香港中文大學醫學院
Faculty of Medicine
The Chinese University of Hong Kong

40th Anniversary
四十週年

School of Biomedical Sciences

BIENNIAL HIGHLIGHTS 2020-2022

Contents

DIRECTOR'S MESSAGE

Challenges and Achievements

I feel immensely proud and honoured to present the many notable achievements attained by our School in 2020-21 and 2021-22, the years that also went down in history as those struck by an unprecedented global pandemic. Human lives were at stake and the importance of biomedical research and studies have emerged to become one of the forefronts of this fight against COVID-19. Our dedicated scientists have taken proactive roles in contributing to scientific research despite all limitations, whereas our teaching staff have put enormous efforts with the greatest flexibility in adjusting their teaching approaches and research activities, in order to better respond to the ever-changing situation while maintaining the high quality of education we delivered.

Research Advancements

We continued to soar in our various research initiatives. In face of the global pandemic, our expertise and contributions have only become more important than ever. Principal Investigators under our three Thematic Research Programs took part in collaborative and interdisciplinary research projects, among which included projects that contributed to combating the COVID-19 virus. We also managed to expand the Core Laboratories services by establishing three new technological platforms, namely the Single Cell Omics Core, the Genomic Core and the Bioinformatics Core. Translating scientific excellence into practical outputs that benefit human life is also one of the key areas that we focus on. An exemplary example would be the impact case study carried out by Prof. John Rudd on preventing nausea and vomiting in cancer patients while

undergoing cancer treatment, which was justifiably selected by the University Grants Committee to be featured in the TV Programme Series "Living with the Benefits of Research" broadcasted in December 2021.

Nurturing Talents

In the years under review, we were particularly impressed by the prestigious awards and scholarships obtained by our students and teaching staff, who have made remarkable efforts in being versatile to adapt into new teaching, learning and assessment methods facing the challenges posed by the pandemic. Our Division of Education also strived to be innovative in the development of different pedagogical projects, enabling an effective and timely change of teaching method to virtual mode while exploring every possible attempt to make virtual learning as interactive as possible.

Outreach Partnership

Despite the travel and social distancing restrictions in place, we have made significant efforts to strengthen partnerships with external parties and collaborators. One of the annual flagship events, SBS Research Days, were held successfully in collaboration with the Hong Kong-Nordic Research Network and the Hong Kong Society for Developmental Biology, with the aims to create greater synergies and to enable the collision of new research ideas. We have continued to strengthen networking with industry partners so as to ensure that our students are able to obtain the necessary opportunities for hands-on training and internships. We have also maintained collaborative partnerships with over 20 mainland and overseas academic institutions, and took active participation in academic activities and meetings, be it school-level or university-level.

The Way Ahead

Looking ahead, we are committed to further enhancing our research excellence, particularly through capacity building and talent acquisition. Through the use of cutting-edge technology, we endeavour to engage in research projects that are of great impact, collaborative and translational values in order to bring greater benefits to the human community. We will also actively broaden our academic network by connecting with outstanding basic and clinical scientists around the globe for in-depth exchanges and collaborations. With the concerted efforts of our staff and students, we are confident and all the more ready to make important and active contributions to various efforts in biomedicine initiated by the University.

We pride ourselves in being one of the leading providers of biomedical sciences education in Asia, and we do not stop there. Our team of expertise is determined to continue developing innovative e-learning tools for the purposes of teaching and learning, as well as to strengthen the capacity of our pedagogical research in order to ensure a high standard of preclinical and biomedical sciences education. Regular reviews on our existing programmes are also crucial, so that new academic and experiential learning components could be introduced in a timely manner to our curriculum in order to keep up with the rapid advancement in biomedical science.

Concluding Remarks

The many achievements made by the School could not be possible without the dedication and hard work done by our investigators, staff and students. I was consistently impressed by their commitment in the pursuit of research and educational excellence, and I owe them for where the School stands today. My sincere gratitude also goes towards the University management, the Faculty of Medicine, our alumni, generous donors, as well as our academic and industry partners for their unwavering trust and support throughout the years.

I hope all of you will enjoy reading this biennial report as much as we enjoy putting it together for you. When you finally turn to the last page of this booklet, I hope you will be inspired by what we did, or better still, be motivated to get involved with us to accomplish what we could.

Professor Andrew M. Chan
Professor and Director
School of Biomedical Sciences
The Chinese University of Hong Kong

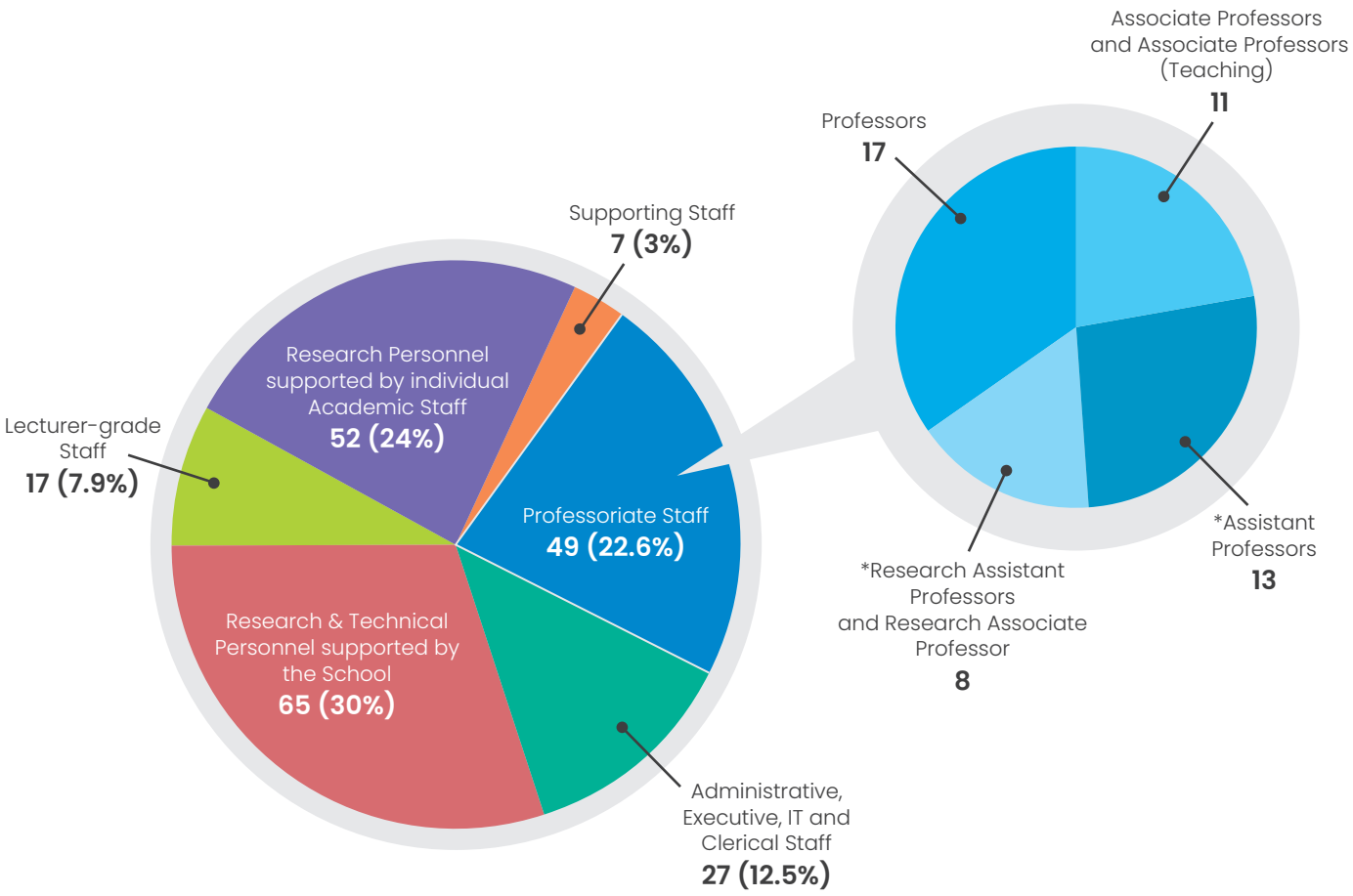

OVERVIEW

OVERVIEW

Staff Establishment

As of 30 June 2022, the School of Biomedical Sciences had a total of 217 staff members, with the following distribution:

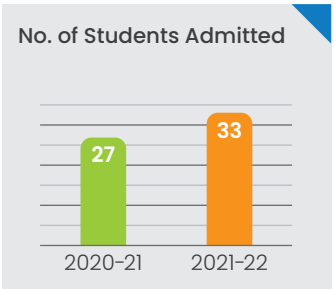
Staff Establishment of the School of Biomedical Sciences (as of June 2022)

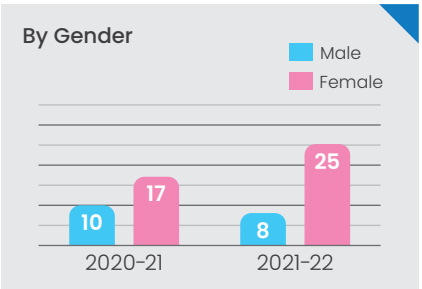


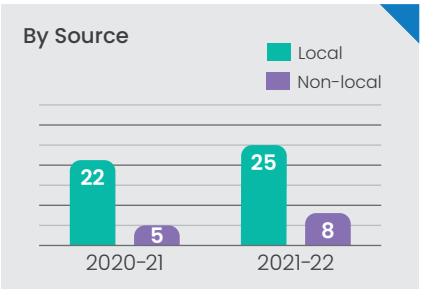
* *Including academic staff of iTERM (Institute for Tissue Engineering and Regenerative Medicine) who are affiliated with the SBS.*

Student Admission in 2020-21 and 2021–22

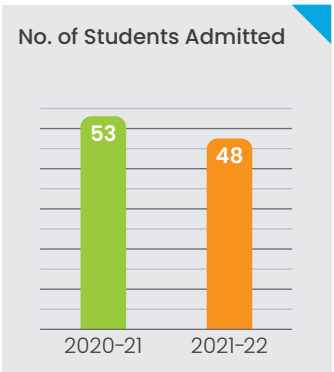
Bachelor of Science (BSc) in Biomedical Sciences Programme

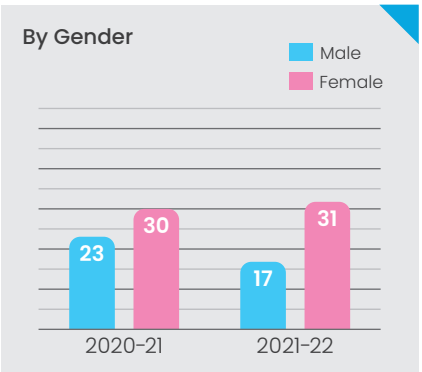


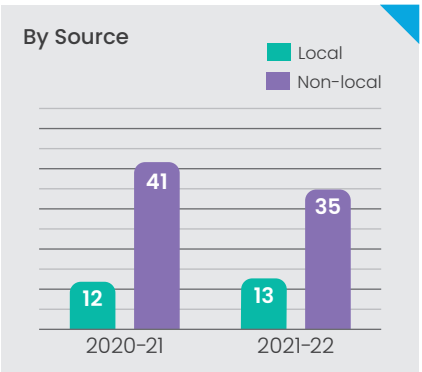




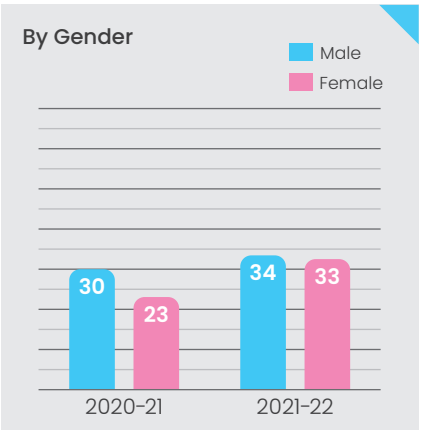
MPhil-PhD in Biomedical Sciences Programme

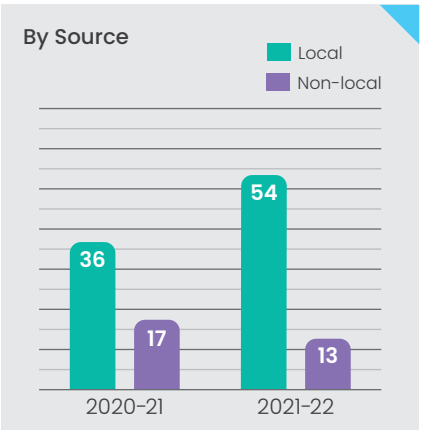






Master of Science (MSc) in Genomics and Bioinformatics Programme





RESEARCH EXCELLENCE

RESEARCH EXCELLENCE

Overview

Our School had taken the following initiatives to add values to existing research activities, connect different themes, encourage greater collaboration, and eventually address multi-disciplinary research challenges, so as to better respond to the fast-changing research landscape:

- A new matching funding scheme was introduced in 2021-22 to hire Research Assistant Professors under the internal Incentive Scheme, which aims to recruit outstanding researchers and to enrich the research talent pool of the School.
- Workshops and seminars were organized where Principal Investigators (P.I.) gathered to share their research outcomes, experience and insights for developing new and innovative projects.
- Launched the Technological Workshop Series in 2020 to keep School members up-to-date on the top-notched core services and technologies.

Highlighted Events in 2021 & 2022

The SBS Research Day is an annual flagship event providing an excellent platform for School members, clinical colleagues and researchers from other institutions to share their latest scientific insights.

SBS Virtual Research Day 2021 cum Nordic Symposium (16-17 June 2021)

The event was conducted online and attracted over 300 participants from local and Nordic universities, including the University of Oslo, Karolinska Institutet, Norwegian University of Science and Technology, and the University of Copenhagen.

The keynote speakers were Prof. Jason Seong-Jin Kim from GILO Institute, Korea; Prof. Vilhelm Bohr from the University of Copenhagen, Denmark; Prof. Kai Liu from The Hong Kong University of Science and Technology; and Prof. Megan Y.P. Ho from the Department of Biomedical Engineering, CUHK.

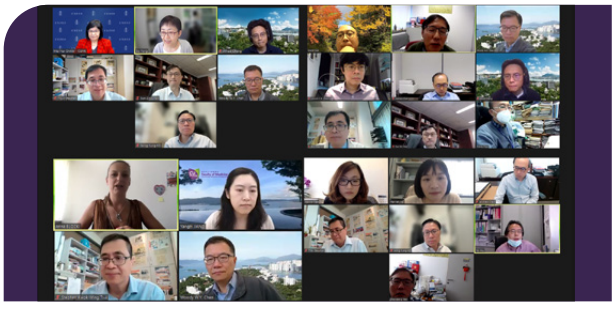
SBS Research Day 2022 (16-17 June 2022)

Jointly organized with the Hong Kong Society for Developmental Biology, the event was attended by over 300 participants. Sixteen speakers from local and mainland tertiary institutions gave lectures on the theme "Advances in Developmental and Stem Cell Biology", which facilitated fruitful and stimulating discussions.

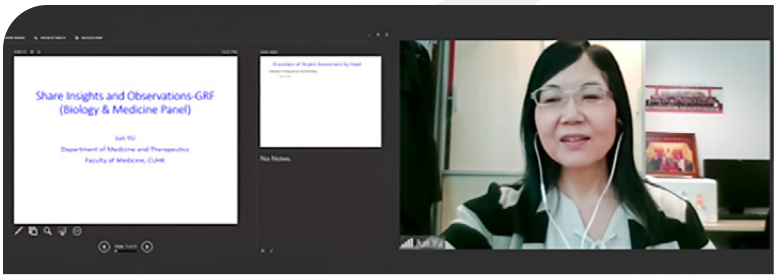
Frontiers in Biomedical Sciences Seminar Series and Theme Seminars

Renowned local and international scholars were invited to give seminars to share their latest research findings and experiences in biomedical sciences with our investigators and students. A total of eight and seven seminars were held in 2020-21 and 2021-22, respectively.

SBS Principal Investigator (PI) Seminar Series



Grant Writing Workshop Series



Establishment of Single Cell Omics Core and Online Seminars (2021)

Following the completion of two technological workshops held on 29 and 30 July 2020, the Single Cell Omics Core was established in 2021 to further expand our top-notched core services. Two online seminars were organized, namely "An introduction of the Single Cell Omics Core", and "Official Launch of the Single-Cell RNA Sequencing Service".

Participation in the Centre for Neuromusculoskeletal Restorative Medicine (CNRM)

A number of our School members have joined CNRM under Health@InnoHK as Principal Investigators since March 2022. The Centre gathers the talents and expertise from CUHK and the Karolinska Institutet (KI) in Sweden in stem cells, biomaterials, 3D bioprinting, tissue engineering, as well as personalized and translational medicine.

Prestigious Research Awards Received by Academic Staff

Awardee	Award Title
Prof. Alfred S.L. Cheng	Young Researcher Award 2019, CUHK
Prof. Alfred S.L. Cheng	The 10th Health and Medical Research Fund (HMRF) Anniversary Award
Prof. Jacque P.K. Ip	Faculty Innovation Award 2020, Faculty of Medicine, CUHK
Prof. Tian Xiaoyu	The United College Mr. and Mrs. Joseph W.N. Cheung Research Excellence Award 2022
Prof. Yao Xiaoqiang	Second Prize of Chinese Medical Science and Technology Award 2020

Research Outputs

Peer-reviewed Publications

In the reporting period from 1 July 2020 to 30 June 2021, each of our 35 School investigators published at least one full-length peer-reviewed scientific paper. The School produced a total of 170 academic publications, with an average of 4.15 peer-reviewed research papers per investigator.

In the period from 1 July 2021 to 30 June 2022, each of our 35 investigators published at least one full-length peer-reviewed scientific paper. The School produced a total of 161 academic publications, with an average of 4.03 peer-reviewed research papers per investigator.

The details are as follows:

Category	Quantity	
	2020–21	2021–22
Scholarly books, monographs and chapters	2	3
Journal publications	170	161
Patents	4	18
Conference papers/abstracts	78	47
All other outputs (journal editor, review of books or software, postgraduate research theses and other outputs)	10	5
Total:	**264**	**234**

Data source: downloaded from AIMS in January 2023

Papers with High Impact Factors

During the reporting period, SBS PIs published 36 research papers in journals with Impact Factors (IF) higher than or equal to 10, as first/co-first/corresponding/co-corresponding authors. The details are as follows:

2020-2021

Author(s) from the School	Title of the Published Paper / Name of Journal	Publication Date
Prof. So Hon-cheong*	Exploring Diseases/Traits and Blood Proteins Causally Related to Expression of ACE2, the Putative Receptor of SARS-CoV-2: A Mendelian Randomization Analysis Highlights Tentative Relevance of Diabetes-Related Traits. *Diabetes Care*	Jul 2020
Prof. Cao Qin#	A Unified Framework for Integrative Study of Heterogeneous Gene Regulatory Mechanisms. *Nature Machine Intelligence*	Aug 2020
Prof. Vincent C.K. Cheung#	Plasticity of muscle synergies through fractionation and merging during development and training of human runners. *Nature Communications*	Aug 2020
Prof. Xia Yin*	Hippo kinases MST1 and MST2 control the differentiation of the epididymal initial segment via the MEK-ERK pathway. *Cell Death and Differentiation*	Oct 2020

* *Corresponding author/co-corresponding author*
\# *First/co-first author*

Author(s) from the School	Title of the Published Paper / Name of Journal	Publication Date
Prof. Chan Hon-fai*	Modulation of macrophages by bioactive glass/sodium alginate hydrogel is crucial in skin regeneration enhancement. *Biomaterials*	Oct 2020
Prof. Tian Xiaoyu*	Pancreatic Sirtuin 3 Deficiency Promotes Hepatic Steatosis by Enhancing 5-Hydroxytryptamine Synthesis in Mice With Diet-Induced Obesity. *Diabetes*	Jan 2021
Prof. Wang Dan# Prof. Elmer D.F. Ker#*	Combinatorial mechanical gradation and growth factor biopatterning strategy for spatially controlled bone-tendon-like cell differentiation and tissue formation. *NPG Asia Materials*	Mar 2021
Prof. Alfred S.L. Cheng*	A selective HDAC8 inhibitor potentiates antitumor immunity and efficacy of immune checkpoint blockade in hepatocellular carcinoma. *Science Translational Medicine*	Apr 2021
Prof. Zhou Jingying* Prof. Alfred S.L. Cheng*	Cell cycle-related kinase reprograms the liver immune microenvironment to promote cancer metastasis. *Cellular & Molecular Immunology*	Apr 2021
Prof. Franky L. Chan*	Interplay between orphan nuclear receptors and androgen receptor-dependent or -independent growth signalings in prostate cancer. *Molecular Aspects of Medicine*	Apr 2021
Prof. Ke Ya*	Apolipoprotein E deficiency induces a progressive increase in tissue iron contents with age in mice. *Redox Biology*	Apr 2021
Prof. Fok Kin-lam#	Spatio-temporal landscape of mouse epididymal cells and specific mitochondria-rich segments defined by large-scale single-cell RNA-seq. *Cell Discovery*	May 2021
Prof. Wang Dan# Prof. Anna Blocki Prof. Rocky S. Tuan Prof. Elmer D.F. Ker*	Engineering multi-tissue units for regenerative Medicine: Bone-tendon-muscle units of the rotator cuff. *Biomaterials*	May 2021
Prof. Lin Ge*	Polyoxypregnanes as safe, potent and specific ABCB1-inhibitory pro-drugs to overcome multidrug resistance in cancer chemotherapy *in vitro* and *in vivo*. *Acta Pharmaceutica Sinica B*	Jul 2021
Prof. He Yisheng# Prof. Stephen K.W. Tsui Prof. Lin Ge*	Mutational signature analysis reveals widespread contribution of pyrrolizidine alkaloid exposure to human liver cancer. *Hepatology*	Jul 2021
Prof. Huang Yu*	KLF2 mediates the suppressive effect of laminar flow on vascular calcification by inhibiting endothelial BMP/SMAD1/5 signaling. *Circulation Research*	Aug 2021
Prof. Wang Wuming Dr. Lu Gang* Prof. Chan Wai-yee*	Pten Regulates Cardiomyocyte Differentiation by Modulating Non-CG Methylation via Dnmt3. *Advanced Science*	Sep 2021
Prof. Tian Xiaoyu*	Loss of myeloid Bmal1 exacerbates hypertensive vascular remodelling through interaction with STAT6 in mice. *Cardiovascular Research*	Nov 2021
Prof. He Yisheng Prof. Lin Ge*	The key role of gut-liver axis in pyrrolizidine alkaloid-induced hepatotoxicity and enterotoxicity. *Acta Pharmaceutica Sinica B*	Dec 2021
Prof. Fok Kin-lam*	CD147 deficiency is associated with impaired sperm motility/acrosome reaction and offers a therapeutic target for asthenozoospermia. *Molecular Therapy – Nucleic Acid*	Dec 2021

* *Corresponding author/co-corresponding author*
\# *First/co-first author*

Author(s) from the School	Title of the Published Paper / Name of Journal	Publication Date
Prof. Hui Xiaoyan#*	Mitochondrial uncoupling protein 1 antagonizes atherosclerosis by blocking NLRP3 inflammasome–dependent interleukin-1β production. *Science Advances*	Dec 2021
Prof. Rocky S. Tuan* Prof. Anna Blocki*	Dextran sulfate-amplified extracellular matrix deposition promotes osteogenic differentiation of mesenchymal stem cells. *Acta Biomaterialia*	Dec 2021
Prof. Hui Xiaoyan*	Hepatic CPT1A facilitates liver–adipose cross talk via induction of FGF21 in mice. *Diabetes*	Jan 2022
Prof. Jiang Xiaohua*	Human pluripotent stem cell-derived ectomesenchymal stromal cells promote more robust functional recovery than umbilical cord-derived mesenchymal stromal cells after hypoxic-ischaemic brain damage. *Theranostics*	Jan 2022
Prof. Sham Mai-har Prof. Chan Wood-yee*	Direct interaction of Sox10 with cadherin-19 mediates early sacral neural crest cell migration: Implications for enteric nervous system development defects. *Gastroenterology*	Jan 2022
Prof. Chen Yangchao*	CircRTN4 promotes pancreatic cancer progression through a novel CircRNA-miRNA-lncRNA pathway and stabilizing epithelial-mesenchymal transition protein. *Molecular Cancer*	Jan 2022
Prof. Tian Xiaoyu*	Endothelial PPARδ facilitates the post-ischemic vascular repair through interaction with HIF1α. *Theranostics*	Jan 2022
Prof. He Yisheng Prof. Lin Ge*	Dietary alcohol exacerbates the hepatotoxicity induced by pyrrolizidine alkaloids: Hazard from food contamination. *Journal of Hazardous Materials*	Feb 2022
Prof. Cao Qin#*	Reusability report: Capturing properties of biological objects and their relationships using graph neural networks. *Nature Machine Intelligence*	Mar 2022
Prof. Tian Xiaoyu*	SOX4 is a novel phenotypic regulator of endothelial cells in atherosclerosis revealed by single-cell analysis. *Journal of Advanced Research*	Mar 2022
Prof. Chen Yangchao*	The establishment of CDK9/RNA PolII/H3K4me3/DNA methylation feedback promotes HOTAIR expression by RNA elongation enhancement in cancer. *Molecular Therapy*	Apr 2022
Prof. Anna Blocki*	Engineering microparticles based on solidified stem cell secretome with an augmented pro-angiogenic factor portfolio for therapeutic angiogenesis. *Bioactive Materials*	Apr 2022
Prof. Zhou Jingying * Prof. Tian Xiaoyu Prof. Alfred S.L. Cheng*	Aberrant cholesterol metabolic signaling impairs antitumor immunosurveillance through natural killer T cell dysfunction in obese liver. *Cellular & Molecular Immunology*	May 2022
Prof. Stephen K.W. Tsui*	Comparative genomics reveals Insights into the divergent evolution of astigmatic mites and household pest adaptations. *Mol Biol Evol.*	May 2022
Prof. Lee Tin-lap	Distinctive molecular features of regenerative stem cells in the damaged male germline. *Nature Communications*	May 2022
Prof. Jiang Xiaohua*	Human embryonic stem cell-derived neural crest model unveils CD55 as a cancer stem cell regulator for therapeutic targeting in MYCN-amplified neuroblastoma. *Neuro-Oncology*	Jun 2022

* *Corresponding author/co-corresponding author*
\# *First/co-first author*

High-impact Paper Highlights

Developmental and Regenerative Biology (DRB)

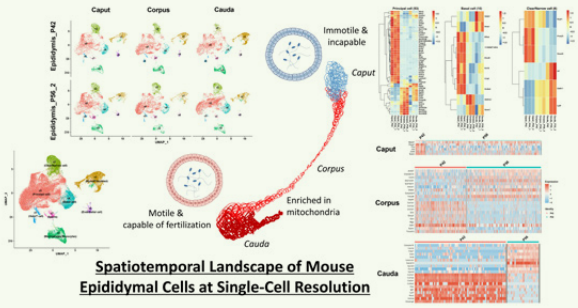
Author from the School	Title of the Published Paper / Name of Journal / IF	Publication Date
Prof. Fok Kin-lam#	Spatio-temporal landscape of mouse epididymal cells and specific mitochondria-rich segments defined by large-scale single-cell RNA-seq. *Cell Discovery* [IF/5-Yr IF(2021): 38.09 / 19.645]	May 2021

A Cell Atlas of Mouse Epididymis for Understanding Sperm Maturation

Male infertility is a major health problem that affects millions of men worldwide. The underlying causes of male infertility are still largely unknown. While the epididymis plays a crucial role in sperm maturation, a high-resolution cell atlas of the epididymis has yet to be established.

In this study, we reported a single-cell transcriptome atlas of the mouse epididymis from over 40,000 cells. We were able to depict the spatiotemporal gene expression during the first and subsequent waves of sperm production. We identified eight major cell types and revealed subpopulations of principal cells, basal cells, clear/narrow cells, and halo/T cells. We also uncovered unexpected enrichment of mitochondria and mitochondrial transcription in the corpus and cauda that may be involved in sperm maturation. The characterization of the cellular landscape and organization of the mouse epididymis could serve as a valuable resource for understanding the epididymal function and sperm maturation. This information could be used to develop new diagnoses and therapies for male infertility.

Prof. Fok Kin-lam
(1st from left, back row)

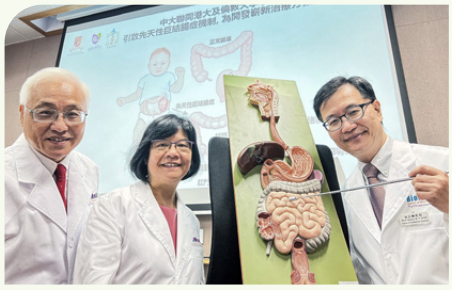


Authors from the School	Title of the Published Paper / Name of Journal / IF	Publication Date
Prof. Sham Mai-har Prof. Chan Wood-yee*	Direct interaction of Sox10 with cadherin-19 mediates early sacral neural crest cell migration: Implications for enteric nervous system development defects. *Gastroenterology* [IF/5-Yr IF(2021): 33.883 / 29.175]	Jan 2022

School Members Decipher How Gene Mutation Leads to Congenital Disease

Hirschsprung's Disease (HSCR) is a life threatening congenital gastrointestinal (GI) motility/movement disorder affecting 1 in 5,000 newborn babies. The main pathology is the absence or reduction of neurons in the colon, leading to GI problems such as faecal incontinence and intestinal infection which may linger throughout the rest of the babies' lives even after surgical removal of the disease-affected gut segment.

A new study has found that mutation in the Sox10 gene retarded the migration of neural progenitor cells, which led to a deficiency in neural cells in the gut, resulting in gut motility problem. It further showed that Sox10 gene mutation could lead to a reduction of cadherin-19, a molecule essential in regulating the early migration of neural progenitor cells to the gut. The new findings not only unravelled the mechanism of how Sox10 mutation leads to HSCR, but also suggested that cadherin-19 could be a potential therapeutic target for HSCR.



Project leader Prof. Chan Wood-yee (right) with his collaborators Prof. Sham Mai-har (middle) and Prof. Paul Tam (left)

Research team of
Prof. Chan Wood-yee (left)

Cancer Biology and Experimental Therapeutics (CBET)

Author from the School	Title of the Published Paper / Name of Journal / IF	Publication Date
Prof. So Hon-cheong*	Exploring Diseases/Traits and Blood Proteins Causally Related to Expression of ACE2, the Putative Receptor of SARS-CoV-2: A Mendelian Randomization Analysis Highlights Tentative Relevance of Diabetes-Related Traits. *Diabetes Care* [IF/5-Yr IF(2020): 19.112 / 17.067]	Jul 2020

A Mendelian Randomization Analysis Supports Diabetes as a Casual Risk Factor for Severe COVID-19

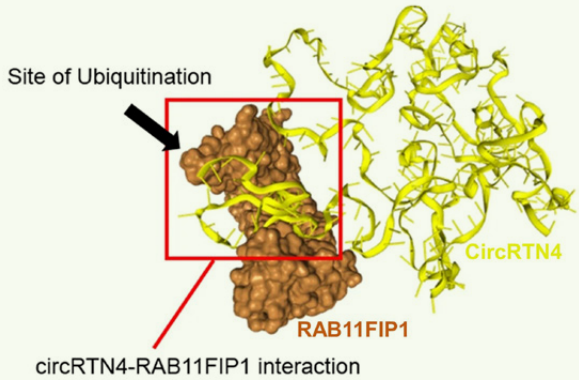
COVID-19 has become one of the most important pandemics in recent history. There was an urgent need to control the spread of the disease to susceptible groups and to identify effective treatments. As a result, we explored causal risk factors affecting risk to infection and prioritize drug repositioning candidates, based on a method known as Mendelian Randomization (MR). The study was conducted during the early stages of the pandemic, when the causal risk factors and pathophysiology of COVID-19 were still barely understood. It was found out that diabetes was a causal risk factor for severe COVID-19, shedding light on a possible mechanism underlying the increased susceptibility. In addition, we also identified a number of drugs that may target proteins altering ACE2 expression. One of the top-ranked drugs, fostamatinib, was subsequently tested in clinical trials and showed significant effects in reducing the severity of COVID-19 (see https://doi.org/10.1093/cid/ciab732). This showcased the potential of our novel framework in identifying new repositioning candidates to treat COVID-19.

Prof. So Hon-cheong

Author from the School	Title of the Published Paper / Name of Journal / IF	Publication Date
Prof. Chen Yangchao*	CircRTN4 promotes pancreatic cancer progression through a novel CircRNA-miRNA-lncRNA pathway and stabilizing epithelial-mesenchymal transition protein. *Molecular Cancer* [IF/5-Yr IF(2021): 41.444 / 30.612]	Jan 2022

CircRTN4 Promotes Pancreatic Ductal Adenocarcinoma Growth and Liver Metastasis through Protein Stabilization

Pancreatic ductal adenocarcinoma (PDAC) is a deadly disease with extremely low overall survival rate of 9%, due to the lack of promising diagnosis and therapeutics. Circular RNAs (circRNAs) are a novel type of non-coding RNAs that play important roles in many biological processes and disease development. However, the detailed mechanism underlying the critical roles of circRNAs in PDAC remains largely unexplored.



circRTN4-RAB11FIP1 interaction

We profiled circRNAs expression pattern in PDAC cells and identified an upregulated circRTN4, which promoted PDAC tumor growth and liver metastasis. Mechanistically, circRTN4 stabilized an important epithelial-mesenchymal transition (EMT)-driver protein called RAB11FIP1, which in turn promoted the oncogenes expression in PDAC. This study revealed the oncogenic roles of circRNAs in PDAC and uncovered novel gene-regulating mechanisms of circRNAs through stabilizing their interacting proteins. The upregulated circRTN4 can be a promising therapeutic target in PDAC.

Neural, Vascular, and Metabolic Biology (NVBM)

Author from the School	Title of the Published Paper / Name of Journal / IF	Publication Date
Prof. Vincent C.K. Cheung#	Plasticity of muscle synergies through fractionation and merging during development and training of human runners. *Nature Communications* [IF/5-Yr IF(2020): 14.919 / 15.805	Aug 2020

Understanding Neural Control of Running for Improving Stroke Rehabilitation

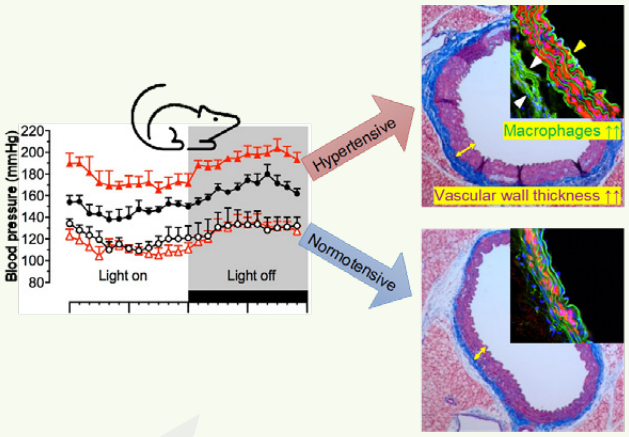
We attempted to explore on a fundamental question in neuroscience: How do inborn muscle patterns for gait from nature get modified by influences from nurture during development and training? To produce movement, the central nervous system coordinates muscle activities by combining activation modules, called muscle synergies, which coactivate groups of muscles as functional units. We studied how muscle synergies change during development and training by studying running in human preschoolers and adults ranging from sedentary subjects to elite marathoners. It was discovered that during child-to-adult development, muscle synergies fractionate into units with fewer muscles. As adults are trained to run, specific synergies coalesce to become merged synergies. The fractionation and merging of muscle synergies might be a mechanism for modifying early modules from Nature to accommodate influences from Nurture. Our framework might be utilized to understand changes in locomotor patterns during post-stroke rehabilitation, thereby leading to novel gait-retraining strategies that promote the use of naturalistic muscle patterns.

Prof. Vincent C.K. Cheung (sitting in the middle)

Author from the School	Title of the Published Paper / Name of Journal / IF	Publication Date
Prof. Tian Xiaoyu*	Loss of myeloid Bmal1 exacerbates hypertensive vascular remodelling through interaction with STAT6 in mice. *Cardiovascular Research* [IF/5-Yr IF(2021): 13.081 / 11.446]	Nov 2021

Circadian Rhythm, Immune Cell, and Hypertension

Hypertension is a common chronic disease affecting many adults. If left untreated, hypertension could lead to serious complications, such as heart failure and kidney problems. Recent studies emphasized the contribution of macrophage, especially those reside within the vasculature, in modulating vessel function and structure, under pathological conditions, such as hypertension. Our study showed that clock gene BMAL1 not only regulates rhythmic gene expression in macrophages, but also interacts with other factors to maintain homeostasis of macrophage function. Loss of BMAL1 could lead to more pro-fibrotic macrophages in the arteries, contributing to hypertensive vascular remodelling. These findings added to the complexity of blood pressure regulation and vascular remodelling, indicating the importance to consider individual differences for BP control and anti-hypertensive treatments.



* *Corresponding author/co-corresponding author*
\# *First/co-first author*

Research Funding

In terms of external research grants, a total of 181 and 190 ongoing projects were undertaken by the School in 2020-21 and 2021-22, respectively, involving a total amount of HK$219,908,981 and RMB¥19,224,700 in 2020–21, and HK$231,916,025 and RMB¥9,163,302 in 2021–22.

New research grants secured by our investigators as PI from the Research Grants Council (RGC) and other government research grant schemes amounted to HK$35,569,006 and HK$30,899,356 in 2020–21 and 2021–22, respectively.

These grants included the Collaborative Research Fund (CRF), the General Research Fund (GRF), the NSFC/RGC Joint Research Scheme, the Health and Medical Research Fund (HMRF), the HMRF Research Fellowship Scheme, and the Innovation and Technology Fund (ITF).

Major Competitive Research Grants (School members as PI)

2020–21

- 11 General Research Fund (GRF)/Early Career Scheme (ECS) with a total amount of HK$18,229,567.
- 1 National Natural Science Foundation of China (NSFC)/RGC Joint Research Scheme with an amount of HK$1,171,828.
- 1 RGC Senior Research Fellow Scheme (SRFS) with an amount of HK$7.8 million.
- 1 Food and Health Bureau (FHB) – Commissioned Research Studies on COVID-19 with an amount of HK$2,972,960.
- 9 Health and Medical Research Fund (HMRF) projects with a total amount of HK$11,549,132.
- 1 NSFC (Major Research Plan) with an amount of RMB¥2,400,000.

2021–22

- 13 General Research Fund (GRF)/Early Career Scheme (ECS) grants with a total amount of HK$14,661,692.
- 1 National Natural Science Foundation of China (NSFC) RGC Joint Research Scheme grant with an amount of HK$1,185,561.
- 4 Health and Medical Research Fund (HMRF) projects with a total funding of HK$5,092,660.
- 1 Innovation and Technology Commission – Mainland-Hong Kong Joint Funding Scheme (MHKJFS) project with a funding of HK$2,921,006.
- 1 NSFC (Young Scientists Fund) with an amount of HK$361,084.
- 4 SBS PIs participated in Theme-based Research Scheme (TRS) projects as Co-PI/Co-I with a total allocation of HK$3,007,000.

Support from Industry and Private Foundations

Our investigators received research funding from the following companies, corporations and organisations to support their cutting-edge research in a variety of fields and promote translational research. We are grateful for their generosity and unfailing support to our research endeavours.

Company/Organisation Name *

AP Infosense Ltd.
AstraZeneca UK Limited/AstraZeneca Hong Kong Limited
BMI Technologies Limited
Celleron Therapeutics
Chengdu Qingke Biotechnology Co., Ltd.
Guangzhou Baiyunshan Qixing Pharmaceutical Co., Ltd.
Hong Kong Cancer Fund
Lee's Pharmaceutical (Hong Kong) Limited
Millennium Pharmaceuticals, Inc.
NeuroDetective International Inc.
New B Innovation Ltd.
Nutrir Ltd.
Terry Fox Cancer Research Funding
Shenzhen Ango Mould Co., Ltd
Shenzhen Taifeng East Marine Biotechnology Co., Ltd.

** Remarks: Organisations with ongoing research projects with SBS PIs from 1 July 2020 to 30 June 2022*

COVID-19-related Research Grants and Publications

Facing the emergence of COVID-19 pandemic, our School investigators applied their expertise in biomedical sciences and made concerted efforts to actively take part in many related research projects. These projects included:

Research Grants

School member as PI*/Co-PI#	Project Title	Funding	Amount awarded to the project
Prof. Chen Yangchao*	Development of a Modified Droplet Digital PCR (ddPCR) Assay for Highly Accurate and Sensitive Detection of SARS-CoV-2 RNA for Screening of Infected Individuals and Environmental Monitoring	Worldwide Universities Network - Addressing Needs Triggered by the COVID-19 Pandemic, U.K.	GBP£10,000
Prof. Kwan Yiu-wa*	Utilization of CRISPR/cas9-modified Lactobacillus casei as an oral vaccine for treating and preventing COVID-19 infection	Food and Health Bureau (FHB) - Commissioned Studies, HKSAR	HK$2,972,960
Prof. So Hon-Cheong#	A Predict-to-Prescribe Approach to Social Communication Treatment in Chinese Preschool Children with Autism Spectrum Disorder	2021/22 One-off CRF Coronavirus Disease (COVID-19) and Novel Infectious Disease (NID)	HK$7,974,224
Prof. Feng Bo#	Replication-defective SARS-CoV-2 mutant vaccines with abnormal codon usages	RGC - Collaborative Research Fund	HK$6,983,473
Prof. Stephen K.W. Tsui#	Ecology, molecular virology and pathogenesis of SARSCoV-2: From bedside to bench and back	RGC - Theme-based Research Scheme	HK$28,653,000

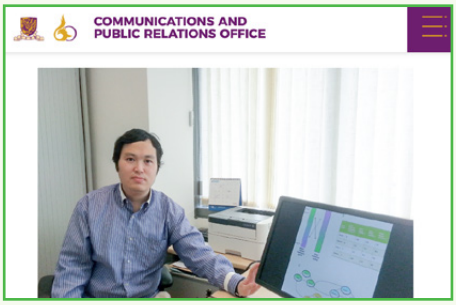
Publications

Author from the School	Title / Name of Journal	Publication Date
Prof. Stephen K.W. Tsui	Development of a Novel, Genome Subtraction-Derived, SARS-CoV-2-Specific COVID-19-nsp2 Real-Time RT-PCR Assay and Its Evaluation Using Clinical Specimens. *International Journal of Molecular Sciences*	Apr 2020
Prof. So Hon-Cheong*	Exploring Diseases/Traits and Blood Proteins Causally Related to Expression of ACE2, the Putative Receptor of SARS-CoV-2: A Mendelian Randomization Analysis Highlights Tentative Relevance of Diabetes-Related Traits. *Diabetes Care*	Jul 2020
Prof. Chen Yangchao*	Detection of COVID-19: A review of the current literature and future perspectives. *Biosensors and Bioelectronics*	Oct 2020
Prof. John A. Rudd	COVID-19, nausea and vomiting. *Journal of Gastroenterology and Hepatology*	Mar 2021
Prof. So Hon-cheong*	Uncovering Clinical Risk Factors and Predicting Severe COVID-19 Cases Using UK Biobank Data: Machine Learning Approach. *JMIR Public Health and Surveillance*	Sep 2021
Prof. So Hon-cheong*	Exploring Drugs and Vaccines Associated with Altered Risks and Severity of COVID-19: A UK Biobank Cohort Study of All ATC Level-4 Drug Categories Reveals Repositioning Opportunities. *Pharmaceutics*	Sep 2021
Prof. Tian Xiaoyu	A human pluripotent stem cell-based model of SARS-CoV-2 infection reveals an ACE2-independent inflammatory activation of vascular endothelial cells through TLR4. *Stem Cell Reports*	Mar 2022

* *Corresponding author/co-corresponding author*

Media Coverage on Research Projects

Research led by Prof. So Hon-cheong uncovers diabetes as a potential risk factor for COVID-19, and possible mechanisms (July 2020)



Findings published in *Diabetes Care*

Research led by Prof. Alfred S.L. Cheng uncovers a new strategy to turn "cold" liver tumour "hot" leading to an effective and durable combined immunotherapy (April 2021)

Findings published in *Science Translational Medicine*

Prof. Woody W.Y. Chan and Prof. Sham Mai-har with The University of Hong Kong (HKU) and University College London (UCL) researchers decipher how gene mutation leads to congenital megacolon providing clues for the development of novel therapeutic strategies (November 2021)

Findings published in *Gastroenterology*

Research led by Prof. Stephen K.W. Tsui unveils the evolutionary history of medically important mites, laying the genomics groundwork for diagnosis of and intervention in mite allergy (June 2022)

Findings published in *Molecular Biology and Evolution*

Prof. Tian Xiaoyu's participation in a collaborative research on development of novel RNA nanoparticles for targeting and alleviating atherosclerotic plaque (October 2022)

Findings published in *The Proceedings of the National Academy of Sciences (PNAS)*

Research led by Prof. Ke Ya and Prof. Yung Wing-ho discover a neural architecture that facilitates the formation of associative memory (November 2022)

Findings published in *Current Biology*

Interview with Prof. Wan Chao, Prof. Zhao Hui, Prof. Cheung Hoi-hung, Prof. Chan Hon-fai & Prof. Elmer D.F. Ker by *Wen Wei Po* (April 2021)

Research Assessment Exercise (RAE) 2020 TV Programme "Living with the Benefits of Research" - Prof. John A. Rudd's impact case study (December 2021)

New Investigators

	Name	Thematic Research Program
	Prof. Hannah Hui Xiaoyan Assistant Professor Joining Date: 1 April 2021	Neural, Vascular and Metabolic Biology
	Prof. Bruce Ransom Professor Joining Date: 1 December 2021	Neural, Vascular and Metabolic Biology
	Prof. Ellen N.Y. Poon Assistant Professor Joining Date: 4 February 2022	Neural, Vascular and Metabolic Biology

	Name	Thematic Research Program
	Prof. Wang Wuming Research Assistant Professor Joining Date: 18 October 2021	Developmental and Regenerative Biology
	Prof. Stephen Dalton Professor & Global STEM Scholar Joining Date: 3 January 2022	Developmental and Regenerative Biology
	Prof. Tong Man Assistant Professor Joining Date: 4 July 2022	Cancer Biology and Experimental Therapeutics

Thematic Research Program Highlights

Cancer Biology and Experimental Therapeutics (CBET)

Major research topics

- Molecular mechanisms of major cancers, such as prostate, liver, pancreatic, breast, and their metastatic niches
- Single-cell transcriptomic, epigenomic, metabolomic, and 3D genomic profiling of cancer cells and tumour microenvironment
- Development of bioinformatics tools for "omics" and gene network analyses
- Translational cancer pharmacogenomics, preclinical studies of novel biologics, and Chinese herbal extracts
- Development of new therapeutics for immunotherapy and the alleviation of chemotherapy-induced nausea and emesis

A number of important discoveries were made by the investigators of the CBET theme during the reporting period. One of the highlights is the study by Prof Alfred S.L. Cheng, Professor of the School, and Prof. To Ka-fai, Professor and Chairman of the Department of Anatomical and Cellular Pathology, CUHK. The study uncovered that a cancer-promoting gene called HDAC8 is responsible for maintaining tumours that are immune cell-excluded. Inhibiting HDAC8 can lead to epigenetic reprogramming of the tumour cell and so increase the infiltration of T cells into the tumour, or turn the tumour "hot".

Further study by the team showed that a new combined immunotherapy using HDAC8 and an immune checkpoint inhibitor could protect the mice model, remaining tumour-free in HCC for at least 15 months with no evidence of side effects. The research results have been published in the leading international journal *Science Translational Medicine* (doi: 10.1126/scitranslmed.aaz6804).

Prof. Alfred S.L. Cheng (left) and Prof To Ka-fai (right)

The co-first authors of the paper include Dr. Yang Weiqin (first from left), Dr. Feng Yu (second from right) and Prof. Zhou Jingying (first from right)

Development and Regenerative Biology (DRB)

Major research topics:

- Embryonic and fetal development and reproductive tract environment in health and diseases, including prematurity, Hirschsprung's disease, neural crest defects, cardiac diseases and diabetic pregnancies
- Development and regeneration of peripheral nerves, craniofacial development, deafness and eye diseases
- Generation, biological, molecular, genetic, and genomic characterization, and clinical application of induced pluripotent stem (iPS) cells, embryonic stem cells, and mesenchymal stem cells (MSC) in cell therapies and tissue regeneration, and stem cells in aging and age-related diseases
- Stem cell-based tissue engineering, biomaterials, artificial intelligence, deep learning, label-free cell tracking, musculoskeletal regeneration, orthopaedic research, small molecules, and 3D microphysiological tissue models for regenerative medicine
- Genetics and genomics of organogenesis, and functional genomics, epigenetics and cell biology of the reproductive epithelia, developing germ cells, embryonic organs and reproductive/developmental tumours
- Inherited and congenital diseases, kidney injuries and diseases, CRISPR/gene-editing technologies for cell therapies to treat human diseases, and personalized medicine

Members of DRB have conducted pioneering research in the following three areas: Development and Diseases, Stem Cells and Tissue Engineering in Regenerative Medicine, and Developmental Genomics, Genetics and Epigenetics. Using advanced technologies such as organoid culture, AI-assisted imaging and bioinformatics, stem cell reprogramming, and genetic manipulation, they were able to unveil disease mechanisms of various congenital disorders, devise therapeutic strategies for regenerating diseased tissues, and determine basic developmental processes. Their findings were published widely by top international journals.

Their active research in regenerative medicine also contributed to the inception, formation and establishment of the Center for Neuromusculoskeletal Restorative Medicine (CNRM), one of the InnoHK centres in Hong Kong.

Establishment of the Center for Neuromusculoskeletal Restorative Medicine (CNRM)

Participation in the 2020 Monash – CUHK PhD Exchange Virtual Symposium held on 7 August 2020

Neural, Vascular, and Metabolic Biology (NVMB)

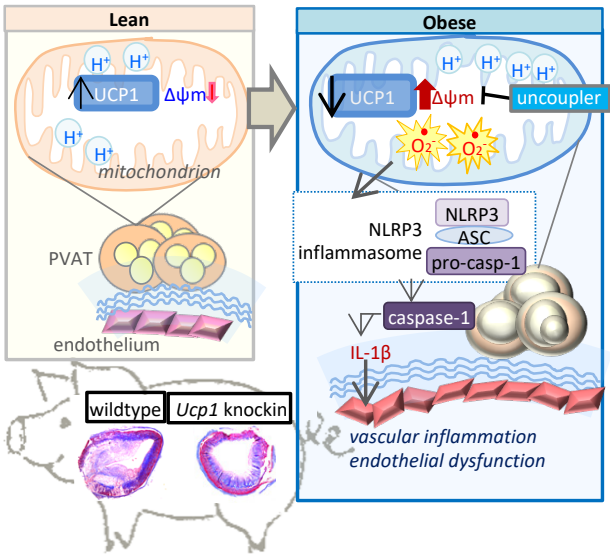
Major research topics:

- Decipher the neural circuits and neuroplasticity underlying animal behaviours and cognitive functions
- Motor control, motor learning during development and post-injury recovery, synaptic plasticity, and autism
- Macrophage and vascular homeostasis
- Adipose tissue biology, brown and beige fat development for the treatment of obesity
- Human pluripotent stem cell-derived cardiomyocytes
- Ion channels in the cardiovascular system

Investigators in the NVMB theme have made some important discoveries about the regulation of adipose tissue, the impact of SARS-CoV-2 infection on cardiomyocytes, the limbic circuitry in emotional stress-induced grooming, the role of Baml1 and PPARσ in vascular remodeling, and the dynamics of actin and cancer cell metastasis.

One of the highlighted studies is the one conducted by Prof. Hannah Hui Xiaoyan. Her team identified a previously unidentified function of brown adipose tissue (BAT) in protection against vascular inflammation and atherosclerosis. Using a combination of small animal (mice) and large animal (pig) models, they found that uncoupling protein 1 (UCP1), the hallmark of BAT, exerted anti-inflammatory and anti-oxidative stress actions, in addition to the common understanding that UCP1 improves metabolism by generating heat. Based on their findings, the administration of a chemical mitochondrial uncoupler efficiently alleviated atherosclerotic plaque formation in the mice model. The study unravels new insights regarding the crosstalk between blood vessel and the surrounding adipose tissues, and provides a new molecular target for treating vascular diseases.

Prof. Hannah Hui Xiaoyan (front row, first from right) and her team members



A hypothesis diagram illustrating how UCP1 in perivascular adipose tissue antagonizes inflammation and protects against atherosclerosis

Translational Research

The School has put tremendous efforts in accelerating bench-to-bedside translational research to ensure that our research outputs have a direct impact on society. We continued to build and maintain sustainable relationships with clinical scientists from the Faculty of Medicine, researchers from other institutions, and medical practitioners. We welcomed a total of 38 new Associate Members in 2020-21, and 31 in 2021-22, respectively (See Appendix 1).

In addition, a few of our investigators filed patents on their notable research work during the reporting period. These include:

Name of Inventors (**SBS members** and non-SBS members)	Patent Title	Jurisdiction	Status	Date
Prof. Chan Wai-yee **Dr. Lu Gang** Dr. Ma Jin-long Dr. Poon Wai-sang Prof. George K.C. Wong Prof. Xiong Zhi-qiang	Circulating microRNAs in Delayed Cerebral Infarction after Aneurysmal Subarachnoid Hemorrhage	China	Patents granted	Jun 2021
Prof. Andrew M. Chan Dr. Marina Dukhinova **Prof. Eugene D. Ponomarev** Dr. Tatyana Veremeyko	Agglutination of Gangliosides for Treating Alzheimer's Disease	U.S.	Patents granted	Jun 2021
Prof. Chan Wai-yee **Prof. Cheung Hoi-hung** **Prof. Kenneth K.H. Lee** Prof. Tommy L.M. Lo	Combinational use of Mechanical Trituration and Programming to Activate Plurlpotent Gene Expression in Somatic Calls	Japan	Patents granted	Jul 2020
Prof. Chen Yangchao	Small Molecule Modulators of MicroRNA-34A	U.S.	Patents granted	Dec 2020
Prof. Elmer D.F. Ker	Invention Disclosure Form Novel Polyurethane	Hong Kong SAR, China	Invention Disclosure	Oct 2021
Prof. Lin Ge	Biomarkers and methods for non-invasive detection of hepatotoxic pyrrolizidine alkaloid exposure.	China	Invention Disclosure	Sep 2021
Prof. Ellen N.Y. Poon	Methods and improve efficacy of Mesenchymal stem cells (MSC) allogenic transplantation	U.S.	Invention Disclosure	Sep 2021

Patent Stories

Patent holder: Prof. Chan Wai-yee

Revolutionizing Subarachnoid Hemorrhage (SAH) Patient Care: Predicting Delayed Cerebral Ischemia (DCI) Onset with Circulating microRNA Biomarkers

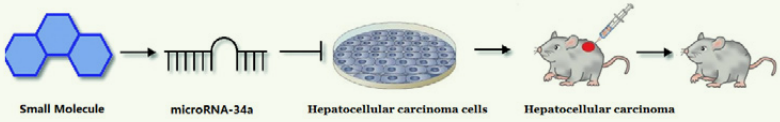
Subarachnoid Hemorrhage (SAH) is a severe cerebrovascular disease involving bleeding caused by the rupture of brain blood vessels. Delayed Cerebral Ischemia (DCI) is a significant complication of SAH, which may lead to neurological deterioration and even death. Identifying biomarkers related to DCI is crucial for better diagnosis, prediction, and treatment of this condition. Our School, in collaboration with the Division of the Neurosurgery and the SDIVF R&D Centre of CUHK, has identified circulating microRNA biomarkers in peripheral blood that can be used to predict DCI onset in SAH patients. Using microarray technology and deep learning algorithms, the team analysed blood samples collected on the first day of SAH onset, uncovering a unique set of microRNAs that linked to different prognostic trajectories. This breakthrough holds significant scientific value, paving the way for improved risk assessment, personalized treatment, and enhanced clinical outcomes for SAH patients.

Patent holder: Prof. Chen Yangchao

Small Molecule Modulators of microRNA as Potential Anti-cancer Agent

Hepatocellular carcinoma (HCC) is the fifth most common cancer and the third leading cause of cancer deaths in the world in 2018. Current therapies for HCC have limited clinical benefit. Therefore, there is an urgent need to develop novel and more effective therapeutics for HCC.

This invention not only provides new methods for identifying compounds that act as miR-34a modulators, but also miR-34a modulators and compositions containing the modulators. It further provides methods for treating diseases by administration of miR-34A modulators. Our findings suggested that small microRNA-34a modulators might be an effective anti-HCC agent.

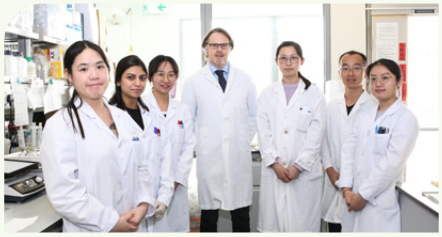


Impact Case Story

Prof. John Rudd

Preventing Nausea and Vomiting to enable a more Effective Treatment of Cancer

Cancer is a leading cause of mortality in the world, accounting for over 30% of all deaths. Chemotherapy may cause unwanted nausea and vomiting which may compromise treatment strategies, delay potential life-saving treatment, and reduce quality of life of patients. Professor Rudd's preclinical research has been fundamental to discoveries which underpinned the development of serotonin (5-HT3) and substance P (NK1) receptor antagonists, which can prevent acute and delayed nausea and emesis caused by chemotherapy. Millions of patients worldwide have been treated with the combination of these drug classes, and they have made a significant impact in a more successful treatment of cancer.

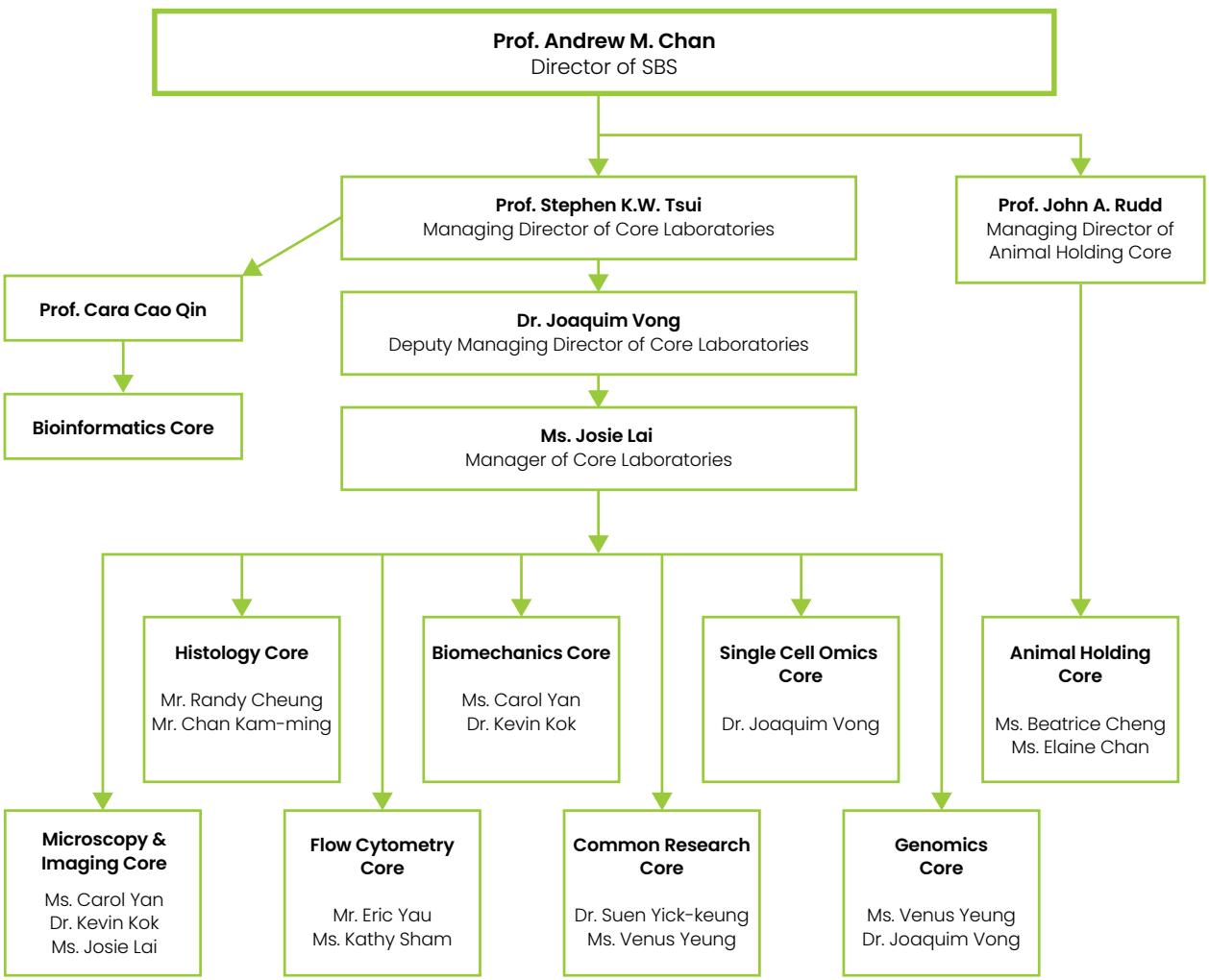


Prof. John Rudd (middle)

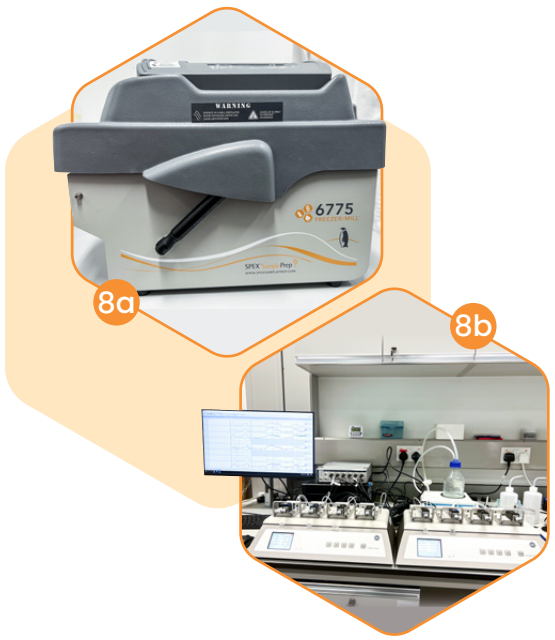
Core Laboratories

In 2020-2022, the School's Core Laboratories played an essential role in enhancing the performance and competitiveness of the cutting-edge research conducted by our investigators. To stay at the forefront of technology, expertise and methods in the biomedical research, the School invested a substantial amount to establish three new major technology platforms: Single Cell Omics Core, Genomic Core and Bioinformatics Core. These new Cores have become critical for the achievement of scientific projects, and they have also helped the School to respond to development challenges and boost our capacity for research collaboration.

Administrative Structure of the Core Laboratories



New Core Equipment at the Core Laboratories in 2020-2022



1. **Microscopy & Imaging Core**
   a. Scientifica Hyperscope Multiphoton Upright Microscope
   b. Nikon Ti2-E Inverted Fluorescence Microscope
   c. Brainvision SciMedia MiCAM03 High-Speed Imaging System
   d. Zeiss Axioscan 7 Automatic Slide Scanner
   e. Molecular Devices ImageXpress Micro Confocal High Content Screening System
2. **Histology Core**
   a. Epredia Excelsior AS Tissue Processor
   b. Epredia HistoStar Embedding Centre
   c. Leica CM1950 Cryostat with UV
   d. Epredia Cryostar NX70 Cryostat
   e. MEDITE TST 44 Automatic Slide Stainer
3. **Flow Cytometry Core**
   a. BD FACSymphony A5.2 SORP Flow Cell Analyzer
   b. Thermo M5000 EVOS Imaging System
4. **Biomechanics Core**
   a. Biomomentum Mach-1 v500csstMechanical Tester
   b. Optics 11 Life S-Pavone-ST Nanoindenter
5. **Common Research Core**
   a. Amersham Cytiva ImageQuant 800 Imaging System
6. **Single Cells Omics Core**
   a. 10x Chromium Controller
   b. 10x Chromium X Series
   c. PCR Workstation
   d. Qubit DNA/RNA Fluorometer
   e. Countess Automated Cell Counter
   f. Eppendorf Mastercycler Nexus Gradient
7. **Genomics Core**
   a. Agilent 4200 TapeStation System
   b. Illumina NextSeq 2000 Sequencing System
8. **PI-focus AEG equipment**
   a. SPEX Freezer Mill 6775 Cryogenic Grinder
   b. Multi-channel Myograph System

Newly Established Core Facilities

- **Genomics Core**

  The Agilent Tape Station DNA and RNA Quality Check Services at the Genomics Core was officially launched in 2022. These services provide checking of DNA/RNA sizing, concentration, and integrity assessment by serving as a quality control that fit in a Next-Generation Sequencing (NGS) workflow with low to high throughput, delivering a high level of precision analytical evaluation.

  The sequencing services provided by the Illumina NextSeq 2000 Sequencing System was launched in 2022. These services provide a broad range of different sequencing tasks, including: conventional DNA sequencing, bulk RNA sequencing, and specific tasks including single-cell RNA sequencing and single-cell multi-omic sequencing. In addition to sequencing, the Core also offers sequencing library quality check, normalisation and preparation services.

- **Single Cell Omics Core**

  The Single Cell Omics Core, which was officially launched in 2021, provides a comprehensive package of services, including initial sample quality check, single-cell preparation and encapsulation, library preparation and quality checks, professional consultation and troubleshooting. Sequencing libraries generated from this Core are suitable to be submitted for sequencing in Genomics Core.

- **Bioinformatics Core**

  This Core was established in 2021 to address the increasing demand for bioinformatic analysis from users, such as sequencing data analysis. It is well-equipped with servers with CPU/GPU calculation power, data storage and bioinformatic pipelines targeting various analytical tasks.

Server Subscription Service

The Core was equipped with four high-performance computing servers in 2021. Each server is embedded with 256 CPUs (physical cores), eight NVIDIA A100-PCIE-40GB GPUs, 4TB random access memory and 240TB hard disks. In 2022, VMWare vCenter was installed, which is an advanced server management software that provides a centralized platform for controlling the VMware vSphere environments, allowing each user to have an independent virtual machine. As of December 2022, seven server subscriptions have been processed, including three high-demand and four general user schemes.

Data Analysis Service

This service includes nearly all kinds of standard bioinformatics analyses, including but not limited to bulk RNA-Seq, single-cell RNA-Seq, multi-omics and Hi-C analyses. Advanced modelling and analysis such as machine learning model development is also available. As of December 2022, the Core has performed ten charging mode services and eight collaborative mode services for clients of the School and various departments within the Faculty.

- **Animal Holding Core**

  The Aquatic Core acquired several new pieces of equipment to expand its services to meet the increasing usage needs of its clients. A new Behavioural Core was also opened, providing a more comprehensive range of services.

New equipment at the Aquatic Core

The New Behavioural Core

Know more about SBS Core Laboratories

NURTURING TALENTS

NURTURING TALENTS

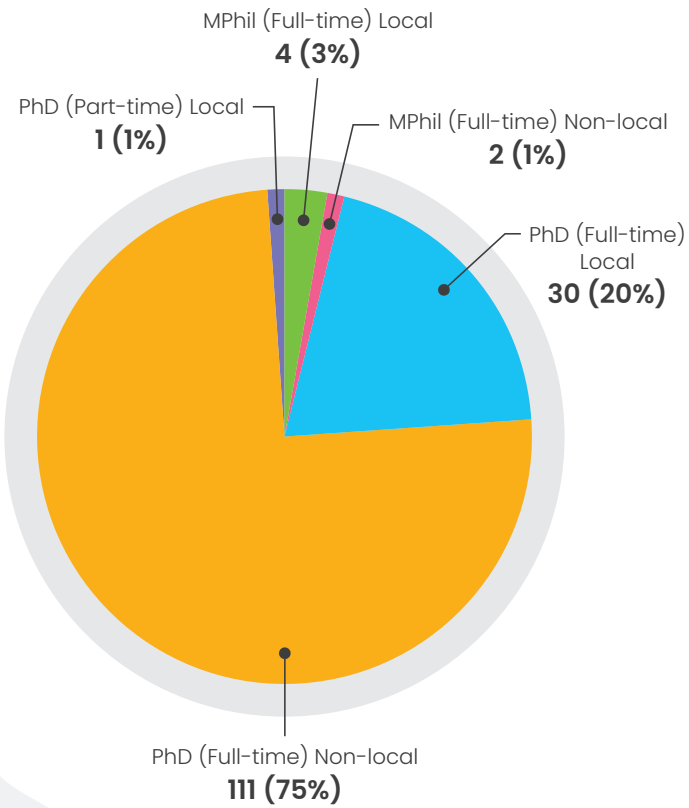
Graduate Education

MPhil-PhD Programme in Biomedical Sciences

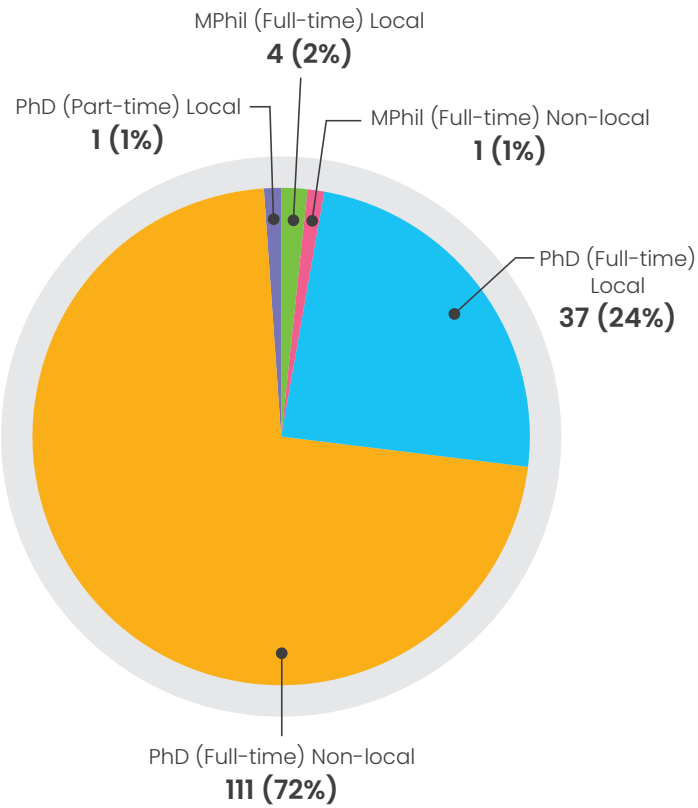
The Graduate Division continued to fulfill its mission of nurturing the next generation of biomedical scientists and physicians at the graduate level by equipping them with solid professional knowledge and advanced research skills.

During the academic years 2020-21 and 2021-22, 36 academic members ranked Assistant Professors or above served as thesis project supervisors for a total of 148 and 154 research postgraduate (RPg) students, respectively.

Number of Research Postgraduate Students (as of June 2021)



Number of Research Postgraduate Students (as of June 2022)



The numbers of research postgraduate (RPg) students who graduated and were newly admitted in 2020-21 and 2021-22 are as follows:

	2020-21	2021-22
RPg Graduates	31 (0 MPhil; 31 PhD)	39 (2 MPhil; 37 PhD)
New RPg Students	53 (3 MPhil; 50 PhD)	48 (2 MPhil; 46 PhD)

The distribution of RPg students and new intakes across the three Thematic Research Programmes (TRPs) in 2020-21 and 2021-22 is as follows:

	2020-2021	As of June 2021	2021-2022	As of June 2022
TRP	No. of New Intakes	No. of Postgraduate Students	No. of New Intakes	No. of Postgraduate Students
Cancer Biology and Experimental Therapeutics	18	48	12	53
Developmental and Regenerative Biology	23	62	22	62
Neural, Vascular, and Metabolic Biology	12	38	14	39
Total	**53**	**148**	**48**	**154**

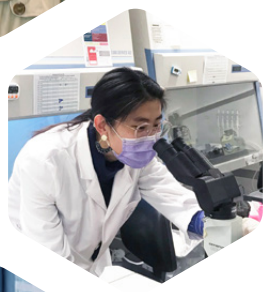
Graduation photo of the 2021-22 RPg graduates with our teaching staff

In the reporting period, a number of RPg students were admitted through highly competitive schemes, with details as follows:

Scheme	Student's Name	Supervisor
Hong Kong PhD Fellowship Scheme (HKPFS)	Ms. Tian Yuyao	Prof. Chan Wai-yee
	Ms. Jiang Minchun	Prof. Huang Yu
	Mr. Tu Yalin	Prof. Alfred S.L. Cheng
	Ms. Yin Liangying	Prof. So Hon-cheong
	Ms. Liang Zhixian	Prof. Alfred S.L. Cheng
	Ms. Zhang Yuan	Prof. Zhao Hui
	Mr. Choi Seongwang	Prof. Woody W.Y. Chan
	Ms. Zhu Yao	Prof. Jacque P.K. Ip
CUHK Vice-Chancellor's PhD Scholarship	Mr. Shi Yujia	Prof. So Hon-cheong
	Ms. Peng Shenyi	Prof. Jiang Xiaohua

Outstanding Student Academic Awards

Ms. He Lei, PhD Student (Supervisor: Prof. Huang Yu)
Young Investigator Award at the 14th International Symposium on Mechanism of VasoDilatation (MOVD2021) and Hong Kong Pharmacology Society

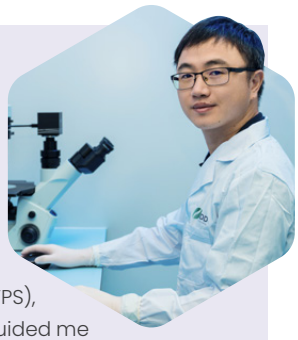


Ms. Tian Yuyao, PhD Student (Supervisor: Prof. Chan Wai-yee)

- Young Researchers Award, the 3rd International Conference on Stem Cells and Regenerative Medicine (Stem Cell Congress 2020)
- Best Speaker Award and Research Excellence Award (Predoctoral 1st Winner), the Virtual Conference on Genetics and Molecular Biology, Conference Series LLC Ltd
- Brilliant Poster Award, The New York Stem Cell Foundation

Mr. Fung Wang-kin, PhD Student (Supervisor: Prof. Zhao Hui)
HSBC Greater Bay Area (Hong Kong) Scholarship 2021

Student and Graduate Sharing



Dr. Wang Chaoqun

PhD Graduate in 2015

Principal Investigator, Chinese Academy of Sciences, Shanghai Institute of Materia Medica; Zhongshan Institute for Drug Discovery, China

I am so grateful for my PhD training in SBS. The wonderful academic atmosphere, dedicated mentors, lovely colleagues, and beautiful natural environments make SBS a great place to carry out research. With the support of the Hong Kong PhD Fellowship Scheme (HKFPS), I pursued my PhD study under the supervision of Prof. Chan Hsiao-chang, a great mentor who guided me to explore the scientific world.

Following my graduation, I started my postdoctoral training at the University of California, San Francisco, USA. I am currently concentrating on establishing my own laboratory at the Chinese Academy of Sciences as a Principal Investigator. The exceptional and all-rounded training I received at SBS has equipped me to face different challenges and guided me in my pursuit of a successful career as a scientist!

Ms. Liang Zhixian

PhD Student Year 2 (in the academic year 2021-22)

It is my privilege to be given the opportunity to pursue PhD study at SBS as a recipient of the HKPFS scholarship. My research aims to improve the efficiency of immunotherapy for patients with hepatocellular carcinoma. The School provides comprehensive and outstanding facilities, as well as professional technical support to assist me in my research. The annual Postgraduate Research Day also provides a platform for me to exchange ideas with other researchers and improve my presentation skills.

Throughout my PhD studies, my supervisor, Prof. Alfred S. L. Cheng has been instrumental in facilitating me to develop and improve my scientific thinking. He has provided me with kind and constructive advice all the time to guide my study forward. I am very grateful to SBS and HKPFS for giving me the opportunity to pursue my academic dream.

Ms. Chawla Dhvanii

PhD Student Year 1 (in the academic year 2021-22)

As a CUHK graduate, I am truly honoured to be furthering my education as an international doctoral student at SBS and the Institute of Tissue Engineering and Regenerative Medicine (iTERM) under great mentors, including Prof. Rocky S. Tuan. This year, I had my first poster presentation at the Postgraduate Research Day and was grateful to receive the Prof. Leung Po Sing Scholarship for the Best Presenter Award at the Graduate Seminar.

From taking part in the research initiative between Karolinska Institutet and CUHK at the Center for Neuromusculoskeletal Restorative Medicine (CNRM), to winning the e-Poster exhibition prize at the Guangdong-Hong Kong Regenerative Medicine Postgraduate Academic Exchange, my first year of PhD study has been full of valuable experiences. I am looking forward to my scientific adventure ahead.

Professor Leung Po Sing Scholarship 2021-22

Prof. Leung Po-sing, Emeritus Professor of SBS, donated a total of HK$1,000,000 to establish a scholarship scheme, namely "Professor Leung Po Sing Scholarship", to support research activities of outstanding SBS postgraduate students during the academic year 2021-22. We are very grateful for Prof. Leung's generous support of our promising students.

The following RPg students received awards under this scholarship in 2021-22:

Awardees of Graduate Seminar Awards
Ms. Cai Ying
Ms. Chan See-wing
Mr. Thomas T.H. Chan
Ms. Cheung Man-yee
Mr. Choi Seong-wang
Ms. Deng Jiani
Ms. Chawla Dhvanii
Ms. Jessica C.M. Hui
Ms. Kwong Tsz-ching
Ms. Jessica J. Pena Paladines
Ms. Qi Yue
Ms. Wang Jingyi
Ms. Zhang Yuan

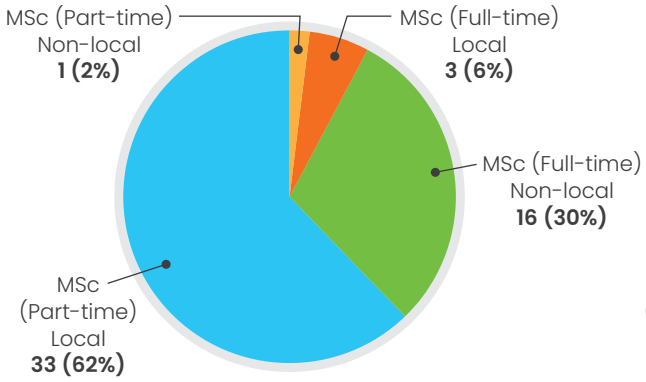
Awardees of Publication Awards
Ms. Cao Xiaoyun
Ms. Hong Huiling
Mr. Xiang Yong
Ms. Yin Liangying
Ms. Zhao Xuemei

Master of Science (MSc) in Genomics and Bioinformatics Programme

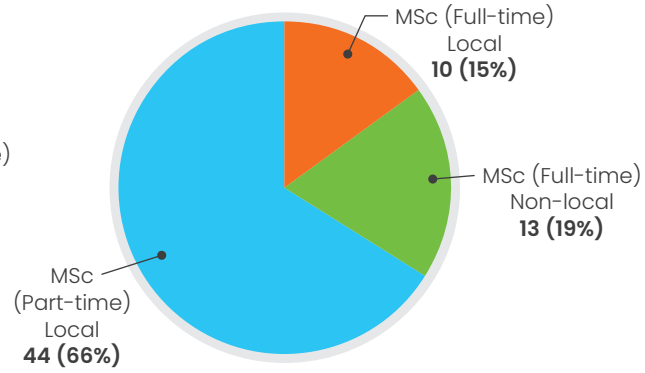
The MSc in Genomics and Bioinformatics Programme has been serving Hong Kong since 2011-12, training bioinformaticians for the industry. The Programme nurtures talents with multidisciplinary knowledge, including programming, molecular biology and genetics, bio-computing, genomics, systems biology, genome informatics, and research methodology using different models.

The MSc Programme is now a quotable qualification approved by the Medical Council of Hong Kong and recognised as Level 6 under the Hong Kong Qualifications Framework (HKQF). Here is an overview of the student composition of the MSc Programme in the reporting period:

Academic Year 2020-21



Academic Year 2021-22



In 2021-22, 10 students under the Programme were awarded the University Grants Committee (UGC)'s Targeted Taught Postgraduate Programmes Fellowships Scheme (TPgFS). The Scheme aims to attract more meritorious local students to pursue further studies in priority areas conducive to the development of Hong Kong.

Student Prospects

Since its offering, the MSc Programme has trained graduates for a variety of professions, including medical doctors, scientific officers, medical technologists, post-doctoral fellows, researchers, managers and directors in academic or governmental organisations and commercial companies. About one-sixth of its graduates have further pursued doctoral studies in Hong Kong and overseas, including the UK, Norway, Denmark, Germany, Canada, Australia, and the Netherlands.

Several graduates of the Programme are currently studying at prestigious universities, such as the University of Cambridge and University College London. Others are visiting scholars and postdoctoral fellows at internationally renowned universities such as Harvard University and Tsinghua University, while some are academic faculty members at The University of Hong Kong, CUHK, as well as universities in Mainland China.

Graduate Sharing

Mr. Wang Haichao

MSc Graduate in 2016

PhD Student, University of Cambridge

During my MSc study, I had a lot of inspiring and productive discussions with my research supervisor, Prof. Stephen Tsui, lab members and fellow students. These learning and training experiences laid a solid foundation and unlocked possibilities for my future career as a bioinformatician and a PhD candidate in cancer research at the University of Cambridge, UK. SBS had shaped my career and spurred me to become a dedicated scientist working on biomedical research.

Dr. Ho Chi-chun

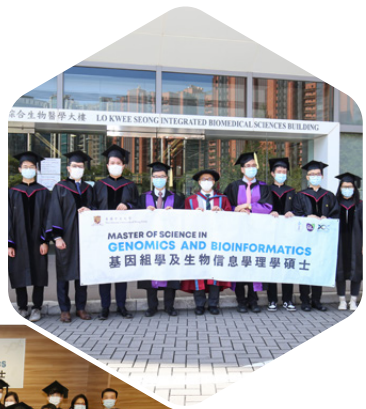
MSc Graduate in 2020, awarded the Certificate and Scholarship of Academic Excellence

Manager at Hospital Authority Head Office

The interdisciplinary approach of this Master's Programme has been instrumental in providing me with a comprehensive and systematic understanding of genomics as it applies to humans, pathogens, animals and plants, as well as the use of bioinformatics tools. The Programme not only helped me build a strong foundation of knowledge, but also provided me with soft skills training that has further inspired and motivated me in my subsequent career development.

The knowledge and skills acquired from the Programme enabled me to play an integral role in the development of the Hospital Authority Genetic & Genomic Test Directory, the first of its kind in Hong Kong. It also allowed me to meaningfully contribute to the strategic deployment of genetic and genomic services to the people of this world-class city in China.

Orientation Lunch and Staff-student Consultative Meeting 2021-22



Graduation Ceremony 2021-22

Undergraduate Education

The School has successfully advocated for excellent face-to-face and online teaching to almost nine thousand students in over 120 courses during the COVID-19 pandemic in 2020-22. This was achieved through substantial investment in resources and enormous collaborative efforts made by School members.

Major Achievements and Events in 2020-2022

- The following School members were awarded teaching-related honours by the Faculty of Medicine in two consecutive years, in recognition of their outstanding instruction in the Bachelor of Medicine and Bachelor of Surgery (MBChB) and Biomedical Sciences Programmes:

Award Year	Award	Awardees
2021	Teachers of the Year Award (Biomedical Sciences)	Prof. Vincent C.K. Cheung
	Teachers of the Year Award (Medical Year 2 and 3)	Prof. Simon C.L. Au
	Teachers of the Year Award (Medical Year 1)	Dr. Wong Wai-kai
2022	Teachers of the Year Award (Biomedical Sciences)	Prof. Vincent C.K. Cheung
	Teachers of the Year Award (Medical Year 2 and 3)	Prof. Simon C.L. Au
	Teachers of the Year Award (Medical Year 1)	Dr. Wong Wai-kai

- Dr. Christopher See received the Faculty Education Award 2022 for his achievements in medical education.

(From left) Prof. Andrew M. Chan, Director of SBS and Prof. Vincent C.K. Cheung

(From left) Dr. Wong Wai-kai; Prof. Simon C.L. Au; Dr. Ann S.N. Lau, Assistant Dean (Education) of the Faculty of Medicine, CUHK and Associate Director (Undergraduate Education), SBS; and Dr. Christopher See

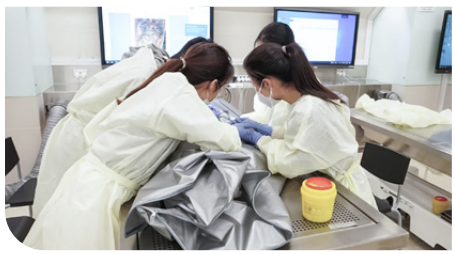
- Our School members successfully secured 22 teaching grants totaling over HK$8,600,000 from the University, University Grants Committee and the Government of The Hong Kong Special Administrative Region.
- List of teaching grants obtained by SBS members from July 2020 to June 2022

Division of Education and Medical Teaching

The Division of Education (DoE) is committed to staying ahead of the curve in education. We actively initiate and participate in projects related to the development of new tools for teaching and learning, such as VR, AI, micromodules, and contribute new ideas for enhancing the teaching and learning experiences of students. The DoE is also pivotal in providing preclinical teaching to the MBChB Programme. In 2020-2022, we committed about 4,500 teachers' manhours in preclinical courses for about 900 medical students.

		2020-2021		2021-2022	
Faculty	Programme	No. of Courses Offered	Enrollment	No. of Courses Offered	Enrollment
Medicine	MBChB	9	2286	9	2363
	Biomedical Sciences	34	690	33	635
	Pharmacy	8	385	8	429
	Chinese Medicine	3	78	3	73
	Faculty Package	2	706	2	713
Engineering	Biomedical Engineering	3	194	3	194
University General Education	General Education	2	99	2	99
Total		61	4438	60	4506

▼ Participants in Summer Research Internship (SRI, for MBChB-GPS students) attending a training workshop in the summer of 2022 to acquire basic lab techniques before commencing their projects



▲ Participants in the Summer Dissection Workshop (SDW) engaging in peer discussions about dissection and preparing good-quality prosected specimens

▲ The first combined SRI and SDW closing ceremony

Teaching in the Time of COVID-19

During the COVID-19 pandemic, teaching activities in the School were inevitably affected. Lectures, tutorials, lab and practical sessions were moved to online mode. Dr Ann S.N. Lau, Associate Director (Undergraduate Education), together with DoE members, organised various in-house training on online teaching for SBS members.

To ensure that dissection practical and lab work classes could continue, tremendous resources and manpower were utilised to produce video clips showing procedural steps and pre-recorded pre-lab briefings for use in lab practical sessions. We also live-broadcasted demonstrations with the use of specimens and addressed students' inquiries in real-time.

Synchronous and proctored online examinations were thoroughly implemented in almost all courses administered by the School. During the second term of 2021-22, a total of 36 online examinations were coordinated, including the first MBChB professional examinations. We provided training workshops for School members and administrative staff on how to access and grade online examination scripts, and how to operate online examinations, respectively. Dr. Josephine Lau, Online Examination Convenor, and Prof. Simon C.L. Au were invited to share experiences and good practices in coordinating proctored online examinations in CUHK and The Hong Kong Polytechnic University.

Live-broadcasting an anatomy practical session with specimens ▶

▲ Live-broadcasting a surface anatomy teaching session with a model and synchronous Q & A session.

▲ The importance of teamwork in operating proctored online examinations for large classes

Conducting online invigilation ▲

◀ Operation manual for running online examination (with proctoring tools)

Courseware Developments and Participation in Education Events

- DoE members, in collaboration with faculty members, successfully developed 32 micromodules that were fully blended and applied in a variety of biomedical sciences, medical and non-medical courses.
- Members presented their work in 42 education conferences and workshops, and 12 publications were issued.

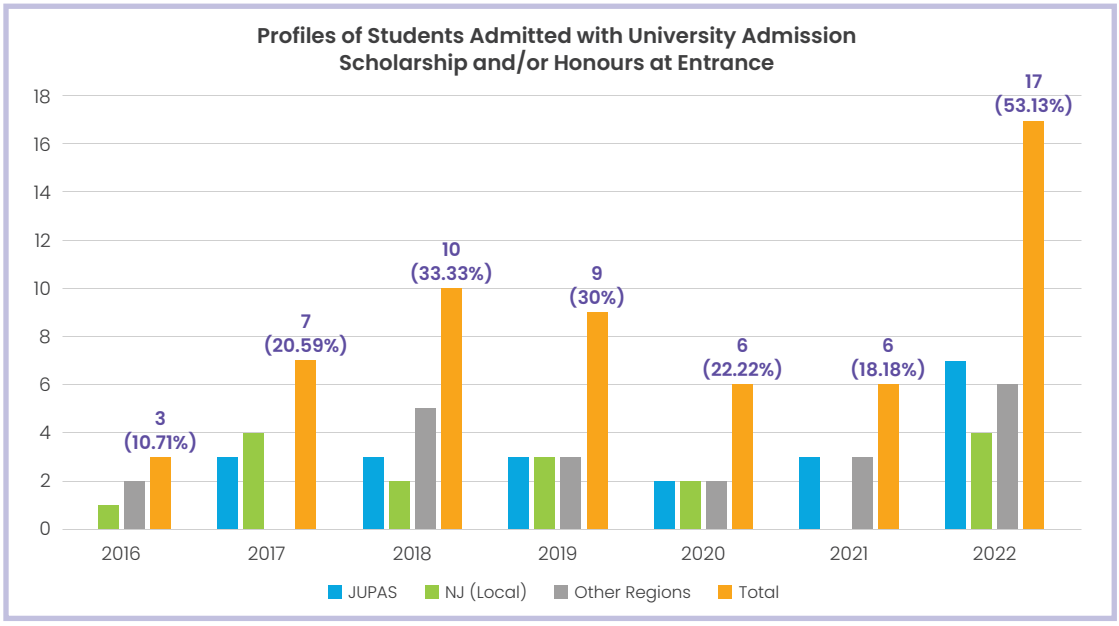
List of e-learning development:

List of participation in education conferences, workshops, seminars, etc:

List of publications (journal articles, book chapters etc.):

BSc in Biomedical Sciences Programme

The School of Biomedical Sciences launched its first bachelor's degree programme, BSc in Biomedical Sciences (BMS), in September 2016 with the mission of training the next generation of biomedical scientists to engage in research, innovation and entrepreneurship as well as health services. The Programme is multi-disciplinary, comprehensive and integrative, best illustrating the relevance of basic biomedical science knowledge and research in the clinical, pharmaceutical and healthcare settings. The Programme offers different Concentration Areas to prepare graduates for diversified career paths, including: biomedical research, diagnostics, genetics and bioinformatics, quality management of new therapies and biopharmaceuticals, legal, health services and lab management.



Graduate Careers

Around 75% of our graduates went on to pursue further studies. Most of them were admitted by renowned universities, such as the University of Oxford, Imperial College London, University College London, the University of Toronto, and King's College London. Two of our graduates are now pursuing a D.Phil. at the University of Oxford.

Other graduates have devoted themselves in the industry, engaging in entrepreneurship and allied health services, such as working at Pfizer, IQVIA, Prenetics, and PHASE Scientific.

We look forward to seeing our graduates shine as the next generation of biomedical scientists in their respective fields of profession.

Student Career Development

Summer Undergraduate Biomedical Research Attachment (SUBRA)

Our students were able to gain early research exposure by joining our annual in-house Summer Undergraduate Biomedical Research Attachment (SUBRA) programme, which helps students to explore their strengths and interests in being a research scientist before they commit to specialising in a particular Concentration Area.

SUBRA 2022
(May - August 2022)

Career Talks

Career talks were organised to help students broaden their horizons and make better planning for their future.

Career talk by Dr. Tenny Chung from PHASE Scientific (November 2021)

Career talk by Dr. Gina Jiang from the Hong Kong Institute of Biotechnology (November 2021)

Student Accomplishments

Silver medal at the International Genetically Engineered Machine (iGEM) Competition 2022
(Front row, from left) Miss Er Hiu-suet; Miss Leung Sum-yin; Miss Fung Yu-shan; Miss Lin Hong-man;
(Back row, from left) Mr. Yam Ming-ho; Miss Wong Hoi-ting; Miss Lau Li-kei

Miss Charmaine Tsang (right), recipient of the Hong Kong Life Sciences Scholarship Awards 2022, and Dr. Ann Lau (left), Associate Director (Undergraduate Education)

Mr. Yam Ming-ho, recipient of the AIA Special Mention Award of hackUST 2022

▲ Mr. Ho Chun-wa, recipient of The Innovation and Technology Scholarship 2021

Mr. Cheng Yin-chun obtains The Hong Kong Jockey Club Graduate Scholarships to study at the University of Oxford in 2021

Belt and Road Scholarship

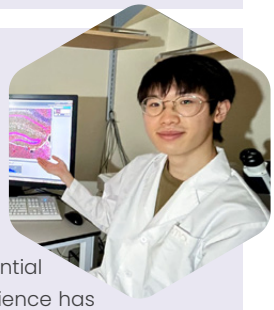
Student Name	Year of Award	Country
Adiya Ualiyeva	2020	Kazakhstan
Vania Devina	2022	Indonesia
Alikhan Zhumagaleyev	2022	Kazakhstan



Student Sharing

Mr. Cheng Yin-chun
Graduate

I started my MSc in Clinical and Therapeutic Neuroscience at the University of Oxford in the UK in 2021. In October 2022, I was accepted into the D.Phil. programme in the Nuffield Department of Clinical Neurosciences at Oxford. I am grateful to have had biomedical sciences as my undergraduate degree, as it provided a solid foundation for my further studies. The courses in the BSc in Biomedical Sciences Programme and the research experience I gained from my Capstone Research Project and Summer Undergraduate Biomedical Research Attachment equipped me with the essential foundational knowledge that I needed to pursue my preclinical postgraduate education and clinical studies in neuroscience.



Mr. Ho Chun-wa
5th Year BMS Student

I am glad to have been admitted as a non-graduating research student by the Department of Physiology at the Yong Loo Lin School of Medicine of the National University of Singapore, with the support from the Innovation and Technology Scholarship 2021.

The research attachment has equipped me with a variety of research skills. I have learned not only experimental techniques, but also experimental planning, troubleshooting, and other essential skills. It has also been exciting to work in a team with diverse research backgrounds. Such experience has allowed me to explore unlimited possibilities and further shaped my future career path.

Miss Ma Hiu-laam
Graduate

I discovered my passion for commercial roles in the biomedical industry after completing a product development internship at a biotech startup (Qi Diagnostic) that was introduced to me by the BSc programme.

I then received a graduate offer from Pfizer, which allowed me to rotate through different departments for a more comprehensive development. I was promoted to become a regional marketing associate for the Asia Internal Medicine profile that oversees ten countries' brands. Upon gaining the experience working six months for the Asia profile, I picked up the Vaccines profile and continue to improve myself through in-house training.

Graduation

Our first batch of graduates of the class 2020

Our second batch of graduates of the class 2021

OUTREACH ENDEAVOURS

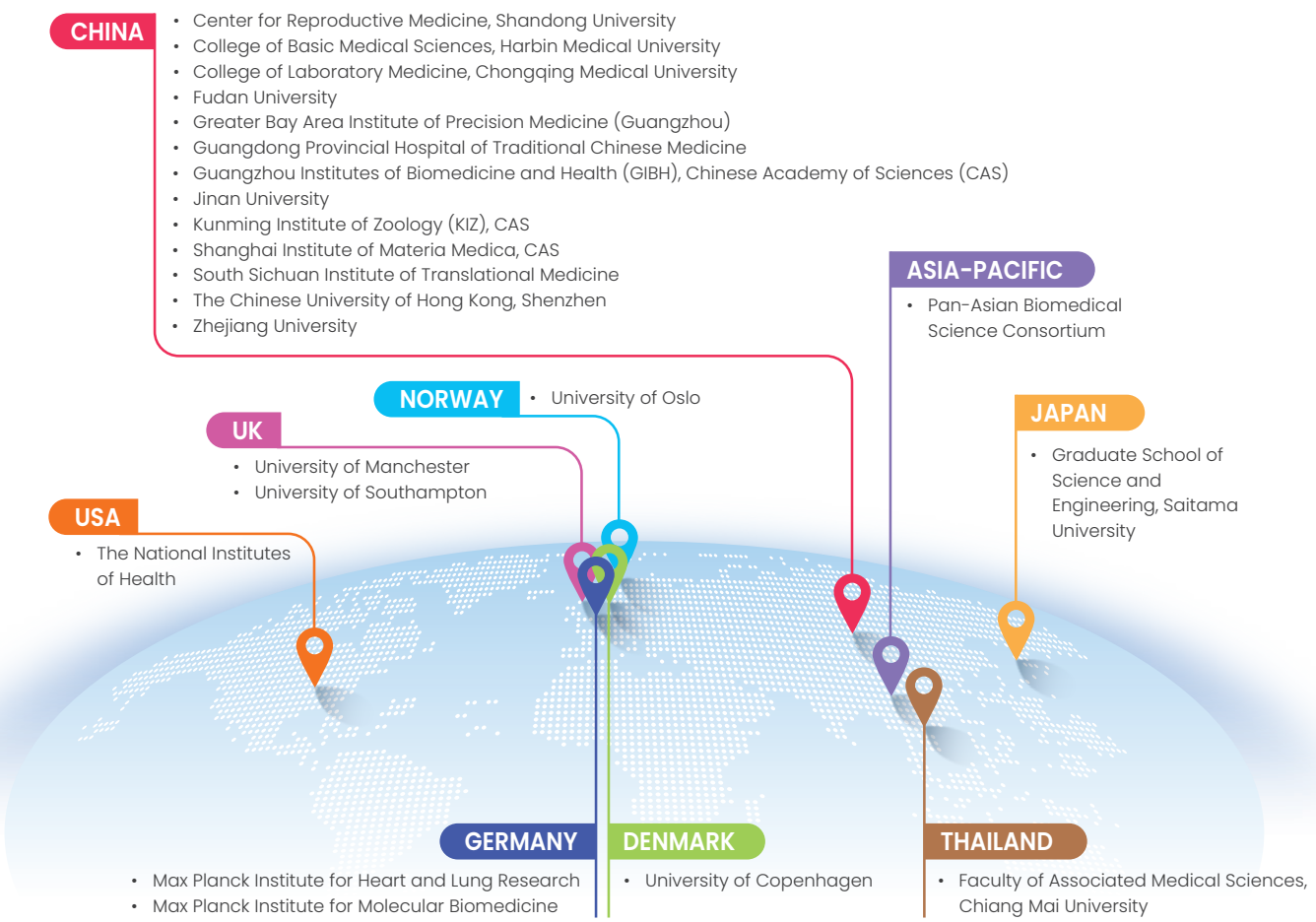
OUTREACH ENDEAVOURS

Our School has been actively expanding its academic links with universities worldwide and prestigious scientific institutions. This has been achieved through the signing of collaborative agreements, the establishment of joint research centres, and participation in joint scientific activities.

Academic Connections

Our School has built strong academic ties with many renowned universities and research institutions outside Hong Kong by signing Memoranda of Understanding (MoU) to promote collaborative research partnerships or joint training programmes for students. During the reporting period, the School signed new MoUs with Fudan University, Harbin Medical University, The Chinese University of Hong Kong (Shenzhen) and the University of Manchester.

The following is a full list of our partner institutions (in alphabetical order by the institutions' names):



26 June 2020

Guangdong-Hong Kong Advanced Institute for Regenerative Medicine Meeting

07 August 2020

2020 Monash University – CUHK PhD Exchange Virtual Symposium

Academic and Scientific Activities

11 November 2020

5th Academic Committee Meeting of the Ministry of Education Key Laboratory for Regenerative Medicine (CUHK – Jinan University)

18 November 2020

2020 Guangdong – Hong Kong Postgraduate Research Symposium and Exchange on Regenerative Medicine, organised by the MOE Key Laboratory for Regenerative Medicine

23 June 2021

Partnership Steering Committee Meeting between CUHK and Zhejiang University

30 June 2021

Inauguration of CUHK – Fudan University Joint Research Centre in Life and Biomedical Sciences

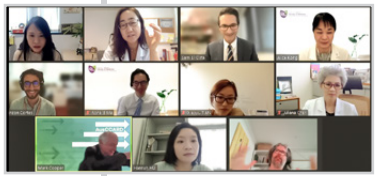
Academic and Scientific Activities

08 September 2021

CUHK – Shandong University Collaboration Agreement Signing Ceremony

28 September 2021

2021 Monash University – CUHK PhD Exchange Virtual Symposium



SBS Joint Postgraduate Workshop with the College of Pharmaceutical Sciences of Zhejiang University

19 November 2021

06 June 2022

SBS Meeting with the School of Lab Medicine, Chongqing Medical University

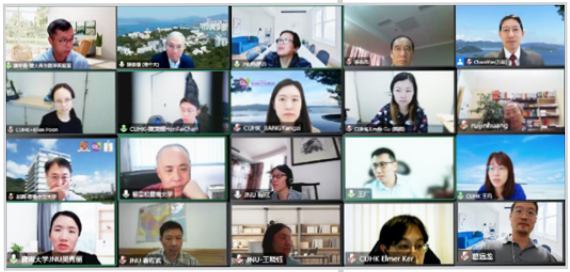
25 April 2022

CAS KIZ – CUHK Joint Laboratory of Bio-resources and Molecular Research of Common Diseases Seminar

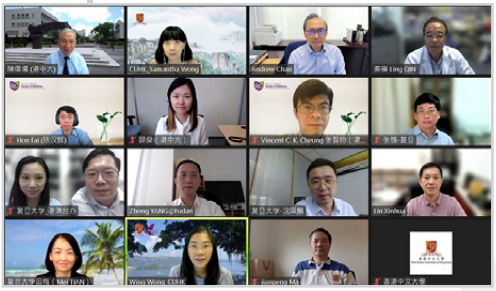
26 November 2021

CUHK – Fudan University Online Meeting

22 September 2022



CUHK – Fudan University Joint Research Centre in Life and Biomedical Sciences Online Collaborative Seminar

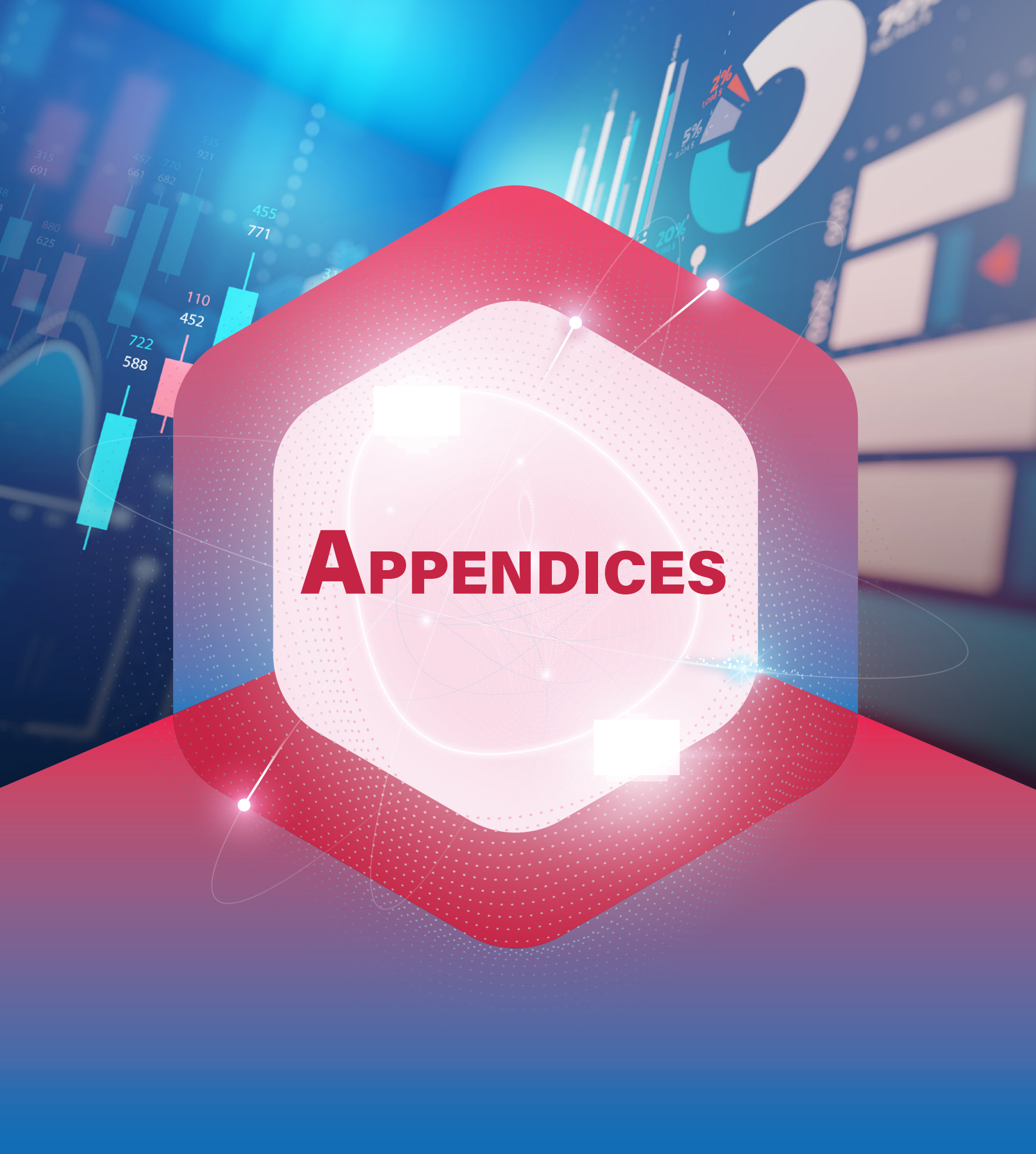


14 November 2022

2022 Guangdong – Hong Kong Postgraduate Research Symposium and Exchange on Regenerative Medicine

14 December 2022

CUHK – Greater Bay Area Institute of Precision Medicine (Guangzhou) Collaboration Agreement Signing Ceremony


APPENDICES

Appendix 1

List of Associate Members of Thematic Research Programs (TRPs) in 2020 – 22

Name	Home Department/ Institution
Cancer Biology and Experimental Therapeutics	
Prof. Stephen L. Chan	Department of Clinical Oncology, CUHK
Prof. Stella S.W. Chan	School of Health Sciences, Caritas Institute of Higher Education (CIHE)
Prof. Anthony T.C. Chan	Department of Clinical Oncology, CUHK
Prof. Anthony W.H. Chan*	Department of Anatomical and Cellular Pathology, CUHK
Prof. Paul B.S. Lai	Department of Surgery, CUHK
Prof. Lan Hui-yao	Li Ka Shing Institute of Health Sciences, CUHK
Prof. Lo Kwok-wai	Department of Anatomical and Cellular Pathology, CUHK
Prof. Ng Chi-fai	Department of Surgery, CUHK
Prof. Simon S.M. Ng*	Department of Surgery, CUHK
Prof. Billy W.L. Ng	School of Pharmacy, CUHK
Prof. Kenneth K.W. To	School of Pharmacy, CUHK
Prof. Nathalie Wong	Department of Anatomical and Cellular Pathology, CUHK
Prof. William K.K. Wu	Department of Anaesthesia and Intensive Care, CUHK
Prof. Yu Jun	Department of Medicine and Therapeutics, CUHK
Development and Regenerative Biology	
Prof. Bian Liming*	Faculty of Engineering, CUHK
Prof. Juliana C.N. Chan	Department of Medicine and Therapeutics, CUHK
Prof. Clement L.K. Chan	Private Practitioner
Prof. Jack C.Y. Cheng	Department of Orthopaedics and Traumatology, CUHK
Prof. Richard K.W. Choy	Department of Obstetrics and Gynaecology, CUHK
Prof. Oscar K.S. Lee*	Department of Orthopaedics and Traumatology, CUHK
Prof. Leung Ting-fan	Department of Paediatrics, CUHK
Prof. Li Gang	Department of Orthopaedics and Traumatology, CUHK
Prof. Poon Wai-sang	Department of Surgery, CUHK
Prof. Nelson L.S. Tang	Department of Chemical Pathology, CUHK
Prof. Wu Chi	Department of Chemistry, CUHK

* *Associate member(s) in 2020–21 only*
\# *Associate member(s) in 2021–22 only*

Name	Home Department/ Institution
Neural, Vascular, and Metabolic Biology	
Prof. Bian Liming*	Faculty of Engineering, CUHK
Prof. Juliana C.N. Chan	Department of Medicine and Therapeutics, CUHK
Prof. Clement L.K. Chan	Private Practitioner
Prof. Jack C.Y. Cheng	Department of Orthopaedics and Traumatology, CUHK
Prof. Richard K.W. Choy	Department of Obstetrics and Gynaecology, CUHK
Prof. Oscar K.S. Lee*	Department of Orthopaedics and Traumatology, CUHK
Prof. Leung Ting-fan	Department of Paediatrics, CUHK
Prof. Li Gang	Department of Orthopaedics and Traumatology, CUHK
Prof. Poon Wai-sang	Department of Surgery, CUHK
Prof. Nelson L.S. Tang	Department of Chemical Pathology, CUHK
Prof. Wu Chi	Department of Chemistry, CUHK

Neural, Vascular, and Metabolic Biology	
Prof. Chen Zhen-yu	School of Life Sciences, CUHK
Prof. Jonathan C.H. Choi	Department of Biomedical Engineering, CUHK
Prof. Linda C.W. Lam*	Department of Psychiatry, CUHK
Prof. Christopher K.S. LEUNG#	Department of Ophthalmology, The University of Hong Kong
Prof. Kathy O.L. Lui	Department of Chemical Pathology, and Li Ka Shing Institute of Health Sciences, CUHK
Prof. Ronald C.W. Ma	Department of Medicine and Therapeutics, CUHK
Prof. Vincent C.T. Mok	Department of Medicine and Therapeutics, CUHK
Prof. Calvin C.P. Pang	Department of Ophthalmology and Visual Sciences, CUHK
Prof. Faye S.Y. Tsang	School of Life Sciences, CUHK
Prof. Wan Song	Department of Surgery, CUHK
Prof. Ronald C.C. Wang	Department of Obstetrics and Gynaecology, CUHK
Prof. Patrick C.M. Wong*	Department of Linguistics and Modern Languages, CUHK
Prof. Justin C.Y. Wu*	Department of Medicine and Therapeutics, CUHK

* *Associate member(s) in 2020–21 only*
\# *Associate member(s) in 2021–22 only*

Appendix 2

List of Seminars/Symposia organized by the School between 1 July 2020 and 30 June 2022

Speaker's Name	Home Institution / Organisation	Title of Seminar / Symposium	Date (DD/MM/YYYY)
Frontiers / Theme-based Seminar			
Prof. Han Weiping	Singapore Bioimaging Consortium, Agency for Science, Technology and Research (A*STAR), Singapore	Targeting metabolism in cancer stratification and therapy	06/08/2020
Prof. Wang Zhao-qi	Friedrich-Schiller-University Jena, Germany	Interplay of DNA damage response and mitochondrial integrity	15/10/2020
Prof. Liu Haikun	Uni Heidelberg, Germany	Stem cells and cancer in the central nervous system	29/10/2020
Prof. Eunjoon Kim	Korea Advanced Institute of Science and Technology (KAIST), Korea	NMDA receptor dysfunction in autism spectrum disorders	19/02/2021
Dr. Tan Zhiwu	The University of Hong Kong, HKSAR	Developing Novel Immunotherapeutic Approaches to the Treatment of Cancer	12/03/2021
Dr. Jiang Di	Science, AAAS	Opening the black box: an editor's perspective on scientific publishing	19/03/2021
Prof. Jason Wong	The University of Hong Kong, HKSAR	Uncovering mutational processes from the sequence of cancer genomes	09/04/2021
Prof. Chim Chor-Sang, Prof. James S.H. Ho	The University of Hong Kong, HKSAR	Applications of molecular understandings of blood cancer: the model of multiple myeloma	23/04/2021
Dr. Jia Wang	Sun Yat-Sen University, China	3D Genome Architectures Regulated by Phase Separation for Cell Fate Transitions	26/07/2021
Prof. Huang Guo	University of California San Francisco, USA	Molecular Control of Organ Regeneration: Insights from Platypus, Anteaters, Bats and Whales	16/12/2021
Prof. Park Jong-In	Medical College of Wisconsin, USA	Targeting mortalin in MEK/ERK-dependent tumors	06/01/2022
Prof. Sara Wickström	The University of Hong Kong, HKSAR	Regulation of stem cell fate and integrity by niche-derived factors and forces	27/01/2022
Dr. Didier Stainier	Goethe University, Frankfurt, Germany	Biological robustness: genetic compensation and transcriptional adaptation	24/02/2022
Prof. Paula Bos	Virginia Commonwealth University, USA	Cell extrinsic mechanisms controlling breast cancer progression and metastasis	31/03/2022
Prof. Jan Schnupp	City University of Hong Kong, HKSAR	How to improve bionic hearing through cochlear implants	27/05/2022
Other Research Seminar			
Dr. Xu Chunliang	Albert Einstein College of Medicine, New York, USA	Regulation of a Genetic Disease by Nongenetic Factors: Environment, Microbiota and Neuron	07/07/2020
Dr. Zhang Gao	Duke University, USA	Understanding and Overcoming Adaptive Response, Primary and Acquired Resistance to Targeted Therapy and Immunotherapy in Metastatic Melanoma	28/08/2020
Prof. Hannah Hui	The University of Hong Kong, HKSAR	Adipose Browning as a New Option to Combat Obesity and Comorbidities 11	11/09/2020
Prof. Stephen Dalton	University of Georgia, USA	Using adult and pluripotent stem cells as a platform to develop therapies for type 2 diabetes	16/12/2020
Prof. Zhou Jingying	The Chinese University of Hong Kong, HKSAR	Applying T cell-based immunotherapies for primary and metastatic cancer cure	03/03/2021
Dr. Joaquim Vong	The Chinese University of Hong Kong, HKSAR	An introduction of the Single Cell Omics Core (SCOC)	22/03/2021
Prof. Cora Lai	The University of Hong Kong, HKSAR	A Lesson from the environmental enrichment: parvalbumin interneuron acts as a key regulator for the yin and yang in the frontal cortex	10/05/2021

Speaker's Name	Home Institution / Organisation	Title of Seminar / Symposium	Date (DD/MM/YYYY)
Frontiers / Theme-based Seminar			
Prof. Ellen N.Y. Poon	The Chinese University of Hong Kong, HKSAR	Mitochondria-rich human pluripotent stem cell derived-cardiomyocytes uniquely recapitulate disease phenotype and drug responses	07/07/2021
Dr. Leina Lu	Case Western Reserve University, USA	Robust eHi-C Maps of E-P Interactions in Neural Development and Diseases	12/07/2021
Dr. He Yisheng	The Chinese University of Hong Kong, HKSAR	Hazard from natural products: basic and translational study on pyrrolizidine alkaloids	09/08/2021
Dr. Wang Wuming	The Chinese University of Hong Kong, HKSAR	Non-CG methylation patterns participate in shaping the epigenetic landscape during cardiogenesis	31/08/2021
Dr. Carol M. Tong	The University of Hong Kong, HKSAR	Harnessing tumor heterogeneity and circumventing therapeutic resistance in liver cancer	24/01/2022
Dr. Jia Wang	Sun Yat-Sen University, China	Phase Separation-Dependent Reorganization of 3D Genome Promotes Cell Fate Transitions	16/02/2022
Prof. Michelle D. Wang	The Chinese University of Hong Kong, HKSAR	Basic to Translational Science: Tissue Engineering Adventures in Bone-Tendon Repair	28/02/2022
Prof. Jiang Yangzi	The Chinese University of Hong Kong, HKSAR	Cartilage Stem/Progenitor Cells in Tissue Regeneration and Degeneration	09/03/2022
Dr. Bo Gao	The University of Hong Kong, HKSAR	Planar Cell Polarity Signaling - the compass of the developing cells	23/05/2022
Prof. Barbara Chan	The University of Hong Kong, HKSAR	Building Tissues from Scratch – Enabling Technologies, Scientific Understanding, Clinical Translations and Challenges ahead	10/06/2022

SBS PI Seminar Series

Speaker's Name	Title of Seminar / Symposium	Date (DD/MM/YYYY)
Cancer, Biology and Experimental Therapeutics		
Prof. Alfred S.L. Cheng	Translating Epigenetic Mechanism Discoveries to Advance Cancer Immunotherapy	17/02/2022
Prof. Lin Ge	Investigation of pyrrolizidine alkaloid induced liver injury - implication for clinical diagnosis and safety assessment of herbal and dietary hepatotoxicity	31/03/2022
Prof. So Hon-cheong	Translating genomics and medical big data into clinical practice: applications to psychiatry and other complex diseases	26/05/2022
Prof. Andrew M. Chan	PTEN/RCC2/BACH1/HK2 signalling axis: a potential pathway linking mitosis to metabolism in gliomas	23/06/2022
Development and Regenerative Biology		
Prof. Woody W.Y. Chan	Migration of sacral neural crest cells in the mouse: Implications for Hirschsprung's disease	10/03/2022
Prof. Sham Mai-har	The roles of Irx genes in craniofacial and sensory development	07/04/2022
Prof. Anna M. Blocki	Engineering and modulating microenvironments to promote tissue regeneration and healing in ischemic diseases	14/04/2022
Prof. Ellis K.L. Fok	Reproductive tract mticroenvironments: biology and the implications	02/06/2022
Prof. Cynthia X. Jiang	hESC-derived Neural Crest Cells for Pediatric Disease Modeling and Treatment	30/06/2022
Neural, Vascular, and Metabolic Biology		
Prof. Hector S.O. Chan	Experimental models for study of ocular inflammation	17/03/2022
Prof. Yao Xiaoqiang	Role of TM9SF4 in Actin Dynamics and Ovarian Cancer Metastasis	24/03/2022
Prof. Hannah Hui	Na+ K+ futile cycle facilitates a noncanonical energy expenditure in white adipose tissue	21/04/2022
Prof. Ellen N.Y. Poon	Using human pluripotent stem cells-derived cardiomyocytes to investigate cardiotoxicity induced by anti-cancer and anti-viral treatment	09/06/2022

Appendix 3

List of Publications by SBS members for the period between 1 July 2020 and 30 June 2022 ^

^ *Retrieved from the CUHK Academic Information Management System (AIMS) administered by the Office of Research and Knowledge Transfer Services on 14 August 2023.*

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School of Biomedical Sciences
Faculty of Medicine
The Chinese University of Hong Kong

Room G03, G/F, Lo Kwee-Seong Integrated
Biomedical Sciences Building, Area 39,
The Chinese University of Hong Kong,
Shatin, New Territories, Hong Kong

Telephone : (852) 3943 1233

Fax : (852) 2603 5123

Email : sbs.med@cuhk.edu.hk

Website : http://www2.sbs.cuhk.edu.hk/en-gb/

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