



HKU-SUSTech Joint Research Symposium 2017

To enhance academic exchanges between HKU and Southern University of Science and Technology (SUSTech), both universities have agreed to co-organise a joint research symposium annually – to be held alternately at HKU and SUSTech – starting from 2017. The first joint research symposium was held at HKU on October 24, 2017, with the support of the Faculty of Engineering, Faculty of Science and Mainland Research Projects Office of HKU.

Professor Paul Tam, Provost and Deputy Vice-Chancellor of HKU, and Professor Tao Tang, Vice-President of Research and Dean of the Graduate School of SUSTech, gave the opening addresses. Professor Mai Har Sham, Associate Vice-President (Research), then chaired the keynote session and introduced Professor Keiji Fukuda, Director and Clinical Professor, School of Public Health of HKU, who presented a keynote lecture on 'Antimicrobial resistance: Broadening the focus from technical to social'. This was followed by an overview of the research areas of HKU and SUSTech, and the HKU-SUSTech Joint Education Programme for PhD ('Programme'). The overview was presented by Professor Mee Len Chye, Dean of the Graduate School of HKU, Professor Dong-Yan Jin, Associate Dean (Internationalisation and Partnership) of the Graduate School of HKU, and Professor Shuanghua Yang, Associate Dean of the Graduate School of SUSTech. Subsequently, concurrent platform sessions were held, with the themes of **Promoting good health, Developing a sustainable environment, and Advancing emerging research and innovations.**

In the platform sessions, a total of 28 students and supervisors / potential supervisors of the Programme shared their research, with a view to further fostering research collaborations and joint PhD supervision between the two universities.

The symposium was a memorable and fruitful event in which participants from the two institutions gathered to exchange ideas, garner feedback on their research and enhance collegial networks.



Professor Paul Tam



Professor Keiji Fukuda

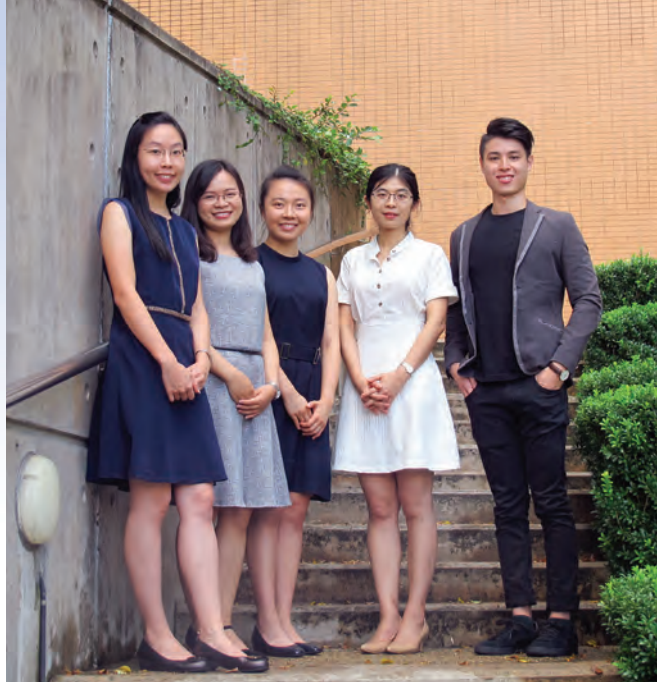


Professor Tao Tang



HKU PhD Students Excel in the Fulbright-RGC Hong Kong Research Scholar Awards Programme 2017-18

Young scholars at the University excelled in the recent results of the Fulbright-RGC Hong Kong Research Scholar Award Programme 2017-18, capturing six of the eight awards. The fellowship programme was launched by the Research Grants Council (RGC) in collaboration with the US Consulate General in Hong Kong and Macau, supported by commercial donors solicited by the Hong Kong-America Center, to enable doctoral candidates in Hong Kong to conduct their dissertations in elite institutions in the United States. Congratulations go to the following HKU award recipients:



From left: Suet Yee Yiu, Suqin Tang, Rachel Yiu, Weijie Huang and William Choi

Name/ Department	Affiliated Institution	Approved Length of Fellowship	Research Topic
Tsun Man William Choi <i>PhD Candidate, Faculty of Education (Division of Speech and Hearing Sciences)</i>	Massachusetts Institution of Technology	10 months	Speech perception and reading acquisition
Weijie Huang <i>PhD Candidate, Department of Law</i>	University of California, Berkeley	10 months	Studying copyright law to the newly-emerging phenomenon of URC (user-remixed content) and its social regulation systems in the URC context
Suqin Tang <i>PhD Candidate, Department of Social Work and Social Administration</i>	Weill Cornell Medical College of Cornell University	10 months	The mechanism underlying adaptive and maladaptive grief and bereavement experience
Sze Wan Rachel Yiu <i>PhD Candidate, Department of Surgery</i>	University of Pittsburgh	6 months	Deriving an advanced version of 3D liver organoids for decoding biliary atresia
Suet Yee Yiu <i>PhD Candidate, School of Humanities (Linguistics)</i>	The University of Arizona	6 months	Tones and rhythm in complex tone languages
Xiaohan Zhang <i>PhD Candidate, Department of Law</i>	Yale University's Law School	6 months	Developing a legal framework for cultivating a Chinese Online Dispute Resolution mechanism

HKU PhD Graduate Wins International Best PhD Prize for Urban Mobility in Developing Countries



Dr Muhammad Adeel – a PhD graduate of Professor Anthony Yeh in the Department of Urban Planning and Design who is now working as a Research Officer in the LSE Cities programme at the London School of Economics and Political Science, UK – has won the CODATU Prize of the best

PhD thesis on urban mobility in cities of developing countries.

CODATU (Cooperation for Urban Mobility in the Developing World), whose headquarters are in Lyon, France, is an international organisation that aims to promote sustainable mobility policies and knowledge sharing between developed and developing countries. The CODATU PhD Prize aims to encourage young researchers in the field of urban transport mobility in

developing countries and to reinforce the interaction between researchers, professionals and policy makers. This is the first year that CODATU has given this prize.

With the support of a University Postgraduate Fellowship, Dr Adeel completed his PhD studies at HKU in 2015 on 'Transportation Disadvantage and Social Exclusion in Pakistan', and he has published a number of papers in top academic journals, including *Transport Policy* and *Transportation*.

Dr Adeel's study showed that gender, income and residential location are the three important determinants of transportation disadvantage and social exclusion in Pakistan. Furthermore, socio-cultural context plays an important role in shaping the complex links between them. Women, students, rural residents and low income groups seem to be disproportionately affected. The study concluded that there is a need for an integrated land use and transport management perspective with particular focus on the gender dimensions, so as to reduce poverty and facilitate the disadvantaged to access economic resources and to promote social inclusion in the country.

PhD Candidates Receive U21 Graduate Collaborative Research Award for Advancing Building Energy Model Construction to Support Building Energy Retrofits

Huaquan Ying, Qiuchen Lu and Hui Zhou, PhD candidates from the Department of Civil Engineering under the supervision of Dr Sanghoon Lee, have won the Universitas 21 (U21) Graduate Collaborative Research Award 2017. The awarded project, 'Image-based As-is Building Energy Model (BEM) Construction to Support Building Energy Retrofits', aims to develop an image-based methodology to construct as-is BEM geometry models for existing buildings using an automatic, rapid and economic approach. As-is BEM is commonly used to assess the energy performance of existing buildings as well as to quantify potential energy savings from energy retrofit measures. The current practice is to manually create as-is BEMs based on extensive capture of data that depicts the actual conditions of buildings, which is usually labour intensive, costly and time consuming. The project will make use of a drone with a mounted digital camera and smartphones to capture images of building facades and interior spaces respectively, which will be further processed by the proposed methodology to automatically create 3D BEM geometry models. The

project team consists of seven doctoral candidates and five advisors from five U21 member universities (HKU, Shanghai Jiao Tong University, The University of New South Wales, the University of Birmingham and University College Dublin) with multidisciplinary expertise such as image processing, computer vision, computational geometry, building information modelling and building energy modelling.



From left: Dr Sanghoon Lee, Huaquan Ying, Qiuchen Lu and Hui Zhou

PhD Student Named National Geographic Explorer for Research in Marine Biology



Coral reefs in the South China Sea are a biodiversity hotspot, one that is presently under attack from global climate change and regional development. In recognition of their importance and conservation status, myriad efforts for coral restoration are in development for the Chinese mainland.

However, effective restoration plans must identify a relevant historical baseline for biodiversity. It is crucial to identify what has been lost. Jonathan D. Cybulski, PhD student from the School of Biological Sciences at HKU, has been named a National Geographic Explorer and awarded US\$4,000 by the National Geographic Foundation to conduct his fieldwork on coral reefs in Sri Lanka.

Jonathan's proposed project links historic and paleoecology, archaeology, and human ecosystem interaction to tell the story of the original stressor to Hong Kong coral reefs – the slaked lime industry.

Through this National Geographic grant, Jonathan will visit Sri Lanka, one of the last remaining centres of the coral lime industry, to help understand the process of coral mining and identify any sampling bias that may exist when harvesting live coral from the reef. He will collect present coral diversity transect data, conduct interviews with local industry workers, and observe the current process, which is still similar to Hong Kong historic industry. This novel approach proposes to incorporate diversity data from preindustrial time, a period that is often ignored in modern ecology. The results of this project will detail the specific species that existed historically in the ecosystems, as well as identify ecosystem changes, with the aim of informing restoration efforts to rewind our marine environments.

The Young Explorers Grants offer opportunities to young individuals to pursue research, conservation, and exploration-related projects consistent with National Geographic's existing grant programmes. Jonathan joins the ranks of hundreds of other adventurers before him who set out to investigate, explore, and tell the story of our world's changing environment.

PhD Student Wins Best Young Scientist Award at International Symposium on Metallomics

Haibo Wang – a Department of Chemistry PhD candidate supervised by Professor Hongzhe Sun – has won the Best Young Scientist Award for the presentation and scientific achievement of her project 'Mapping protein targets of antimicrobial bismuth enables in-depth deciphering its molecular mechanisms' at the 6th International Symposium on Metallomics (ISM6), held in Vienna, Austria in August 2017. ISM6 provides a multidisciplinary platform covering all aspects of the field from method development to the role of metals in life science.

Haibo's project is about developing antimicrobial bismuth (Bi) agents against *Burkholderia cepacia complex* (*Bcc*) and exploring the molecular mechanism underlying their bactericidal activities. *Bcc* bacteria are important pathogens among immunocompromised patients suffering from the genetic disease cystic fibrosis, but current therapies that involve combinations of even two or three antibiotics can rarely eradicate the pathogen in chronically infected patients. Haibo's work shows that Bi can inhibit the growth of *Bcc* and could be a potential drug candidate for the treatment of cystic fibrosis infections.



Haibo Wang (second from right) with supervisor Professor Hongzhe Sun (second from left) and judges

Through the Global Gateway

An Alumni Tale of

Dr Carrie Gay Lei Lau

Once upon a time in the great Asian city of Hong Kong there lived a young girl called Carrie Lau. Along with changes in Hong Kong, there were changes in her life too. Together with her family she emigrated from Hong Kong to a faraway land called Canada, where she lived in another fine city called Toronto.

The move took her from a Cantonese-speaking environment in Hong Kong to a new life where English became her widely used language. Often Carrie's parents would take her to the library, where she would excitedly browse the shelves and choose her books. Her favourite English language story at that time was 'Cinderella' – a classic fairy tale.

During the ensuing formative years, our young heroine moved to and fro between Toronto and Hong Kong; her eyes were opened to the differences in cultures, societies and values.

Encouraged and supported by her family she studied hard, seized opportunities and travelled to the historical city of Boston, Massachusetts for further education. Overnight, she was magically turned into a 'Jumbo'. (No, she didn't embark upon a fast food diet of double cheeseburgers and chips; undergraduate students at Tufts are affectionately referred to as 'Jumbos'!)

It was here that she was awarded her B.A. (Tufts) and later her Ed.M. (Harvard). Her area of study was in child development, psychology and human development. She also gained hands-on experience in kindergarten classrooms.

Rather than being the end of the story, however, this was merely the beginning of a new chapter.

Dr Lau now recalls nostalgically: "I loved listening to classic stories, and 'The Giving Tree' by Shel Silverstein is the one that I was very influenced by and for me, looking back as an adult, has real meaning and is related to my life experience."

"I returned to my hometown, to Hong Kong, to contribute to education and to the community here. I wanted to give back to Hong Kong."

Now with her own international experience, she needed a university to challenge her and to extend her skill set.

"I chose to do research postgraduate study at HKU because it has a very good reputation and does a lot of local and international research. At that time I had exposure to early childhood organisations where I learnt about the Faculty of Education and the work of Professor Nirmala Rao."

The PhD study at HKU nurtured Dr Lau's broader interest in early childhood education and it became

more specifically centred on the learning of English as a second language within the context of Hong Kong. On the importance of learning English, she says: "English is a gateway for global competitiveness; we need fluency in this language."

Dr Lau recalls vividly one occasion during an English vocabulary test when a five year old was presented with a picture of a bed but she clearly had no idea what a bed was. When asked more about the picture, the young child replied that she came from a poor family and wanted to work hard and learn more so she could earn money and contribute to the family. Dr Lau could see that the child was at a disadvantage. "I remember taking the bus back from that kindergarten and just sitting there and thinking: what can I do?"

"As a student I had ideals, I thought I could do a lot alone, but it's not a lone journey when it comes to making changes."

Dr Lau's passion for her work has motivated her to take part as a team player in a number of projects, taking full advantage of all that HKU has to offer.

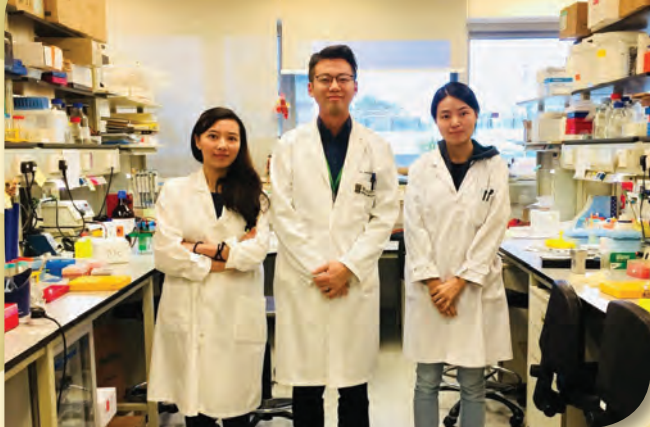
Now, as Assistant Professor, Dr Lau's current projects include developing and validating a classroom assessment tool to measure the quality of English language teaching in early childhood settings and evaluating the effectiveness of the provision of quality education under the Free Quality Kindergarten Education Policy in Hong Kong.

Dr Lau teaches courses on child development, English as a second language and home-school-community partnership at the Bachelor's, Postgraduate Diploma and Master's levels in the Faculty of Education. She is also Deputy Programme Director of the recently introduced BSc in Applied Child Development. This year she was awarded a U21 Fellowship; a trip to the University of Melbourne in 2018 will see her research take her onto the international stage.

Like 'The Giving Tree', Dr Lau is determined through her work to help others and to give back to her community, but, like Cinderella, she knows that you need a strong team to make transformations and thereby go through the 'Global Gateway'.



Dr Carrie Lau (centre) with students



From left: Dr Jessica Liu, Dr Martin Cheung and Yanxia Rao

Discovery of Mechanisms Governing Neural Crest Cell Polarity and Motility

Directed cell migration is fundamental to our life, from organ formation to tissue repair, and it requires prior establishment of cell polarity likely by uneven distribution of cellular proteins. How such polarity and directed migration is controlled, however, remains controversial. A research group led by Dr Martin Cheung of HKU's School of Biomedical Sciences – with group members including PhD graduate Dr Jessica Aijia Liu (Department of Surgery) and PhD student

and Hong Kong PhD Fellowship awardee Yanxia Rao (School of Biomedical Sciences) – has been studying this important issue in embryonic trunk neural crest cells. As these cells are highly migratory and essential for peripheral nervous system development, abnormal neural crest cell migration could lead to various human diseases. In this study, the group used chick embryos as a model system and found that a tumour metastasis suppressor, DLC1 (Deleted in Liver Cancer 1), is asymmetrically localised in the cytoplasm of the migratory neural crest cell front that restricts highly activated RHOA, which plays an important role in regulating actin cytoskeleton organisation for cell migration, at the cell rear to determine neural crest polarised morphology and motility. Importantly, the association of DLC1 with NEDD9, a non-catalytic scaffolding protein, is critical for its asymmetric localisation and differential RHOA activity. Expression of DLC1 and NEDD9 are regulated by SOXE genes which encode transcriptional factors to specify neural crest identity. In summary, the study has unravelled an unexpected role of an inhibitor of tumour metastasis DLC1 in governing neural crest polarity and motility, as well as a novel SOXEDLC1/NEDD9-RHOA regulatory axis to orient neural crest cells in the direction of movement. The findings of the research were published in *Nature Communications* in October 2017.

Fruitful Co-supervision Yields Tomatoes with Enhanced Antioxidant Properties

The fruitful co-supervision of University Postgraduate Fellowship awardee Dr Pan Liao by Professor Mee Len Chye (Wilson and Amelia Wong Professor in Plant Biotechnology) and Dr Mingfu Wang (Associate Professor) of HKU's School of Biological Sciences in collaboration with the Institut de Biologie Moléculaire des Plantes (Centre National de la Recherche Scientifique (CNRS), Strasbourg, France) has yielded a new strategy to significantly boost the antioxidant properties of tomatoes by simultaneously increasing the amount of health-promoting vitamin E by almost six times and doubling both provitamin A and lycopene.

The research group – including Professor Thomas J. Bach from the Institut de Biologie Moléculaire des Plantes, CNRS – manipulated the plant isoprenoid pathway by utilising S359A, a variant of 3-hydroxy-3-methylglutaryl-coenzyme A synthase (HMGS) in which amino acid residue 'serine' at position 359 was switched to 'alanine'. In their prior research, S359A was shown to exhibit 10-fold higher enzyme activity and to increase phytosterol content when it was introduced to the model plant *Arabidopsis*.

The tomato fruits transformed by introducing S359A did not differ from control tomatoes in appearance and size. However, the overexpression of HMGS resulted in a drastic increase in phytosterols (94%), squalene (210%), and vitamin E (α -tocopherol) (494%). The carotenoid extracts, with increased provitamin A (169%) and lycopene (111%), also had 89.5% to 96.5% higher antioxidant activity than the control.

Professor Chye suggested that increasing the health-promoting components in crops would add value to both the human diet and feed for livestock/aquaculture. Dr Wang added that extracts with enriched phytosterols, vitamin E and carotenoids can be used in the production of anti-ageing cream and sun-care lotion. The research findings were reported in the *Plant Biotechnology Journal* in October 2017.

(This article is adapted from <https://www.hku.hk/press/press-releases/detail/17055.html>.)



From left: Dr Mingfu Wang, Professor Mee Len Chye and Dr Pan Liao

A Year at the Harvard-Yenching Institute: Some Reflections

Each academic year, the Harvard-Yenching Institute (HYI) brings together a collection of scholars (faculty members) and fellows (PhD candidates) from various East Asian universities under the auspices of different programmes to spend time at Harvard University. As someone who had neither taught nor researched in the United States at length before, I was extremely grateful to be given this opportunity by HKU to visit Harvard University for a year on an HYI Fellowship. At Harvard, I was affiliated with the Faculty of Arts and Sciences (FAS) and also the Law School.

Throughout the year, scholars and fellows were extremely well looked after by the Institute Director, Professor Elizabeth Perry, and her team. After the orientation period, life for most of us comprised an ongoing cycle of talks, seminars and lunchtime presentations interspersed between bouts of our own research and writing. Scholars work in conjunction with HYI assigned mentors on their projects. I was very honoured to have worked with Professors Ezra Vogel and Professor Robert Weller who provided me invaluable advice on my research. Beyond work, the social life at the Institute was also vibrant. The HYI staff were always organising various social events such as parties, film screenings, city tours, apple picking trips and museum visits, with a longer trip over the winter to Bretton Woods ski resort and a four-day New York City sightseeing trip in spring – all expenses generously covered by the HYI.

The Harvard FAS is a huge faculty. In HKU terms, it would be the equivalent of the Faculties of Arts, Social Sciences and Science combined, with a wide range of programmes and initiatives. I was struck by how free spirited, happy and motivated the students all appeared to be, as they are able to pick and choose freely their own subject combinations from 49 undergraduate fields of concentration to customise their academic career. Graduate students too are extremely spoiled for choice in terms of coursework, research expertise and resources available to help them in their work. I think this freedom to pick and choose is particularly important for

blue sky research, creative new work and disciplinary breakthroughs.

As an Area Studies specialist, my own work straddles geographical divides and disciplinary boundaries. I was astonished by the extent to which interdisciplinarity is institutionalised and adopted by teachers, researchers and students alike. This synergy is seen at the frequent cutting-edge seminars and workshops held by the various centres at FAS – such as the Asia Center, Fairbank Center for Chinese Studies, Reischauer Institute of Japanese Studies, Korea Institute, and Weatherhead Center for International Affairs – or by other faculties such as the Law School, Kennedy School or Business School. These seminars and workshops welcome all scholars regardless of their disciplines, affiliations and seniority. For me, it was often a surreal experience to go into a seminar and find, for instance, twenty or so specialists from different disciplines and schools in heated discussion, with topics as diverse as Donald Trump's election, China's Cultural Revolution and Japan's domestic politics. The sessions were always intense and rich, but never boring. I found them particularly rewarding because I often left the room with questions and thoughts that I had not had before.

The intellectual dynamism comes not only from the eminent speakers and terrific discussants, but also from the steady stream of visitors participating in the academic life there. Where else could one in a given week say listen to a talk by a New York Times journalist who investigated China's elite corruption, lunch with a Stanford nuclear scientist who spent his life obsessing about whether North Korea has ICBM capable missiles, have tea with the lead Chinese archaeologist who led the excavation of the Terracotta Warriors and wrap up the week listening to colleagues argue about Sanskrit manuscripts in China, Korean pop culture, gender discrimination in Japan and other exotic topics over hotpot. If there is one thing I have learnt this year through interactions with these various colleagues, it is that the best research comes from having passion for the research. Knowing your own research passions and also your limitations can be particularly empowering. As the Irish poet Y.B. Yeats has said, "Education is not the filling of a pail, but rather the lighting of a fire". Hence, self-respecting researchers should never let anyone but themselves dictate their research focus or career direction. I am extremely grateful to the University of Hong Kong and the Faculty of Arts for supporting my sabbatical leave. It is my sincere hope that our graduate students, particularly those doing their PhDs, should make the most of the ample fellowship opportunities in various research universities worldwide – either through exchanges or postdoctoral fellowships – to experience the diverse research environment out there in order to continually enhance their research outlook and expertise.

Dr Victor Teo

*Assistant Professor, School of Modern Languages
and Cultures (Japan Studies)*



Harvard Yenching Institute 2016 - 2017

Dr Teo (top row, second from left) with other HYI Fellows

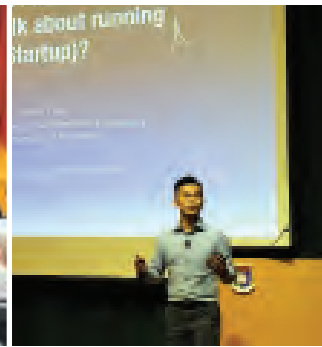
Stimulating Innovation and Entrepreneurship

A Workshop on Innovation and Entrepreneurship, co-organised by the Graduate School and the Graduate House, was held on October 26, 2017 at the Wang Gungwu Lecture Hall, attracting over 80 students and staff.

In his opening remarks, Professor Andy Hor, Vice-President and Pro-Vice-Chancellor (Research), encouraged RPg students to participate more actively in activities related to innovation and entrepreneurship. Later on in the Workshop, Professor Anthony Yeh, Chair Professor of the Department of Urban Planning and Design, suggested a list of exhibitions and competitions that RPg students could join to test their ideas. He further elaborated on the 'Challenge Cup' National Competition Hong Kong Regional Final – Hong Kong University Student Innovation and Entrepreneurship

Competition and gave students some tips for improving their presentation.

Dr Shin Cheul Kim, Director of the Technology Transfer Office, was invited to talk about the innovation process. Participants learned about the importance of patents. Two other speakers, both from the Department of Electrical and Electronic Engineering, shared their experience as entrepreneurs. Professor Victor Li, Chair of Information Engineering, co-founded Accosys Limited with his student Dr Miles Wen. Accosys Limited is an artificial intelligence (AI) start-up building AI-powered multilingual chatbots that enhance efficiency in call centres. Dr Kevin Tsia, Associate Professor, founded Conzeb Limited, which applies an ultrafast cellular imaging technology in developing a diagnostics tool for high-speed cancer pre-screening.



An Immersion in Academic Writing: Writing Boot Camp 2017

Following the success of the last two years, the Graduate School launched the third Writing Boot Camp in October 2017. The participating RPg students from different faculties – who had started writing their theses and wanted to improve their writing productivity at this critical stage of their education – engaged in several hours of daily intensive writing over the three and a half days of the Boot Camp. The students also gained insights from Dr Chee Hon Chan and Dr Siu-Po Lee, awardees of the Outstanding Research Postgraduate Student Award and Li Ka Shing Prize respectively, who generously shared their strategies for successful thesis completion at HKU. This intensive writing time and experience sharing during the Boot Camp were much valued by the participating students, as evidenced by some of their encouraging evaluative comments:

"It provided a communal writing experience with proper writing support (e.g. the facilitators' timely and relevant suggestions and comments) in a quiet environment that removed me from most distractions. I could work more effectively."

"Personal writing time was a good training to 'force' me to write. Previously, I only wrote when I had ideas/ inspiration. The personal writing time was thus my time to practise what had been shared by the speakers, such as making an outline, and setting specific and realistic goals."

"I found the tutor's experience sharing and lectures about writing strategies, goal setting, and solutions for overcoming writer's block most useful."

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