE) 2014

16. Following RAE 2014 – results of which were released in January 2015 – the University is placing increased emphasis on the excellence rather than quantity of research output. This emerging focus on quality can be seen, for example, in the application processes for internal funding, such as for seed funding schemes, Post-doctoral Fellowships/Research Assistant Professor (PDF/RAP) places, RPg places from the central pool, and global fellowship schemes.

Research Data and Records Management Policy

17. In recent decades, measures to tackle the challenge of effectively managing growing amounts of research data have been introduced overseas, for example in the UK and the USA. Although Hong Kong currently has no mandatory requirement in place, HKU acknowledges its responsibility to manage and safeguard research data. The University's Policy on the Management of Research Data and Records (<http://www.rss.hku.hk/integrity/research-data-records-management>) was approved by the Senate in May, 2015, along with the establishment of a Task Force on Management of Research Data and Records to oversee the planning of the implementation of the Policy. According to the Policy, researchers are responsible for, among other things, planning for the on-going custodianship of their research data. HKU has now prepared a platform, through the Libraries, for depositing public and restricted research data through the HKU Scholars Hub, and researchers are being encouraged to make use of this new infrastructure for depositing their research data. Training in the use of the data management and deposit tools will be made available later this year.

2. Collaborative Research

18. Collaboration in research at a wide range of levels is highly valued by the University's management and by individual researchers. Research across disciplines at HKU is actively encouraged, for example through the Strategic Research Themes initiative, in which funding is focused on themes that build on expertise and interests that cross disciplines. Other examples of initiatives at the University to stimulate cross-fertilisation include the Hong Kong Jockey Club Building for Interdisciplinary Research, which focusses on human research, particularly relating to human health and disease, bringing together research from Medicine, Science and Social Sciences. Cross-discipline research centres, such as the Centre for the Humanities and Medicine and the Law and Technology Centre, also aim to encourage productive relationships between fields. The University has recently made available \$1.5 million to promote interdisciplinary collaborations in knowledge exchange (KE), with priority being given to cross-Faculty KE projects.

19. Researchers of the University are also heavily involved in large-scale collaborative projects with local institutions and international partners. For example, of the 48 Areas of Excellence (AoE) and Theme-based Research Scheme (TRS) projects awarded to date, HKU is co-ordinating 22 and participating in a further 18. Such projects thrive on

interdisciplinary and international collaboration; for example, an AoE project on molecular functional materials brings together chemists, physicists and engineers for local and international collaborations, and a TRS project on enhancing Hong Kong's future as a leading international finance centre draws on the expertise of scholars from economics and finance, geography, law, and international relations. The University has introduced an internal funding scheme to help incubate these large-scale collaborative projects.

20. Internationalisation through productive and strategic engagement in China, Asia and the rest of the world is a key feature that is embedded in many elements of the University's strategic plan. HKU has positioned itself to be a globally competitive, regionally engaging and locally impactful university, and in the face of the challenges ahead, the enhancement of collaboration with international and Mainland partners is highly valued. In addition to working closely with other local institutions, HKU actively participates in Universitas 21, a consortium of leading universities around the world dedicated to the internationalisation of higher education. The University is also a member of the Association of Pacific Rim Universities, a regional network of 45 world-class institutions.

21. HKU also collaborates with a number of leading institutions, laboratories, pharmaceutical companies, research institutes and government bodies, both overseas and in mainland China. The University currently has 5 Partner State Key Laboratories (PSKLs) – the most of any Hong Kong institution – in the areas of Brain and Cognitive Sciences, Emerging Infectious Diseases, Liver Research, Synthetic Chemistry, and Pharmaceutical Biotechnology. The research at the PSKLs is integrated with mainland Chinese engagement strategies, and HKU's PSKLs are evolving as innovation hubs. As outlined below, partnership between the University and industry is also an ongoing focus to promote the application of research results.

22. Another form of international partnership by the University to enhance research collaboration is Joint PhD Degree programmes with prestigious overseas universities. To date, the University has signed agreements for joint PhDs with King's College London and Imperial College London, and for joint educational placements for PhD students with the University of Toronto. In addition, HKU and the Southern University of Science and Technology entered into an agreement on a Joint Education Programme for PhD in December 2015, and the first cohort of 17 full-time PhD students are being admitted starting from the academic year of 2016-17. Through these initiatives, students have the opportunity to benefit from shared research excellence in a wide range of disciplines between HKU and its partners and to acquire enriching international experience.

23. The University has set targets for 50% of full-time RPg students to have at least one research experience overseas or in mainland China by 2019, and 100% by 2022. A Pilot Scheme on International Experience for RPg Students, supported by an additional one-off fund from the UGC and an allocation from the URC, has been launched in May 2016, with an aim to motivate and assist Faculties, Departments and supervisors to arrange opportunities for their students to gain international exposure in the coming academic years of 2016–17 and 2017–18.

24. New initiatives for international collaboration include the following examples:

- (a) HKU is taking a leading role in global commissions on countering infectious disease threats. The policy recommendations from the global commissions

will be considered by the World Health Assembly. Four global commissions formed to review the Ebola epidemic are proposing a bold new agenda for global health preparedness and response for future infectious disease threats. The team of international commissioners, including HKU's Professor G.M. Leung, has recently written a paper – published in the prestigious journal *PLoS Medicine* – as a culmination of the recommendations of the four global commissions.

- (b) HKU and the University Chicago have agreed to set up a partnership that will foster a deeper institutional engagement across all levels and result in broader local and international impact. The MOU provides the opportunity for the two institutions to engage in a wide range of activities including cross-disciplinary research and collaboration, teaching and learning opportunities, and partnership arrangements on projects that address pressing global issues such as those identified by the United Nations Sustainable Development Goals. Other areas of exploration include joint postgraduate teaching and research, postdoctoral training, comparative literature, history and postcolonial studies and possibly joint degree programmes.
- (c) The QIMR Berghofer Medical Research Institute (QIMR Berghofer) in Australia and HKU's Li Ka Shing Faculty of Medicine have entered into an important agreement that will give patients in Hong Kong and Australia access to a ground-breaking cancer treatment. Scientists from the two institutions are joining forces for the second phase of a clinical trial using immunotherapy for the management of nasopharyngeal carcinoma, which is an aggressive upper respiratory tract cancer common among people from East Asian countries including China, Indonesia, Thailand, Philippines, Vietnam and Singapore.
- (d) HKU and the University of Sydney have sealed a partnership to foster greater collaboration in research, teaching and learning, and knowledge exchange. The partnership agreement follows many years of active academic collaboration and student exchange between HKU and the University of Sydney. The institutions have published more than 350 joint research papers since 2011, with key areas of collaboration including electrical engineering, pharmacy and urban planning. Capitalising on this solid foundation, the institutions have also launched a joint Global Strategic Partnership Fund to support emerging areas of collaboration. The new agreement also paves the way for co-led projects that address global issues identified by the United Nations Sustainable Development Goals, including urbanisation, healthy ageing, biomedical engineering, translational medicine, food and water safety, and transcultural studies.

25. HKU will take advantage of emerging opportunities for further strategic partnerships for example through the MIT Innovation Node, HKSTP/Cyberport, ASTRI, the Beijing Institute of Collaborative Innovation (BICI), and the Universitas 21 Translational Research Alliance.

26. Through partnership with local governments, HKU has established bases in Shenzhen and Zhejiang for research, innovation and enterprise. The institutes represent an integral part and an extension into the Chinese Mainland of the University's research. The facilities will offer opportunities for HKU researchers to widen their areas of investigation

and strengthen partnerships with Mainland research communities. They will also play an important role in transferring technology and innovations from HKU to mainland China.

27. The HKU-Shenzhen Institute of Research and Innovation (HKU-SIRI, www.siri.hku.hk) provides an HKU base in the Pearl River Delta region. Since its inception in 2011, HKU-SIRI has attracted considerable funding at both local and national levels such as the National Basic Research program of China (973 Program) (國家重點基礎研究發展計劃-973 計劃), the National Natural Science Foundation of China (NSFC) (國家自然科學基金), and the Shenzhen Science and Technology Program (i.e. Basic Research Project, Peacock Program). For example, in the past reporting year, HKU-SIRI received total funding of RMB 5.08 million for the last three years of three ongoing tasks under the 973 program, over RMB 8 million for 6 projects under NSFC and RMB 2.9 million for 4 basic research projects under the Shenzhen Science and Technology Program. Currently 6 laboratories are involved, with 126 research projects to date, 1 patent granted and 7 filed, and nearly 200 papers published.

28. The HKU-Zhejiang Institute of Research and Innovation (HKU-ZIRI, www.ziri.hku.hk) has been set up through a 4-party agreement, with the aim of becoming an innovation hub for regional institutions and enterprises. In 2015–16, it became an eligible entity for its members to apply for NSFC grants. The major construction of the HKU-ZIRI building was completed, and more labs are currently being planned. Collaborations with Zhejiang local institutes and enterprises are expanding. HKU-ZIRI works along five research directions – Smart Materials, Alternative Energy, Biomedical Interfaces, Sustainable Environment and Advanced Manufacturing – under HKU’s framework of (3+1)Is: internationalisation, innovation and interdisciplinarity, all converging to create impact.

29. Large numbers of individual researchers undertook collaborative projects during the report period with researchers in mainland China or elsewhere in the world across a wide range of activities, including joint research projects, co-authoring of papers, teaching or lecturing, providing consultancy or peer review services, supervising research students, and serving as external examiners.

30. To help increase research competitiveness and international collaboration, HKU has introduced a number of initiatives. Details are given below for the application rounds for these initiatives during the reporting period.

- (a) *Distinguished Visiting Scholars Scheme*: The scheme, introduced in 1996, aims to enhance the University's visibility in the international academic community; provide opportunities for our academics to interact with world-class scholars; provide the impetus to promote the development of targeted academic areas; and establish links with institutions leading in the discipline. Over 70 prominent scholars who are at the forefront of their discipline have been appointed under the scheme as Distinguished Visiting Professors, including 6 appointed during the reporting year for visits in 2016–17.
- (b) *Visiting Research Professors Scheme*: Since its inception in 2009, the Visiting Research Professors Scheme (VRPS) has attracted 51 leading scholars from around the world. In this reporting year, 4 nominations were received, and 2 awards were made to prominent professors from the Institut Pasteur, France and the Max Planck Institute for the Structure and Dynamics

of Matter (MPSD), Germany. The mid-term/final reports on VRP appointments received from Faculties demonstrated the VRPs' valuable contributions, particularly in enhancing the research profile and international collaborations of Faculties through co-authoring papers and collaborating in projects, giving feedback on research proposals, and strengthening/developing links between HKU and their host institutions.

- (c) *HKU Overseas Fellowships*: HKU established the Overseas Fellowship awards to support academic staff members to visit overseas institutions over a period of one to two months for research collaborations. In 2015–16, 9 HKU staff visited overseas universities – Harvard University, Stanford University, Princeton University, Imperial College London, the University of British Columbia, the University of Michigan, Columbia University and New York University – while 7 awards were freshly given to support HKU staff to visit overseas institutions within the 2016–17 academic year.
- (d) *Glasgow/HKU Early Career Mobility Funds*: HKU and the University of Glasgow launched the reciprocal Glasgow/HKU Early Career Mobility Funds to enable early career researchers to spend part of their research time in the partner institution. The second round of the scheme was undertaken in the reporting year, and 4 awards were made to 2 members of academic staff and 2 PhD students who will visit the University of Glasgow in the 2016–17 academic year.
- (e) *King's/HKU Fellowships*: HKU and King's College London established reciprocal King's/HKU Fellowships to strengthen their partnership by enabling their academic staff members to visit the partner institution. In the reporting period, 1 HKU member visited King's. In the latest application round, 3 Fellowships were awarded to HKU staff members who will visit King's within the academic year 2016–17.
- (f) *Doris Zimmern HKU-Cambridge Hughes Hall Fellowship*: HKU offers co-funding alongside the Doris Zimmern Charitable Foundation to enable teaching and research staff of the University to spend a period of time at Hughes Hall, as visiting fellows, for research collaboration and other academic exchange. Since its inception in 2009, 56 HKU members have been awarded Fellowships to reside at Hughes Hall for research collaboration and academic exchange, and 5 of them paid their visits within the academic year 2015–16.

3. Knowledge Exchange

31. Translating knowledge and discovery into societal impact is the University's ultimate goal, and knowledge exchange (KE) is regarded as the engine of impact. The UGC's earmarked funding for knowledge transfer has enabled the University to build capacity and develop strategies that take HKU knowledge from the campus to the community through technology transfer, entrepreneurship, community engagement, and knowledge access.

32. Since 2009, the University has put in place infrastructure to support KE, including a KE Office (www.ke.hku.hk) and counterpart units within each faculty. KE activities are reported to UGC annually. Some highlights from the 2015–16 reporting year include the following:

- (a) *Emphasis on impact:* The university-wide KE Excellence Award was launched in the reporting year, which was a natural development of the Faculty KE Awards introduced in 2011, but with stronger emphasis on the significance of impact. The inaugural award went to Dr H.M. Wong and team members Dr J. Jayakumar, Ms L. Li, Mr T. Pei, Ms L. Sun, Mr Y. Wen, Ms P.P.Y. Lam, Ms K.Y. Cheung, Mr K. Lee and Mr K.F. Wong. The project, which applied dental age assessment to address the social issue of unregistered births in the region, serves as an excellent example of the impact of HKU's KE beyond Hong Kong. Other examples of the impact of HKU's KE include (i) an architecture teaching kit for all secondary schools in Hong Kong, (ii) a migrant worker advancement project, (iii) a mobile e-learning platform for knowledge sharing and simultaneous interaction across a class, and (iv) a clinical legal education programme. In the reporting year, 5 impact workshops by experts from UK universities were organised by the KEO in collaboration with the Faculties concerned.
- (b) *Turning knowledge into action:* The University continued to use the knowledge transfer funding in 2015–16 to run the Impact Project Funding Scheme, which has become an important enabler for our academic staff to benefit the broader community with their expert knowledge. In the reporting year, 74 proposals were received, of which 61 were supported. Two examples are (i) Heat Stress on Hong Kong Construction Sites – The Impact of New Guidelines on Workers' Health and Safety; and (ii) Cultivating a Generation of I-Smart Kids: Applying Quality-of-(Real)-Life Theory to Internet Addiction Prevention. A total of 23 student KE projects were also supported in the reporting year.
- (c) *Knowledge access:* The HKU Scholars Hub (hub.hku.hk), a unique one-stop online platform for searching our experts, has been very successful in making HKU researchers, their research and their expertise highly visible. The view counts of the HKU Researcher Pages from outside HKU increased from 2.3 million in 2014–15 to over 4.9 million in 2015–16.

University–Industry Partnership

33. An important part of KE is university–industry partnership, and a key aim at HKU is to bring the University's innovative research results to the wider world through technology transfer, as the practical application of technological advances benefits both the University and the community as a whole. The Technology Transfer Office (TTO) provides services relating to technology transfer, research contract review and liaison with industries and businesses, while commercial operations come under Versitech, a wholly-owned subsidiary of HKU.

34. Over the past year, TTO has continued to strengthen professional capabilities in technology transfer in support of the University's mission of KE. The following training courses and events were organised in 2015–16:

- (a) *InnoCarnival 2015:* TTO was one of the co-organisers for this major nine-day event that was organised by the Innovation and Technology Commission and held from October 31–November 8, 2015 at the Hong Kong Science Park. Under the theme of “Life of Tree”, HKU showcased

six research projects from the Faculties of Engineering, Medicine and Science, with investigators and their teams using various exhibits, demonstrations, specimens, videos and posters to demonstrate the application of their research and inventions to visitors.

- (b) *Entrepreneurship Academy*: The popular workshop on entrepreneurship organised by TTO was offered again in February 2016. In this ten-week workshop, speakers from industries who themselves are successful entrepreneurs shared their experience in turning their ideas and research into real business, while HKU professors explained the fundamental concepts of business development and finance to participants. Participants also visited CoCoon to explore their possible startup routes through the support available from this open co-working space for entrepreneurs.
- (c) *EmTech Hong Kong 2016*: HKU was the Innovation Partner of EmTech Hong Kong 2016 held on June 7-8, 2016 at the Hong Kong Convention and Exhibition Centre. EmTech is the annual conference on emerging technologies hosted by MIT Technology Review and it was held in Hong Kong for the first time. It brought together experts in emerging technologies, business leaders, innovators and entrepreneurs to address global issues and discuss how to turn the ideas into solutions, and how technology is going to change business, economy and our lives using examples of Fintech, robotics and smart city. Over 400 participants, with a significant presence of HKU delegates, attended the event to discuss the latest trends in emerging and disruptive technologies.
- (d) *Public lecture on “Open Innovation and Public-Private Partnerships”*: At this public lecture, held at HKU on January 25, 2016, Professor Raj Thampuran, Managing Director of the Agency for Science, Technology and Research (A*STAR), Singapore shared his valuable experience in open innovation and different modalities of A*STAR’s strategy in public-private partnerships. Participants of this seminar gained better insights into Singapore’s R&D framework and innovation and enterprise landscape.
- (e) *HKU DreamCatchers 100K Entrepreneurship Seed Fund 2016*: HKU has launched the first entrepreneurship seed fund, DreamCatchers 100K, for all entrepreneurial students and young alumni under the age of 35 in 2016. A total of 144 applications were received in March 2016 and 55 teams were invited to a 5-min Pitch. 20 finalists were selected and each team was matched with a mentor from industry. The Final Pitch was held in August 2016 and 10 teams were awarded a \$100,000 prize each to kick start and continue their business ventures. Of these 10 award winning teams, 2 are spin-offs from HKU research: (i) Living Tissues Company Limited – providing regenerative tissues for cartilage repair to solve musculoskeletal problems; and (ii) Conzeb Limited – high speed imaging technology for cancer diagnostics.
- (f) *Workshop on Innovations in Technology Commercialization*: On April 21, 2016, Dr Kim Shin Cheul, Senior Vice President of Exploit Technologies Pte Ltd (ETPL), A*STAR, Singapore shared his insights on commercialising applied research and IP management, as well as A*STAR’s strategies and the successful elements in the commercialisation of electronic technologies. The workshop was well attended by colleagues

from the knowledge transfer offices of local institutions.

- (g) *Presentation on Accelerating the Translation of New Drug Targets (Drug Projects) for Industrialization:* Dr Micky Tortorella – Chief Technology Officer and Vice President for Drug Discovery and Technology Transfer, Guangzhou Institutes of Biomedicine and Health, China, (GIBH) – was invited to give a presentation on May 25, 2016 and share the DDP projects in drug discovery at GIBH, the drug discovery and development-timeline with HKU professors and researchers.

TSSSU@HKU

35. In the reporting year the TSSSU@HKU funding scheme entered its third round of application. A total of 26 applications were received in February 2016 and 13 start-up companies were awarded a grand total of HK\$4 million of funding. Out of these 13 TSSSU awardees, 10 are commercialising HKU technologies:

- (a) Accosys Limited – an indoor localisation system for providing indoor positioning solutions and services;
- (b) Living Tissues Company Limited – providing regenerative tissues for cartilage repair to solve musculoskeletal problems;
- (c) Hactis Limited – VR technology for training and education;
- (d) ImmunoDiagnostics Limited – provision of immunology and diagnostic solutions;
- (e) SkinData Limited – development of skin whitening products;
- (f) Eonzen Technology Co Ltd – non-invasive blood glucose monitoring;
- (g) EN Technology Limited – novel encapsulation technologies for the food and cosmetics industries;
- (h) Conzeb Limited – high speed imaging for cancer diagnostics;
- (i) CISC Limited – provision of cyber intelligence and cyber security consulting service and solutions; and
- (j) Flectrode Limited – development of highly efficient solar cells.

Contract Research Projects and Licensed Inventions

36. A number of examples of successful university-industry partnerships took place during the reporting year. Versitech Ltd undertook a total of 9 contract research projects within 2015–16 with various industrial sectors. As of 2015–16, Versitech Ltd has licensed a cumulative total of 149 inventions and know-hows to industry, representing an overall commercialisation rate of 34.8%.

37. Some examples of the latest developments of HKU technologies transferred include the following:

- (a) *Launch of a novel human blood-flow visualisation invention to the market:* An innovative blood flow visualisation and analysis technology known as Vector Projectile Imaging (“VPI”) and developed by the Biomedical Ultrasound Laboratory of the Department of Electrical and Electronic Engineering has been launched to the market. In addition to the ability to

handle very complex flow imaging such as laminar, vortex, secondary and retrograde flows, VPI enables real-time visualisation of the corresponding direction and magnitude of blood flows in blood vessels and arteries with very high framerate at millisecond time resolution. Such non-invasive, versatile and time-resolved visualisation of blood flows in human arteries is of high diagnostic importance because it may facilitate clinical detection of abnormal vascular conditions.

- (b) *Launch of a diagnostic monoclonal antibody, anti-ANXA3*: The anti-ANXA3 antibody developed by the School of Biomedical Sciences has been launched to the market by a renowned bio-reagent company. Annexin A3 (ANXA3) belongs to the annexin family of calcium-dependent phospholipid-binding proteins, up-regulation of which has been detected in a number of cancers. The detection is particularly significant in liver cancer patients. This anti-ANXA3 antibody is expected to have a high impact on society due to its high affinity and specificity compared with traditional HCC biomarkers.
- (c) *Launch of an immortalised human esophageal epithelial cell line, NE2-hTERT*: An immortalised human esophageal epithelial cell line, NE2-hTERT, established by the School of Biomedical Sciences, has been launched to the market by an international bio-reagent company. This cell line exhibits genetic and genomic alterations commonly found in esophageal cancer, but retains non-tumorigenesis characteristics. It serves as a valuable tool in the study of early events and mechanisms in esophageal tumorigenesis, which can facilitate early diagnosis and intervention of esophageal cancer.
- (d) *Consultancy service on cyber security research and practice platform for financial services*: Two traffic simulation toolkits are being developed by Dr L.C.K. Hui (Department of Computer Sciences) to generate simulated data traffic of ZRTP and another traffic protocol. The toolkits can be used, in particular, for the generation and detection of anonymous and encrypted data traffic, as well as to study the use of forensic tools for plausibly deniable cloud encryption detection.
- (e) *Review service on asset allocation*: Dr P.L.H. Yu (Department of Statistics and Actuarial Science) used a set of historical data from April 2001 to March 2016 provided by a local bank in Hong Kong to estimate and optimise the expected annual returns, annualised standard deviations and correlation coefficients of the asset classes. Dr Yu utilised statistical methodologies and techniques to optimise the global asset allocation and the asset allocation under the Capital Investment Entrant Scheme (CIES).

4. Undergraduate Research

38. In September 2015, the fifth round of the Undergraduate Research Fellowship Programme (URFP) was undertaken. The URFP was introduced by HKU in 2011 with the aims of enhancing the learning experience of undergraduate students and nurturing the next generation of researchers/scholars through providing opportunities for students to undertake

research study under the guidance and supervision of academics with a strong research track record and experience in training research postgraduate students. In the first four rounds, 284 academically outstanding undergraduate students enrolled in the programme, 121 of whom were granted awards to undertake internships locally, in the Mainland or overseas. In the fifth round, 49 students were selected for enrolment, of which 30 were granted awards to undertake internships. These students are expected to complete their research study within the 2016–17 academic year.

39. A URFP poster session was held in April 2016 for recipients of the research internship awards from different Faculties to present their research findings and share their experience, as well as to promote the URFP to undergraduates and the wider community at HKU. The event, which ran for a week, opened with a welcoming session hosted by the Vice-President (Teaching and Learning) and was attended by students, academics and senior management.

5. Research Highlights

40. Research highlights for HKU in 2015–16 include the following:

Theme-based Research Scheme (TRS)

41. The Theme-based Research Scheme (TRS) was introduced to support themes of strategic importance to the long-term development of Hong Kong. In the sixth round of the scheme – the results of which were announced in early July – 4 HKU-led projects (as detailed in paragraph 9 above) received a total budget valued at HK\$140 million (including on-costs) for a period of 5 years. The projects represent a collaborative effort by researchers from local and overseas institutions and look at gastric cancer, liver cancer, wastewater treatment and digital citizenship. HKU is also collaborating in all of the other 3 projects funded in this round.

42. The RGC has awarded funding to a total of 30 projects in the 6 rounds of TRS. HKU is the co-ordinating institution of 14 awarded projects, which have received total funding of \$640 million, with HKU researchers also involved in a further 12 projects.

Areas of Excellence (AoE)

43. Since its inception, the Areas of Excellence (AoE) scheme has provided support for 18 projects over 6 funding rounds to nurture areas of international excellence through high-quality research and inter-institutional collaboration. HKU is the co-ordinating institution of 8 of these 18 AoE projects, representing total funding of \$605 million. The University is also participating in a further 6 co-ordinated by other institutions.

2016–17 General Research Fund / Early Career Scheme (GRF/ECS) Exercise

44. HKU secured both the highest number of approved projects and the largest share of approved funding in the General Research Fund (GRF) exercise for the 14th year in a row (and also the largest share of funding for 19 of the last 20 exercises). Nearly a quarter (24.2%) of the supported projects were those of HKU Principal Investigators, who were awarded HK\$157.490 million out of the total funding of HK\$595.422 million (excluding on-costs). HKU submitted 612 applications in this round, and 233 were approved,

representing a success rate of 38%. As with last year, the University received the largest amount of funds for projects under the Biology and Medicine Panel.

45. In the 2016–17 funding round of the Early Career Scheme (ECS), HKU also received the highest number of approved projects and the largest share of approved funding. RGC supported 155 projects in total. HKU submitted 70 applications in this round, of which 34 were approved, securing HK\$22.87 million in funding (excluding on-costs).

2015–16 Collaborative Research Fund (CRF) Exercise

46. In the 2015–16 round of RGC’s Collaborative Research Fund (CRF), HKU is the lead institution of 5 (all group research projects) of the 18 projects funded, and is participating in a further 9 projects as a collaborating institution. The 5 projects with HKU as lead institution are as follows:

- (a) “Molecular mechanism of PACT-dependent innate antiviral response”, HK\$7.56 million*, Project Coordinator: Professor D. Jin (School of Biomedical Sciences), in collaboration with CUHK;
- (b) “Regulation and function of novel histone modifications”, HK\$5.65 million*, Project Coordinator: Dr X.D. Li (Department of Chemistry), in collaboration with HKUST;
- (c) “Targeted genomics and functional studies of novel cancer predisposing genes for esophageal squamous cell carcinoma”, HK\$7.57 million*, Project Coordinator: Professor M.L. Lung (Department of Clinical Oncology), in collaboration with HKUST;
- (d) “Problems, solutions, and optimization for modern clouds”, HK\$5.10 million*, Project Coordinator: Professor F.C.M. Lau (Department of Computer Science), in collaboration with CityU, CUHK and HKUST; and
- (e) “Total synthesis and medicinal chemistry of cyclic peptide-based antibacterial compounds: An integrative programme for novel antibiotic development”, HK\$4.56 million*, Project Coordinator: Dr X.C. Li (Department of Chemistry), in collaboration with PolyU.

* excluding on-costs

Humanities and Social Sciences Prestigious Fellowship Scheme (HSSPFS)

47. In the 2016–17 funding round of the Humanities and Social Sciences Prestigious Fellowship Scheme, of the 4 applications funded HKU received the largest share, with 2 successful projects awarded a total of HK\$1.256 million (excluding on-costs):

- (a) “Explaining family polyvictimization: The development of a nested ecological theory”, Principal Investigator: Dr E.K.L. Chan (Department of Social Work and Social Administration); and
- (b) “The making of the cult of personality in the twentieth century”, Principal Investigator: Professor F. Dikotter (School of Humanities).

48. Since the scheme began in 2012–13, HKU has the highest cumulative number of fellowships and largest funding amount of any UGC-funded institution: 11 fellowships (total value HK\$7.283M) out of a total of 29 awarded (total value HK\$19.508M).

NSFC/RGC Joint Research Scheme

49. Through the National Natural Science Foundation of China/Research Grants Council (NSFC/RGC) Joint Research Scheme in 2015–16, funding of HK\$26.25 million was awarded to 23 projects from 5 UGC-funded institutions. HKU submitted 48 initial applications, of which 12 were shortlisted and 6 funded, the joint highest number amongst institutions. HKU received total funding of HK\$6.733 million for the following projects:

- (a) “Advancing transportation systems analysis by integrating safety evaluation”, Professor S.C. Wong (Department of Civil Engineering);
- (b) “Photonic integration in GaN membranes on silicon”, Dr H.W. Choi (Department of Electrical and Electronic Engineering);
- (c) “A comprehensive functional ultrasound imaging framework: the assessment of vascular mechanics for the diagnosis of cardiovascular diseases”, Dr W. Lee (Department of Electrical and Electronic Engineering);
- (d) “Mechanistic study of the degradation of multiple indoor air pollutants through vacuum UV photocatalysis”, Professor Y.C. Leung (Department of Mechanical Engineering);
- (e) “Neurodevelopmental effect of gene-environment interaction among early-onset schizophrenia patients: a combined genetic and neuroimaging approach”, Professor E.Y.H. Chan (Department of Psychiatry); and
- (f) “Development of DNA-encoded DNA-glycan constructs as multivalent influenza hemagglutinin inhibitors”, Dr X.C. Li (Department of Chemistry).

National Natural Science Fund—National Natural Science Foundation of China (NSFC)

50. HKU-SIRI members are eligible to apply for funding through the National Natural Science Fund of the National Natural Science Foundation of China (NSFC). HKU-SIRI received total funding of RMB8.68 million in 2015–16 for 16 projects under the NSFC, the results of which were announced in August 2015.

Innovation Technology Support Programme (ITSP)

51. Up to the end of June 2016, HKU has had 187 projects approved under the Innovation and Technology Fund’s Innovation Technology Support Programme (ITSP), which was introduced in 1999. This represents about a fifth (18%) of the 1023 projects approved under ITSP, and HKU has received total funding of HK\$484.61 through this scheme.

52. In the reporting year, 17 HKU projects were awarded total funding of HK\$49.39 million. A further 4 projects were funded HK\$9.64 million under the University-Industry Collaboration Programme (UICP).

Public Policy Research

53. The University was awarded total funding of HK\$4.18 million for 7 projects in 2015–16 under the Public Policy Research (PPR) funding scheme, which is administered by the Central Policy Unit (CPU).

Croucher Foundation: Fellowships and Innovation Awards

54. HKU has been awarded more Croucher Foundation Senior Research Fellowships (49 out of a total of 109 fellowships awarded since 1997, including Senior Medical Research Fellowships) than any other local institution. Two of these Fellowships were awarded to HKU academics during the reporting year: Professor G. Chen (Department of Chemistry) and Professor A. Xu (Department of Medicine).

55. The Croucher Foundation also offers substantial support through the Innovation Awards to a small number of exceptionally talented scientists at a formative stage in their careers, in order to enable them to pursue their own scientific, intellectual and professional inclinations. Of the 9 awards given since the inception of the Innovation Awards in 2012, 6 have been awarded to HKU researchers.

56. In 2015–16, Dr H.Y. Au Yeung (Department of Chemistry) and Dr H. Cui (Department of Computer Science) were awarded HK\$5 million each over 5 years for their research projects through the Innovation Awards. The titles of their research projects are “A binding-induced chemical reaction strategy for the selective detection of neurotransmitters” and “Transparent state machine replication and its applications”, respectively.

Other Croucher Foundation Funding

57. The Foundation offers a start-up allowance for recipients of the Croucher Fellowship for Postdoctoral Research upon their return to Hong Kong to take up tenure-track faculty positions in UGC-funded institutions. Dr S.L. Wong (School of Biomedical Sciences) was awarded HK\$0.5 million to be used over 5 years for his research.

58. To enable experts in a particular field to meet and conduct advanced tuition on a defined topic, the Croucher Foundation sponsors a number of Advanced Study Institutes (ASIs) each year. HKU organised an ASI on immunometabolism in April 2016 and another ASI on two-dimensional atomic crystals in May 2016.

59. The Croucher Foundation also provides funding for summer courses to help educate and inspire promising postgraduate students and early career researchers from Hong Kong and the wider region. Successful applicants receive HK\$0.6 million per course for three courses to be held once every two years over a period of six years. HKU held three summer courses in 2016: one on programming and one on vaccinology in July, and a third on immunology in August.

60. Sponsorship is also provided through the Croucher Foundation for international conferences and seminars. Three conferences in the areas of stellar astrophysics, microchemistry and cardiovascular science were organised by HKU researchers during the reporting period, each with funding of HK\$100,000. Sponsorship for three events in the coming year was also approved in June 2016.

HK Scholars Program

61. The HK Scholars Program is a cross-border initiative (introduced by the Society of Hong Kong Scholars and the Office of the National Administrative Committee of Postdoctoral Researchers under the Ministry of Human Resources and Social Security) that aims to nurture outstanding postdoctoral fellows (PDFs) from the Mainland in Hong

Kong. In the sixth round of this initiative (for which the results were announced in July 2016), 8 HKU researchers were selected to supervise PDFs for a period of 2 years.

Overseas Funding Sources

62. Funding also comes from a wide range of overseas funding bodies in Asia, Australia and New Zealand, Europe and North America. Examples include the National Institutes of Health (NIH), the European Commission, and the Australian Research Council. For example, HKU academics from the School of Public Health are involved in an ongoing collaboration with the St. Jude Children's Research Hospital for the NIAID Centers of Excellence for Influenza Research and Surveillance funded by NIH, and a recently awarded project on influenza research through the Centers for Disease Control and Prevention.

Published Research

63. HKU has an excellent record of published research, both in discipline-specific journals and in more high-profile publications such as *Science*, *Nature*, and *The Lancet*. One recent example is an article in *Nature Communications* – co-authored by Dr X.C. Li and his team in the Department of Chemistry with collaborators at the University of Central Florida and the Hong Kong Polytechnic University – reporting their work as the first team to chemically synthesise teixobactin, a compound that is a potentially game-changing antibiotic.

64. The University has the highest number of refereed publications, both in absolute terms and expressed as a ratio of publications per staff member, of any UGC-funded institution. For 2014–15 (the latest available statistics; see the CDCF data mart website) HKU had 5,833 peer-reviewed refereed publications. The University does particularly well in scientific publications. According to statistics published by Thomson Reuters, there were a total of 443,217 citations of 28,897 HKU papers in journals tracked by Thomson Reuters between January 2006 and April 2016. This was the highest number of citations of any UGC-funded institution. In 2015 the University had 4,740 publications in journals tracked by Thomson Reuters, again more than any other UGC-funded institution, attracting 13,219 citations to date (data collected on November 1, 2016). Thomson Reuters also ranked 111 HKU professoriate staff among the world's top 1% of scientists, based on the number of citations recorded for their publications (April 2016). In addition, 10 HKU academics have been named among the world's top scientists in the 2016 Highly Cited Researchers from Thomson Reuters, based on the number of papers officially designated by Essential Science Indicators as Highly Cited Papers (September 2016) – detailed below in paragraph 91(h).

Patents

65. HKU has filed 1,693 patents since 1998 in various parts of the world, mostly in the United States (745), the European Union (236) and Greater China (281 in China, including Hong Kong, and 25 in Taiwan). Within the same period 542 patents were granted, 38.7% of which were in the United States (210). During the 2015–16 academic year, HKU filed 129 patents, and 60 patents were granted and 18 patent applications were abandoned.

Agreements/Legal Documents

66. The University handled 601 technology/knowledge transfer related agreements/legal documents in 2015–16 – such as licensing, consultancy and materials transfer

agreements – with counter signing parties in Hong Kong (218), the People’s Republic of China (161.5), North America (111), the European Union (57.8) and the rest of the world (52.7).

External Academic Honours

67. The University is proud of its record of academic recognition. A number of important academic awards and honours have been bestowed on HKU researchers over the reporting period, including the following examples:

- (a) Professor S. Kwok, Chair of Space Science in the Faculty of Science, was elected President of the International Astronomical Union (IAU) Commission on Astrobiology during the General Assembly of the IAU in Honolulu. He will help the Union to organise worldwide research and education activities in astrobiology. The commissions of the IAU represent research domains at the frontier of astronomical science. The President serves a term of 3 years until the next election in 2018.
- (b) Professor V.W.W. Yam, Philip Wong Wilson Wong Professor in Chemistry and Energy and Chair Professor in the Department of Chemistry, was elected as the Foreign Member of Academia Europaea (The Academy of Europe). The primary criterion for membership is “sustained academic excellence in the candidate’s field”. Membership is by invitation after peer group nomination, rigorous review and assessment based on the scholarship and eminence of the individual in his/her chosen field, and recommendation to the Council of the Academia for formal election. Professor Yam was also elected as the Leader of the Year 2015 under the Education/Professions/Technology & Innovation category by Sing Tao News Corporation Limited.
- (c) Professor N. Mok, Edmund and Peggy Tse Professor in Mathematics and Chair of Mathematics, was elected a Member of the Chinese Academy of Sciences (Mathematics and Physics). This election to China’s national academy for the natural sciences recognises the importance of Professor Mok’s contribution to mathematical research. He specialises in complex differential geometry, several complex variables and algebraic geometry. He is well-known for having solved a number of outstanding mathematical problems related to curvature and symmetry in geometry.
- (d) Professor K.F. So, Jessie Ho Professor in Neuroscience and Chair Professor of Anatomy, has been named a Fellow of the National Academy of Inventors (NAI) of the US. Election to NAI Fellow status is a high professional distinction accorded to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society.
- (e) Professor J. Lam, Chair Professor of Control Engineering, won a second-class State Natural Science Awards 2015 for his research on constrained control system parameterisation design theory and applications. The State Natural Science Award aims to reward citizens and organisations that have made outstanding contributions to scientific and technological progress. The award to Professor Lam was based on a collaborative project with Professor G. Duan of the Harbin Institute of Technology.

- (f) Professor G. Zhao, Professor of the Department of Earth Sciences, became the first geologist to receive the Khwarizmi International Award (First Class). He was selected as one of the laureates for the 29th Khwarizmi International Award (KIA), and received a first-class prize at the KIA ceremony held in Tehran. His research work for this award was on “A Paleo-Mesoproterozoic supercontinent and its record in North China”.
- (g) Three HKU PhD students received Fulbright-RGC Hong Kong Research Scholar Awards to undertake research work in the US. Social Work and Social Administration PhD student Ms E.W.S. Tsoi will study strengths-based case management for psychosis and bipolar spectrum disorder. School of Modern Languages and Cultures PhD student Ms X. Dong will study African American history through the novel *Invisible Man*. The third student is Ms Y. Dai who will research on education localisation of internationalisation. The award programme is supported by RGC in collaboration with the US Consulate General in Hong Kong.
- (h) Ten HKU academics have been named among the world’s top scientists whose work has been highly cited by fellow academics and are hence making a significant impact in ongoing research in their respective fields of study. The HKU academics featured in Highly Cited Researchers from Thomson Reuters – an annual list recognising leading researchers in the sciences and social sciences from around the world – in 2016 are Professor Y. Guan (School of Public Health); Professor J. Lam (Department of Mechanical Engineering); Professor J.S.M. Peiris (School of Public Health); Professor L.L.M. Poon (School of Public Health); Professor N.P. Shah (School of Biological Sciences); Professor M. Sun (Department of Earth Sciences); Dr S.M. Yiu (Department of Computer Science); Professor K.Y. Yuen (Department of Microbiology); Professor G. Zhao (Department of Earth Sciences); and Professor K.Z. Zhou (School of Business).

Outstanding Researcher Award Scheme

68. HKU’s annual Outstanding Researcher Award Scheme recognises the excellent work of the University’s researchers. At a ceremony on May 9, 2016, the following awards, for research achievements during and prior to the report period, were presented:

(i) Distinguished Research Achievement Award

Professor A.G.O. Yeh, Department of Urban Planning and Design

(ii) Outstanding Researcher Award

Professor J. Huang, School of Biomedical Sciences

Professor G. Xu, School of Humanities (History)

Dr W. Yao, Department of Physics

(iii) Outstanding Young Researcher Award

Dr C.K.Y. Chan, Centre for Enhancement of Teaching and Learning

Dr M.S.Y. Huen, School of Biomedical Sciences

Dr W. Lu, Department of Real Estate and Construction

Dr K.K.M. Tsia, Department of Electrical and Electronic Engineering

Dr M. Yasuhara, School of Biological Sciences

(iv) *Outstanding Research Student Supervisor Award*

Professor T.M. Bray, Faculty of Education

Professor B. Young, Department of Civil Engineering

69. The Faculty-level Research Output Prize, part of the Outstanding Researcher Award Scheme since 2005, rewards the author (or team of authors) for a single outstanding item of research output (such as a publication, artistic production or patent). An output item is selected by each Faculty annually for the prize, and Faculties can determine the research output form that best represents their research achievement. At the May 2016 ceremony, 10 Research Output Prizes were awarded for the following:

Faculty of Architecture: “Synergy between pollution and carbon emissions control: Comparing China and the United States”, *Energy Economics*, 46 (2014) pp. 186-201, by Kyung-Min Nam, Caleb J. Waugh, Sergey Paltsev, John M. Reilly and Valerie J. Karplus

Faculty of Arts: “Moral China in the Age of Reform”, *Cambridge University Press*, New York, 2014, 244pp., by Jiwei Ci

Faculty of Business and Economics: “It’s not fair... or is it? The role of justice and leadership in explaining work stressor–job performance relationships”, *Academy of Management Journal* 2014, Vol. 57, No. 3, pp. 675-697, by Yiwen Zhang, Jeffery A. Lepine, Brooke R. Buckman and Feng Wei

Faculty of Dentistry: “Agarose Hydrogel Biomimetic Mineralization Model for the Regeneration of Enamel Prismlike Tissue”, *ACS Applied Materials & Interfaces* 2014, Vol. 6, Issue 1, pp. 410-420, by Ying Cao, May Lei Mei, Quan-Li Li, Edward Chin Man Lo and Chun Hung Chu

Faculty of Education: “Muslims and Islam in U.S. Education: Reconsidering Multiculturalism”, *Routledge*, Oxon & New York & London, 2014, 184pp., by Liz Jackson

Faculty of Engineering: “High performance organic transistor active-matrix driver developed on paper substrate”, *Scientific Reports* 2014, Vol. 4: 6430, by Boyu Peng, Xiaochen Ren, Zongrong Wang, Xinyu Wang, Robert C. Roberts and Paddy K.L. Chan

Faculty of Law: “Legal Transplantation in Early Twentieth-Century China: Practicing Law in Republican Beijing (1910s–1930s)”, *Routledge*, New York, London, 2014, 188pp., by Michael H.K. Ng

Li Ka Shing Faculty of Medicine: “Effect of closure of live poultry markets on poultry-to-person transmission of avian influenza A H7N9 virus: an ecological study”, *The Lancet*, February 2014, Vol. 383, No. 9916, pp. 541-548, by Hongjie Yu, Joseph T. Wu, Benjamin J. Cowling, Qiaohong Liao, Vicky J. Fang, Sheng Zhou, Peng Wu, Hang Zhou, Eric H.Y. Lau, Danhuai Guo, Michael Y. Ni, Zhibin Peng, Luzhao Feng, Hui Jiang, Huiming Luo, Qun Li, Zijian Feng, Yu Wang, Weizhong Yang and Gabriel M. Leung

Faculty of Science: “Exploring the combined role of eustasy and oceanic island thermal subsidence in shaping biodiversity on the Galápagos”, *Journal of Biogeography* 2014, Vol. 41, Issue 7, pp. 1227-1241, by Jason R. Ali and Jonathan C. Aitchison

Faculty of Social Sciences: “Confucian Perfectionism: A Political Philosophy for Modern Times”, Princeton University Press, UK, 2014, 256pp., by Joseph Chan

Major International Research Events

70. A range of important international research conferences were organised by HKU in the 2015–16 reporting period, including the following:

- (a) November 21, 2015 – HKU hosted the 19th Annual Scientific Meeting of the Institute of Cardiovascular Science and Medicine, in conjunction with the 10th Across the Strait Scientific Conference on Cardiovascular Science. Experts from mainland China, Hong Kong and Taiwan discussed important issues relating to cardiovascular science and medicine during this conference. HKU researchers of the Li Ka Shing Faculty of Medicine highlighted in particular results on blood lead levels and a clinical trial on phytosterol.
- (b) January 15–16, 2016 – the International Conference on the Governance of China brought together renowned scholars and professionals from China and overseas to discuss the development of Chinese political economy and the role of governance within it. The conference had seven panels: The State at the Center; The State and Civil Society; Legal and Constitutional Reform; The Internet and Social Media; Capitalism with a Chinese Face?; China and the World; and China and the Future of Hong Kong.
- (c) January 28, 2016 – the Asia Global Institute hosted at HKU the Asia-Global Dialogue 2016: Towards a New Economic Order. It looked at how business might be a positive and dynamic agent of change as the global economy rebalances to the East. The event provided plenty of opportunities for delegates from around the world to exchange ideas on different aspects of the emerging global economy.
- (d) June 21–24, 2016 – HKU held the 8th International Conference on Marine Pollution and Ecotoxicology. This conference aimed to discuss and advance the understanding of local, regional and global marine pollution problems, and to reveal the latest technologies, methods and policies for pollution monitoring, pollution effect diagnosis, pollution control and environmental remediation. Twenty-eight world renowned experts were invited to share their knowledge and latest advancements in the field with some 200 scientists, environmental professionals and environmental regulators from 16 countries.

International Rankings

71. The University stands among the world’s top universities, ranking 27th and 43rd in 2016 by Quacquarelli Symonds and Times Higher Education (THE), respectively (rankings announced in September 2016). In the QS 2016 subject rankings, HKU was ranked in the top 50 for 29 subjects, including 6 top-ten subjects (linguistics, civil and structural engineering, mineral and mining engineering, dentistry, education, and social policy), and a further 5 with top-twenty placings. HKU’s Faculty of Dentistry was ranked 1st in the scholastic ratings of dental schools around the world.

72. HKU was ranked the third most international university in the world in 2016 by THE. The ranking is compiled using the results of the “international outlook” indicator in the THE 2015–16 World University Rankings. This measure considers each institution’s proportion of international staff, proportion of international students and proportion of research papers published with at least one co-author from another country.

Visit to HKU by the RGC

73. In June 2016, a delegation of about 100 RGC members/secretariat visited the University as part the RGC's ongoing schedule of visiting all institutions in Hong Kong on a rotational basis. During the visit, the delegation sought to gain a clear picture of research at HKU, including its strategies, activities, facilities, achievements, and output. The University provided this information through an introductory presentation, visits to schools and departments, detailed poster displays, and discussion opportunities with academics and students involved in research. Visitors were also provided with a detailed reference folder. The various elements of the day gave visitors an overview of research policy and practices, research programmes and directions, and highlights of the University's research projects under, inter alia, the Areas of Excellences scheme, Theme-based Research Scheme, Collaborative Research Fund, General Research Fund/Early Career Scheme, and Innovation and Technology Fund, as well as the work of our Partner State Key Laboratories. To enable in-depth insight to some areas of the University's research, 9 sub-groups of the delegation visited different units across the University. The RGC congratulated the University on a successful visit day, and the University looks forward to receiving formal feedback for further consideration.

6. Conclusions

74. Over the reporting year, HKU researchers have continued to demonstrate excellence in research and they are making their mark locally, regionally and globally. Through its strategies and policies, the University aims to support their vital, cutting-edge work in an environment that promotes **internationalisation**, **innovation** and **interdisciplinarity** and a commitment to making a positive **impact** on society.

75. Whilst the University is proud of its achievements to date, it remains determined to enhance and expand its research strengths and foster a robust culture for the creation, application and transfer of knowledge.

76. The University's strategic intent is to build peaks of excellence, develop synergistic partnerships and deliver community value. An integrated set of mechanisms – including diverse funding, international alliances, community projects, local and global internships, mainland partnerships, corporate partnerships, and strategic themes in key emerging areas – will enable HKU to form a competitive edge. Key goals in the University's research development include

- (a) To grow and sustain target key areas (e.g., advanced materials, infectious diseases, visual arts, psychology) for HKU's research to be world leading,
- (b) To strengthen the translational capabilities of the research in HKU in areas of needs and opportunities, such as Fintech, Healthtech and Smart City,
- (c) To develop HKU as a major hub in Asia for innovation and entrepreneurship, with a Centre for Innovation and Entrepreneurship acting as the key enabling platform for fostering development,
- (d) To grow the research institutes in mainland China (viz. HKU-SIRI and HKU-ZIRI) and fully develop their innovation potential, and
- (e) To provide international opportunities for all HKU graduate students through global academic, research, cultural and industry exposure.