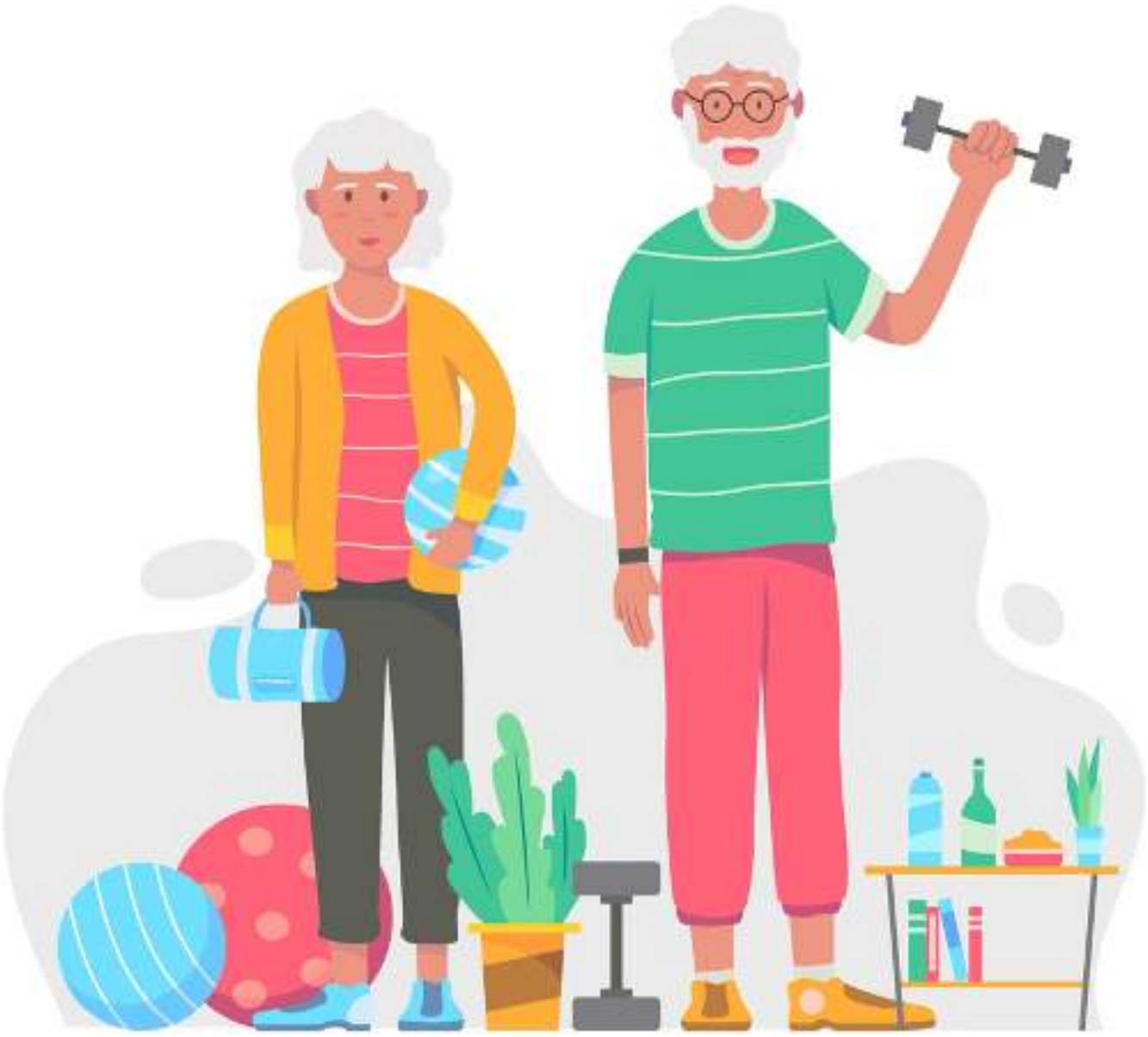
ISSUE NO
06
JAN 2023

Towards a Healthier Singapore

LKCMedicine's Commitment to Research and Development in Nutrition, Metabolism, and Health in the Face of an Ageing Population



STRIDES

The Research Newsletter of
Lee Kong Chian School of Medicine

LEE KONG CHIAN SCHOOL OF MEDICINE
NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE
Imperial College London

CONTENT OVERVIEW

EDITORIAL BOARD

FROM THE VDR'S DESK

A Healthier New Year by Vice-Dean (Research), Professor Lim Kah Leong

Vice-Dean (Research), Professor Lim Kah Leong

Happy New Year and welcome to the first edition of STRIDES for 2023. In this issue, we are focusing on the theme of creating a healthier Singapore by studying aspects of nutrition, metabolism, and health. Our researchers are delving deep into the intricacies of the microbiome and its impact on human health while investigating new ways to improve the nutritional status of our population and understand the underlying mechanisms of metabolic disorders.

In this issue, you will also find articles showcasing other groundbreaking research conducted by our faculty and students, as well as the impactful collaborations with external partners. This includes a feature on our Vice-Dean (Education) Prof Jennifer Cleland, who discussed the use of digital resources for research, particularly in light of the shift to online and remote working due to Covid-19. Her team observed that Singapore heavily relies on photographs rather than text in various aspects of life and wrote a methodological paper on the use of digital images and photographs for research purposes to encourage their field of medical education to move beyond traditional text-based methodologies.

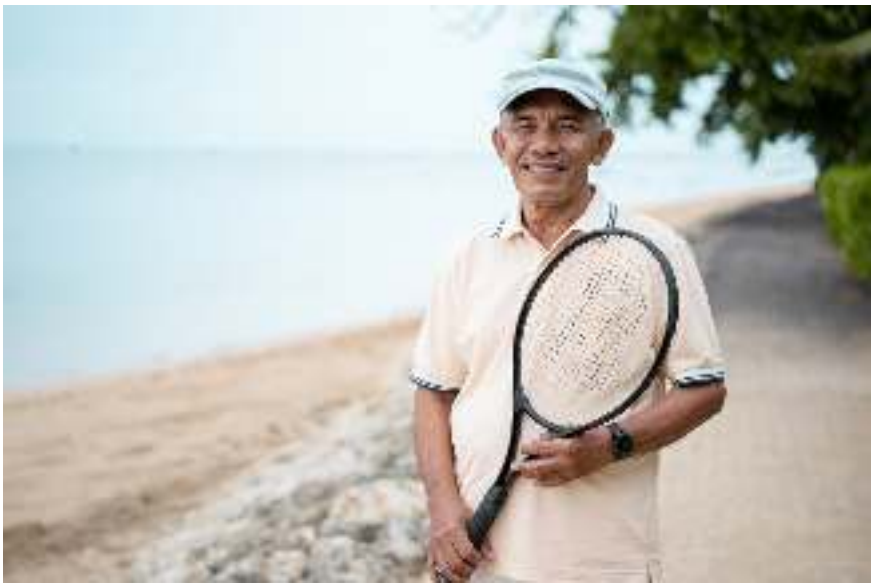
As we embark on this new year, we are committed to continuing our efforts in generating impact to the world of knowledege and applying our newfound knowledge towards improving the health and well-being of our community. We look forward to working with our partners NHG and Imperial College London, as well as others in the industry and academia to bring about real-world impact through our research.

Thank you for your continued support, and we hope you will enjoy reading this issue of *STRIDES*.

TOWARDS A HEALTHIER SINGAPORE

LKCMEDICINE'S COMMITMENT TO RESEARCH AND DEVELOPMENT IN NUTRITION, METABOLISM, AND HEALTH IN THE FACE OF AN AGEING POPULATION

BY EUGENE WOON & SUFIAN SUDERMAN, LKCMEDICINE, RESEARCH ADMINSTRATION AND SUPPORT SERVICES



Despite an aging population, growing burden of chronic diseases, and rising healthcare costs, Singapore continues to maintain its investment in research, innovation, and enterprise at approximately 1% of the country's GDP (approximately S$25 billion) under the RIE2025 initiative (2021-2025). This demonstrates the nation's ongoing and long-term dedication to research and development despite economic fluctuations.

Singapore's population, like those of many countries, is ageing rapidly. It is projected that the percentage of people aged 60 and over will increase from 13.3% in 2010 to 31.9% in 2050, making Singapore a country with a high proportion of older citizens. An increasingly ageing population and low death rates may see a higher proportion of people living with diabetes.

Ever since Singapore declared war on diabetes in 2016, the nation is still deep in the trenches and battling the disease till today. Heeding Singapore's call to arms against diabetes, the Lee Kong Chian School of Medicine's (LKCMedicine) Metabolic Disorders Programme was expanded into the Nutrition, Metabolism & Health Programme in 2021 to include the gastrointestinal system and nutrition; a reflection of the key determinants of obesity, diabetes, related gut and metabolic disorders that are acutely felt in Singapore's rapidly ageing population. The programme aims to understand the developmental and environmental factors of these disorders, and translating this knowledge into disease alleviation and prevention to maximise human potential.

For example, a study led by Associate Professor Yusuf Ali, LKCMedicine's Programme Director of Nutrition, Metabolism & Health, found that saturated fatty acids can degrade a protein required for lipid droplet biogenesis, FIT2, which then initiates a cascade of events that lead to the death of insulin-producing cells. This results in a shortage of insulin, which causes the body to have difficulty in processing carbohydrates, and progress towards Type-2 Diabetes. The study, published in PNAS, provides new insight into the link between saturated fats and diabetes (Zheng et al 2022). Its findings suggest diabetic patients should be mindful of the amount of saturated fats in their diet, which are commonly found in red meats, meat products, and dairy products, when choosing protein over white rice.

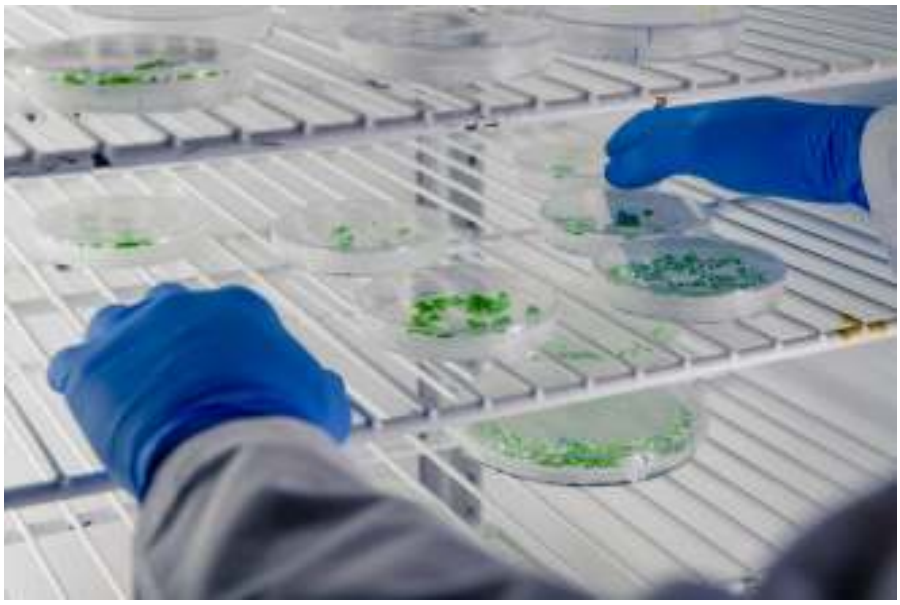
"LKCMedicine is conducting intensive work to better understand the mechanisms behind obesity, diabetes, related gut and metabolic disorders. We hope to translate this understanding into disease alleviation and prevention with better drug delivery and precision medicine to maximise our human potential," said Associate Professor Yusuf Ali.

To complement the Nutrition, Metabolism & Health Research Programme, LKCMedicine launched the Centre for Microbiome Medicine (CMM) on 14 September 2022. The CMM is a research facility that aims to improve human health and find new ways to treat diseases by leveraging the microbiome. The gut microbiome refers to the microbial communities, including genes and metabolic products, found in the gut of adult humans. These communities are generally considered to be diverse and regulated by factors such as diet, exercise, gender, and age. As individuals age, the composition of their gut microbiome may shift, which is often linked to health issues such as chronic diseases, cognitive decline, and cancer.

TOWARDS A HEALTHIER SINGAPORE

LKCMEDICINE'S COMMITMENT TO RESEARCH AND DEVELOPMENT IN NUTRITION, METABOLISM, AND HEALTH IN THE FACE OF AN AGING POPULATION

BY EUGENE WOON & SUFIAN SUDERMAN, LKCMEDICINE, RESEARCH ADMINSTRATION AND SUPPORT SERVICES



Boosted by a S$2.5 million gift from Ms Petrina Leong, Ms Sandy Leong, and Mr Jimmy Leong through the Madam Wang Lee Wah Memorial Fund, the CMM led by LKCMedicine Associate Professor of Nutrition, Digestion and Metabolism and Assistant Dean, Academic Medicine Sunny Wong, will work with partners like the National Healthcare Group (NHG), Imperial College London (Imperial), and Singapore-based precision gut microbiome company AMILI to unravel the mechanisms behind microbiome and diseases.

"The gut microbiome, influenced by factors such as nutrition and exercise, plays a crucial role in the development of digestive diseases, metabolic syndrome, and obesity. Understanding the intricacies of this diverse microbial community can lead to new insights into disease prevention and management, as well as the development of personalised treatment options. As the microbiome has been shown to play a key role in various bodily functions and health conditions, it has become an increasingly important field of research," said Associate Professor Sunny Wong.

The Nutrition, Metabolism & Health Programme actively seeks to partner other research and clinical organisations both locally and internationally to co-develop research projects and to leverage on its cutting-edge research capabilities. Through workshops and symposiums, the Programme builds and strengthens the ties between LKCMedicine and its partners, NHG and Imperial, as well as explores potential collaborations and research ideas to expand its partnership network.

For instance, LKCMedicine met with the London Institute of Medical Sciences (LMS), a partnership between Imperial and the Medical Research Council (United Kingdom), for a virtual "Innovation Mixer" in May 2021. The mixer provided an avenue for participants to discuss tumour metabolism, epigenetic evolution, and ageing. In light of a world gone digital, LMS Director Professor Dame Amanda Fisher FRS, and LKCMedicine Toh Kian Chui Distinguished Professor Philip Ingham FRS, encouraged participants to use the virtual networking to seed and kick-start future collaborations.

At the local level, LKCMedicine engaged with its counterparts from other NTU Schools through a Microbiome Medicine workshop in September 2021. The workshop laid the groundwork for future collaborations, as well as plans for more workshops on microbiome. In addition, LKCMedicine faculty and NHG participated in the NHG-LKCMedicine Joint Symposium on Metabolic Health in August 2022 to tackle the complexities of the issue together. The joint symposium series is an ongoing effort to fortify the collaborative bond between the medical school and its clinical partner across research disciplines.

LKCMedicine's ongoing commitment to new findings in the field of nutrition, metabolism, and health has positioned it at the forefront of the field. Through investing in state-of-the-art infrastructure and building a strong network of partners, LKCMedicine is well-equipped to continue making significant contributions to the field of nutrition, metabolism, and health for positive impact to human health.

References
https://www.diabetes.org.sg/about-diabetes/the-singapore-demographics-of-diabetes/
https://www.ntu.edu.sg/news/detail/study-finds-saturated-fat-may-worsen-diabetes?utm_medium=social
https://www.nrf.gov.sg/rie2025-plan
Zheng X., Ho Q.W.C., Chua M., Stelmashenko O., Yeo X.Y., Muralidharan S., Torta F., Chew E.G.Y., Lian M.M., Foo J.N., Jung S., Wong S.H., Tan N.S., Tong N., Rutter G.A., Wenk M., Silver D.L., Berggren P.O., Ali Y. Destabilization of ß-cell FIT2 by saturated fatty acids alter lipid droplet numbers and contribute to ER stress and diabetes. PNAS U.S.A. 2022 119 (11) e2113074119.

MINISTER FOR HEALTH LAUNCHES SG100K AND ENROLS IN STUDY

LKCMedicine is conducting Singapore's largest longitudinal study, SG100K, which aims to identify the social, environmental, lifestyle, and genetic factors associated with diseases prevalent in Singapore, such as diabetes, hypertension, and cancer. It will include 100,000 Singaporeans and span over several decades. The study could lead to the development of better tools for predicting and preventing chronic diseases among Singaporeans and other Asian populations. The study was officially launched by Singapore's Minister for Health, Mr Ong Ye Kung, who also joined the study as a participant.

LKCMEDICINE LAUNCHES BIOSAFETY LEVEL 3 LABORATORY

The launch of LKCMedicine's new Biosafety Level 3 laboratory (BSL-3) on 2 December, marked a significant milestone in the progress of research into pandemic viruses and deadly bacterial infections. Guest-of-Honour, Associate Professor Kenneth Mak, Director of Medical Services at the Ministry of Health, graced the occasion. The laboratory located in the Experimental Medicine Building, will enable safe handling of dangerous bacteria and viruses, taking research efforts to the next level.

SOFT LAUNCH OF THE ACADEMY OF CLINICIAN SCIENTISTS & INNOVATORS

LKCMedicine marked another milestone with the soft launch of the Academy of Clinician Scientists and Innovators (ACSI) on 31 October. The new initiative is aimed at growing clinical research, innovation and attracting and nurturing research and innovation talents within the National Healthcare Group (NHG) and LKCMedicine. This exciting development is set to take LKCMedicine to new heights as it continues to lead the way together with NHG in advancing healthcare through research and innovation.

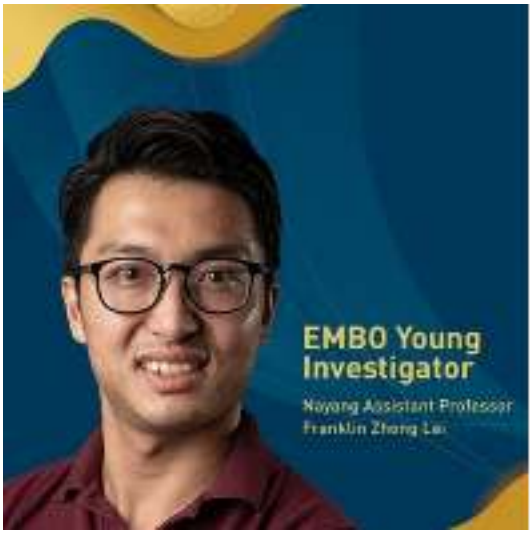
LKCMEDICINE DEAN CONFERRED THE INTERNATIONAL TÜBA ACADEMY AWARD (HEALTH & LIFE SCIENCES)

LKCMedicine Dean Professor Joseph Sung is proud to receive the International TÜBA Academy Award (Health & Life Sciences) presented by the Turkey Academy of Sciences, at a ceremony in the capital Ankara on 28 December. In line with TÜBA's mission of encouraging and appreciating scientists, scientists were conferred awards in three categories: Social and Human Sciences, Health and Life Sciences, and Science and Engineering Sciences. Prof Sung was recognised for his unique, pioneering and groundbreaking treatment approaches. He showed that peptic ulcer bleeding can be treated with the use of antibiotics and treated endoscopically, without the need for surgery.

LKCMEDICINE FACULTY NAMED AS CLAVIRATE'S HIGHLY CITED RESEARCHERS 2022

Being named on the list of Highly Cited Researchers 2022 by Clarivate on 15 November, is a feather in the cap for LKCMedicine Dean Professor Joseph Sung, Professor David Lye, Professor Laurent Renia, Joint Professors Chen Peng, Chen Xiaodong, and Joint Associate Professor Pu Kanyi. This recognition adds to the prestige and reputation of the institution and the researchers.

LKCMEDICINE FACULTY RECOGNISED BY SCIENTIFIC COMMUNITY



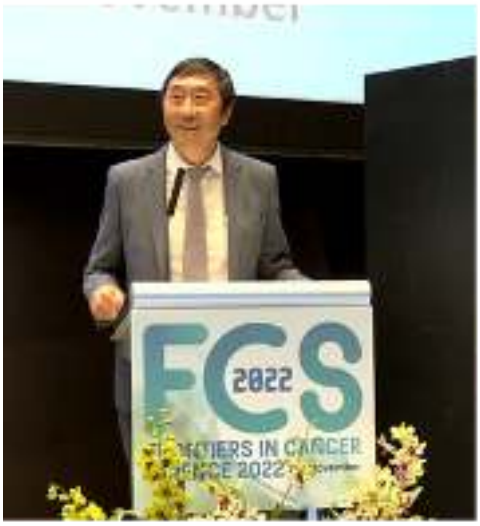
The inclusion of LKCMedicine's Nanyang Assistant Professor Franklin Zhong among the 24 life scientists selected as the newest members of the prestigious EMBO Young Investigator Programme and Nanyang Assistant Professor Christine Cheung receiving the highly coveted Nanyang Research Award (Young Investigator) on 22 November adds prestige and standing to the institution. These recognitions are a testament to the excellence of the research being conducted by the institution's young investigators and the level of talent and dedication among the faculty.

2ND PAN-ASIA SYMPOSIUM ON GENETICS OF BRAIN DISORDERS



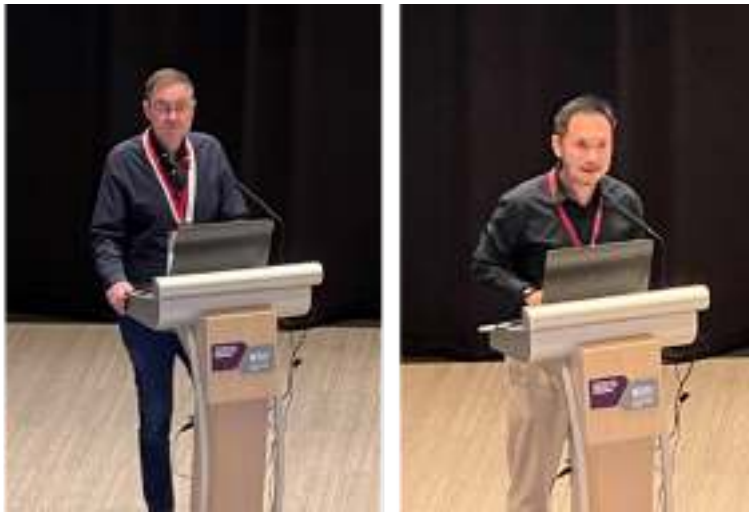

LKCMedicine recently played host to the highly anticipated 2nd Pan-Asia Symposium on Genetics of Brain Disorders, which took place from 3-5 November. The event brought together some of the world's leading experts in neuropsychiatric disorders, provided a platform for the sharing of cutting-edge research and fostered collaboration towards the development of more effective therapeutics. One of the highlights of the symposium was a keynote lecture by Harvard University Distinguished Service Professor of Stem Cell and Regenerative Biology Steven E Hyman from the Stanley Center for Psychiatric Research at the Broad Institute of MIT and Harvard, USA, who impressed the audience with a talk titled "Psychosis: Progress in understanding complex brain disease".

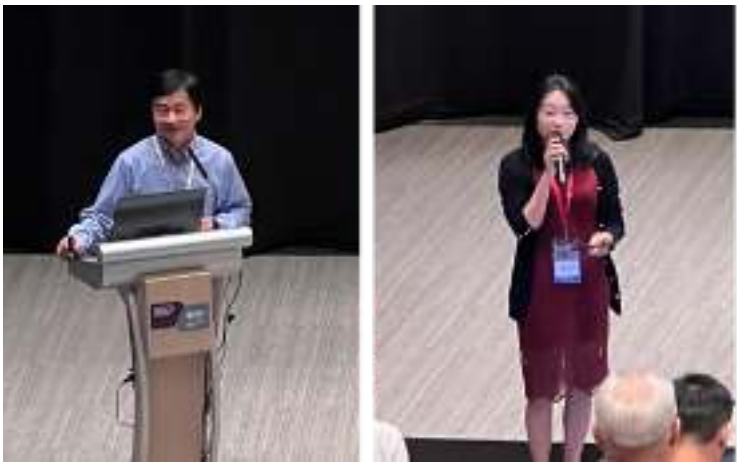
14TH ANNUAL CONFERENCE: FRONTIERS IN CANCER SCIENCE 2022



LKCMedicine continues to be the preferred venue for international conferences as the School recently played host to the 14th Annual Conference: Frontiers in Cancer Science 2022, which took place from 7-9 November. The event attracted distinguished cancer researchers from across the globe, provided a platform for the exchange of ideas and information, and fostered collaboration among international experts in the field. Attendees had the opportunity to gain insight into the latest research and developments in cancer science, and learn from experts who are at the forefront of the fight against cancer. It was a great opportunity for professionals and enthusiasts alike to stay up to date on the latest advances and be a part of the international conversation on cancer research.

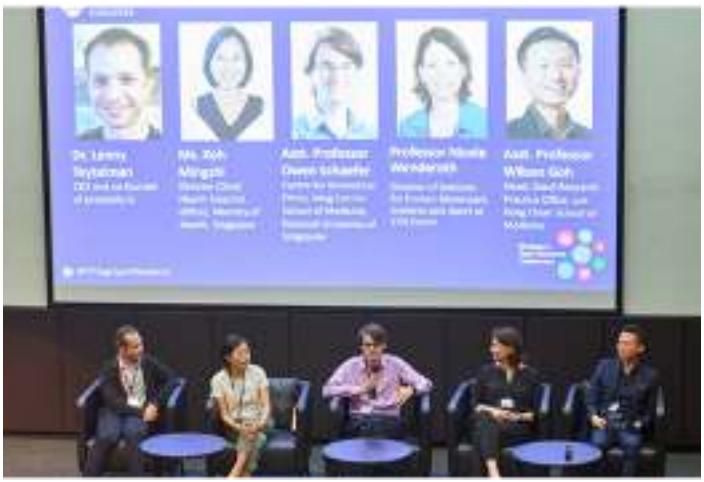
14TH STEM CELL SOCIETY SINGAPORE SYMPOSIUM 2022





LKCMedicine recently played host to the 14th Stem Cell Society Singapore Symposium 2022, which took place from 7-9 December, bringing together distinguished international stem cell researchers with complementary knowledge and expertise in stem cell and cell therapy research from across the globe. The event provided a platform for the exchange of ideas and information and was a great opportunity for researchers and enthusiasts alike to stay at the forefront of the latest breakthroughs in stem cell research and discover the latest trends and developments in the field.

INAUGURAL SINGAPORE OPEN RESEARCH CONFERENCE



The inaugural Singapore Open Research Conference is a collaborative effort between the NTU Research Integrity and Ethics Office, NTU Library, and LKCMedicine. The conference was graced by Guest-of-Honour, Professor Ling San, who serves as the NTU Deputy President and Provost, and holds the President's Chair in Mathematical Sciences. In his keynote speech, Prof Ling San discussed the importance of accelerating research through responsible open science practices.

IN PARTNERSHIP WITH NATIONAL HEALTHCARE GROUP

On 25 November, LKCMedicine and the National Healthcare Group (NHG) came together for a joint symposium on Mind-Brain Disorders. The 8th session in a series of thematic research symposiums, the event brought together faculty from both institutions to share their latest findings and discuss the latest developments in the field of mind-brain disorders. It was a valuable opportunity for professionals and enthusiasts alike to stay up-to-date on the latest research and advancements in the field, and to engage in thought-provoking discussions about the future of mind-brain disorder research.

GRANT AWARDS
CONGRATULATIONS TO ALL!

MOE AcRF Tier 1

Balazs Zoltan Gulyas
Theranostics approach for the treatment of Parkinson's Disease

Navin Kumar Verma
Understanding Immunomodulatory Impact of Bioengineered Scaffold Topologies in the Skin Wound

MOE AcRF Tier 1 Seed Funding

Lim Jue Tao
Mixed data sampling models to infer the impacts of exposomes on disease burden

NTUitive Gap Fund

David Lawrence Becker
Bringing advanced chronic wound care to consumers - correcting elements of chronic wounds with Product Ten

Yusuf Ali
Formulation and Dosing for Novel Oral Insulin

Nanyang Research Award (Young Investigator)

Christine Cheung
Molecular underpinning of endothelial dysfunction in metabolic and inflammatory conditions

ICL (Brain Sciences)-UKDRI-LKCMed Collaborative Neuroscience Research Pilot Grant

Anna Barron
Novel therapeutics to improve cardiovascular risk profile of statins

Christine Cheung
Targeting venous susceptibility in cerebral ischemia

Sarah Raye Langley
Investigating the crosstalk between histone modifications and alternative splicing in Alzheimer's disease

LKCMed-MiRXES Service Grant

Christine Wong Siu Ling
Circulating microRNA as novel biomarkers for vascular health profiling in type 2 diabetes mellitus

Joanne Ngeow Yuen Yie
Contribution of miRNA and short telomere length to Progressive Fibrosing Interstitial Lung Disease: A Singaporean Interstitial Lung Diseases Cohort Study

Yeo Tsin Wen
Identifying early expression of neutrophils miRNAs as possible biomarkers of severe dengue

Lee Kuan Yew Postdoctoral Fellowship

Song Chenchen
Epigenetic reprogramming of behavioural setpoints

NTU Presidential Postdoctoral Fellowship

Ng Wei Tian Alvin
Multi-omic detection of mutational processes in patients with germline mutations and hereditary cancers

LKCMedicine Dean's Postdoctoral Fellowship

Cheng Hong Sheng
Effect of gut microbiome dysbiosis on adaptive immune receptor repertoires in MAFLD

GRANT AWARDS
CONGRATULATIONS TO ALL!

LEARN Grant

Andrew Teo Chin Chye
Heparin binding protein and its impact on endothelial glycocalyx shedding in dengue subjects

Chew Bing Liang, Alvin
Development of automated high throughput single-domain antibody library screening method with open-source lab automation

Fransiskus Xaverius Ivan
Metagenomic plasmidome in chronic respiratory diseases

Lee Ee Soo
Role of atypical chemokine receptor 1 (ACKR1) in endothelial injury and vasculopathy among COVID-19 survivors

Tomoki Naito
Investigating the molecular basis of intracellular cholesterol transport and its impact on cell metabolism

RESEARCH PUBLICATIONS



ASSOCIATE PROFESSORS SANJAY CHOTIRMALL, ANDREW TAN & YEO TSIN WEN

THE ESTABLISHMENT OF COPD ORGANOIDS TO STUDY HOST-PATHOGEN INTERACTION REVEALS ENHANCED VIRAL FITNESS OF SARS-COV-2 IN BRONCHI

NATURE COMMUNICATIONS

Chronic obstructive pulmonary disease (COPD) is characterised by airflow limitation and infective exacerbations, however, in-vitro model systems for the study of host-pathogen interaction at the individual level are lacking. Here, we describe the establishment of nasopharyngeal and bronchial organoids from healthy individuals and COPD that recapitulate disease at the individual level. In contrast to healthy organoids, goblet cell hyperplasia and reduced ciliary beat frequency were observed in COPD organoids, hallmark features of the disease. Single-cell transcriptomics uncovered evidence for altered cellular differentiation trajectories in COPD organoids. SARS-CoV-2 infection of COPD organoids revealed more productive replication in bronchi, the key site of infection in severe COVID-19. Viral and bacterial exposure of organoids induced greater pro-inflammatory responses in COPD organoids. In summary, we present an organoid model that recapitulates the in vivo physiological lung microenvironment at the individual level and is amenable to the study of host-pathogen interaction and emerging infectious disease.



ASSOCIATE PROFESSOR JOANNE NGEOW, PROFESSOR JOHN CHAMBERS & ASSISTANT PROFESSOR LEE ENG SING

ANALYSIS OF CLINICALLY RELEVANT VARIANTS FROM ANCESTRALLY DIVERSE ASIAN GENOMES

NATURE COMMUNICATIONS

Asian populations are under-represented in human genomics research. Here, we characterize clinically significant genetic variation in 9051 genomes representing East Asian, South Asian, and severely under-represented Austronesian-speaking Southeast Asian ancestries. We observe disparate genetic risk burden attributable to ancestry-specific recurrent variants and identify individuals with variants specific to ancestries discordant to their self-reported ethnicity, mostly due to cryptic admixture. About 27% of severe recessive disorder genes with appreciable carrier frequencies in Asians are missed by carrier screening panels, and we estimate 0.5% Asian couples at-risk of having an affected child. Prevalence of medically-actionable variant carriers is 3.4% and a further 1.6% harbour variants with potential for pathogenic classification upon additional clinical/experimental evidence. We profile 23 pharmacogenes with high-confidence gene-drug associations and find 22.4% of Asians at-risk of Centers for Disease Control and Prevention Tier 1 genetic conditions concurrently harbour pharmacogenetic variants with actionable phenotypes, highlighting the benefits of pre-emptive pharmacogenomics. Our findings illuminate the diversity in genetic disease epidemiology and opportunities for precision medicine for a large, diverse Asian population.

RESEARCH PUBLICATIONS

ASSOCIATE PROFESSOR SANJAY CHOTIRMALL, ASSOCIATE PROFESSOR ANDREW TAN, PROFESSOR JOSEPH SUNG & ASSOCIATE PROFESSOR SUNNY WONG

MICROBIAL DYSREGULATION OF THE GUT-LUNG AXIS IN BRONCHIECTASIS

AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE

Emerging data supports the existence of a microbial 'gut-lung' axis that remains unexplored in bronchiectasis.

Methods: Prospective and concurrent sampling of gut (stool) and lung (sputum) was performed in a cohort of n=57 individuals with bronchiectasis and subjected to bacteriome (16S rRNA) and mycobiome (18S ITS) sequencing (total 228 microbiomes). Shotgun metagenomics was performed in a subset (n=15; 30 microbiomes). Data from gut and lung compartments were 'integrated' by weighted Similarity Network Fusion (wSNF), clustered and subjected to co-occurrence analysis to evaluate 'gut-lung' networks. Murine experiments were undertaken to validate specific Pseudomonas-driven 'gut-lung' interactions. In conclusion: A dysregulated 'gut-lung' axis, driven by lung Pseudomonas, associates with poorer clinical outcomes in bronchiectasis.

MEDICAL EDUCATION RESEARCH

PROFESSOR JENNIFER CLELAND
VICE-DEAN (EDUCATION)
LEE KONG CHIAN SCHOOL OF MEDICINE

Researching digital ways of being and working

As many of you know, I came to LKCMedicine and Singapore just over three years ago (January 2020). It was quite a culture change, one exacerbated by Covid-19. However, as an education researcher I could not help but see research questions and opportunities in my new situation.

The first came from observing that Singapore uses photographs rather than text in all spheres of life – as proof of payment or parcel delivery, to illustrate a point, to share information, to advertise an event, etc. This was very different to what I was used to in the UK (where we still like writing letters and emails), and from what I was seeing in the literature (where any study involving visual methods wanted research participants to draw pictures with pen and paper). In contexts where smartphones are ubiquitous and many people are "digital natives", asking participants to share and engage with photographs aligns with their everyday activities and norms more than textual or analogue approaches to data collection. Thus, a colleague from Dalhousie University in Canada, Prof Anna MacLeod, and I wrote a methodological paper looking at the use of digital images and photographs for research purposes. Our objective in doing so was to encourage my field of medical education to move beyond the "linguistic imperialism" of text and embrace visual methodologies. The aim was to explain the photograph as qualitative data and introduce different ways of using still images/photographs for qualitative research purposes and consider ethical and philosophical challenges associated with photography research, specifically issues of power, informed consent, confidentiality, dignity, ambiguity, and censorship.

The second inspiration was the shift to online and remote working. It was just the same for Faculty and staff as it was for students – contained in a corner of our homes, trying to juggle work and life with no clear boundaries between the two. It struck me very quickly that digital technologies were pervasively and increasingly shaping the way we interact, behave, think, and communicate as health professions educators and researchers (and as people). Understanding the contemporary culture(s) of medical education thus meant paying attention to what goes on in digital spaces. Anna and I decided to write another methodological paper, in which we critically considered some of the potential issues when the field of ethnography exists outside the space time continuum, including the need to engage with theory in research about technology and digital spaces in medical education. We were surprised to see how few studies there were on this topic, and so it was very timely to scrutinize what can be gained when ethnography encompasses the digital world, and what the issues might be in doing research in the digital space.

This kind of research is very difficult from most of the research ongoing at LKCMedicine, but I hope the inspiration for the two papers, and our focus on improving methodology in our field, resonates with all researchers no matter their disciplinary focus.

References

Cleland J, MacLeod A. Disruption in the space–time continuum: why digital ethnography matters. Advances in Health Sciences Education 2022, 27 (4); 877–892.

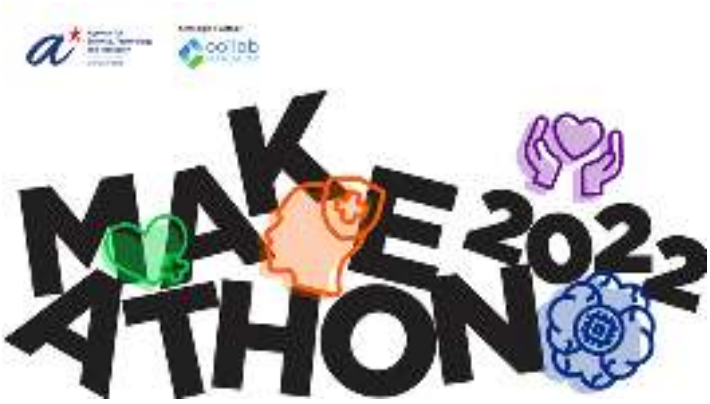
Cleland JA, MacLeod A. The visual vernacular: embracing photographs in research. Perspectives on Medical Education 2021; 10: 230-237.

MEDICAL EDUCATION RESEARCH PUBLICATIONS

	Publications	Month
1	Radzi S, **Chandrasekaran R**, Peh ZK, **Rajalingam P**, Yeong WY, **Mogali SR**. Students' learning experiences of three-dimensional printed models and plastinated specimens: a qualitative analysis. BMC medical education (Published on 1 October 2022)	October 2022
2	Saravanan R, **Chandrasekaran R, Cleland JA, Mogali SR.** What is the evidence for biology as the 'heart of eligibility' to study medicine? A retrospective analysis. Medical Teacher (Published on 31 October 2022)	October 2022
3	Shah A, Walker KA, Walker KG, Hawick L, **Cleland J**. "It's making me think outside the box at times": a qualitative study of dynamic capabilities in surgical training. Advances in Health Sciences Education Early online Oct 26 2022;1-20. doi: 10.1007/s10459-022-10170-2 (Published on 26 October 2022)	October 2022
4	Ross JC, Martin A, **Han SP**. Finding our voice—Scholarship in peer review. The Clinical Teacher (Published on 6 November 2022)	November 2022
5	**Cleland J**, MacLeod A, Ellaway RH. CARDA: Guiding document analyses in health professions education research. Medical Education. First published 18th Nov 2022 early online https://onlinelibrary.wiley.com/doi/abs/10.1111/medu.14964 (Published on 18 November 2022)	November 2022
6	You Y, Xie A, **Cleland J**. Medical students' rural practice intention: Academic performance matters. Medical Education (Published on 1 December 2022)	December 2022

INNOVATION AND ENTREPRENEURSHIP ACTIVITIES

TEAM LED BY LKCMEDICINE FACULTY CLINCHED FIRST PRIZE AT A*STAR MAKEATHON 2022



Cerebrus, led by LKCMedicine's Professor Nagaendran Kandiah, emerged victorious at the A*Star Makeathon 2022, held on October 14, 2022. The team's winning solution, POWERD, is a digital platform that enables individuals to take control of their cognitive resilience and ensure their cognitive health for a lifetime of healthy aging.

A*STAR Makeathon was co-organised with its strategic partner, co11ab - BioMedTech incubator tripartite of A*STAR,, NTU and NHG. The event aims to provide a platform for staff from A*STAR, NTU and NHG to turn their innovative ideas into prototypes through a process of making, collaborating with like-minded individuals, and solving important problems. The second edition of the Makeathon focused on the theme of Health & Wellness in the Digital Age, with challenge statements developed from insights from government agencies, healthcare institutes, academic institutions, and industry players. The event emphasizes on having fun while being creative.

WOMEN IN SCIENCE@LKCMEDICINE

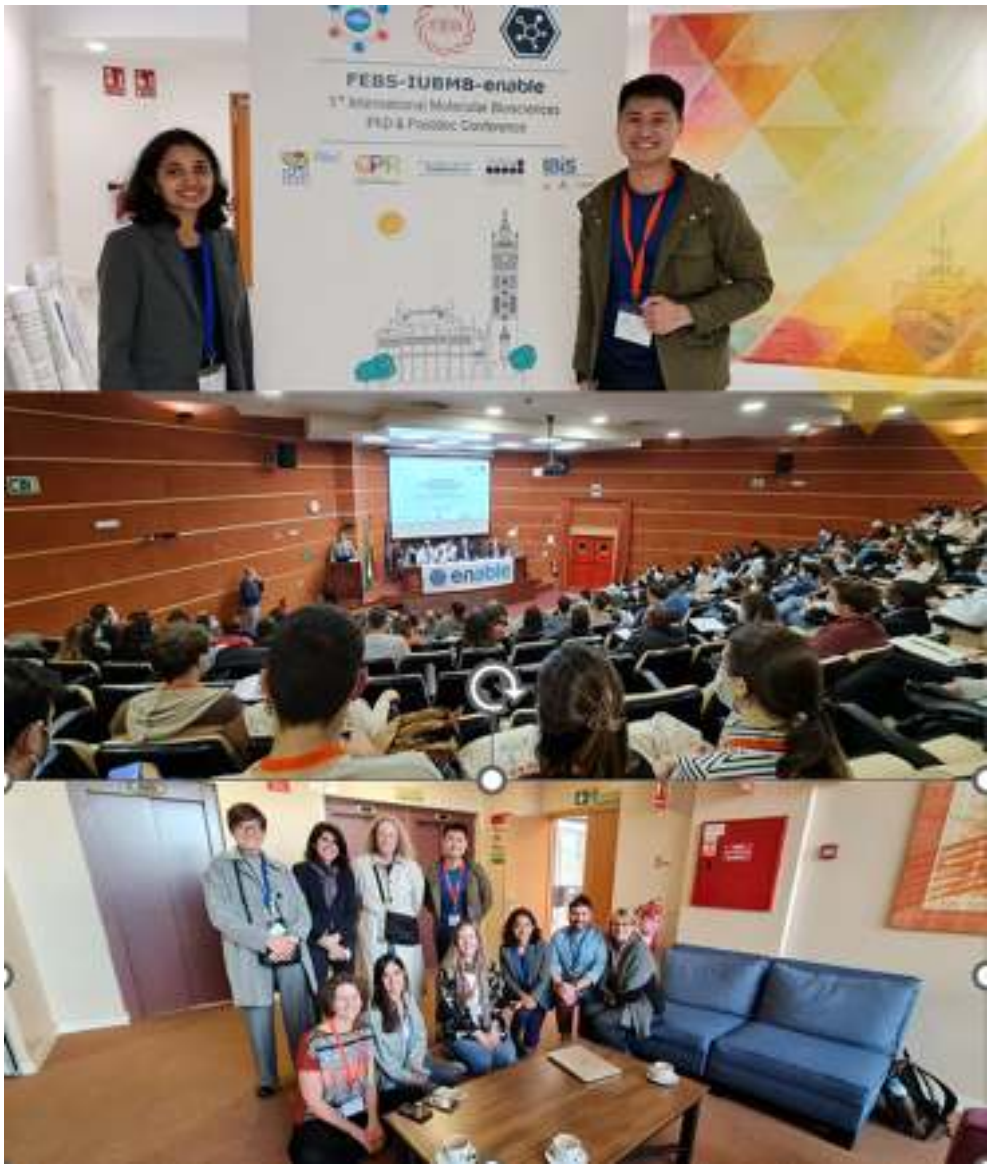
WIS PLENARY SPEAKER SERIES WITH PROFESSOR VICTORIA SEEWALDT

On November 9, 2022, Professor Victoria Seewaldt, the Ruth Ziegler Chair and Professor in Population Sciences from City of Hope in the United States, shared valuable insights and tips with young researchers and faculty members as part of the Women in Science Plenary Speaker Series at LKCMedicine. During her talk, Prof. Seewaldt discussed the importance of effective grant writing, highlighting key strategies and techniques for crafting successful proposals. She also shared her thoughts on how to effectively manage research teams, emphasizing the need for open communication and a supportive, nurturing environment. In addition, Prof. Seewaldt discussed the importance of mentorship and fostering collaborative relationships, and encouraged young researchers to seek out and establish mentoring relationships with experienced scientists.

BREAKING NEW GROUND – WIS @ LKCMEDICINE PODCAST WITH PROFESSOR JENNIFER CLELAND

In Episode 5 of the Podcast, we were privileged to host Professor Jennifer Cleland, our Vice-Dean (Education), Director of Medical Education Research & Scholarship Unit (MERSU), President's Chair in Medical Education, and Professor of Medical Education Research, at Lee Kong Chian School of Medicine. Professor Cleland shared with the audience the unconventional path that led her to her research field, her latest projects, as well as insights on medical education. Professor Cleland also discussed the role of females in leadership and the challenges, and provided tips on how to manage time when one has lots of tasks to juggle. Don't miss out this exciting episode at https://www.ntu.edu.sg/medicine/news-events/news/detail/Podcast_Episode_5!

LEARN HAPPENINGS



FEBS-IUBMB-ENABLE 2022 CONFERENCE IN SEVILLE, SPAIN

The LKCMedicine EArly Researchers' Network (LEARN) committee is thrilled to announce that LKCMedicine has been selected as the inaugural host for the first FEBS-IUBMB-ENABLE Conference outside of Europe in 2024. ENABLE (European Academy for Biomedical Science) is a unique initiative to support early researchers that was funded by the European Union Horizon 2020 programme that took off in Barcelona 2017. From 2022 onwards, it is sustained by funding from the Federation of European Biochemical Societies (FEBS) and the International Union of Biochemistry and Molecular Biology (IUBMB). Two of our committee members, Dr Chew Bing Liang Alvin (President, LEARN) and Dr Madhuvanthi Chandrakanthan (Co-Chair of Professional Development, LEARN), attended this year's conference held at the Institute of Biomedicine of Seville, Spain between 16-18 November 2022. This meeting paved the way to meet the ENABLE coordinators and scientific organising committee of 2023 to network and plan for our own conference.

LEARN HAPPENINGS

CONNECTING SCIENCE AND BUSINESS TO DEVELOP BILINGUAL LEADERS

On 2 November, LKCMedicine EArly Researchers' Network (LEARN) and Singapore Business Federation (SBF) jointly organised a panel discussion and networking session titled, "Connecting Science and Business to Develop Bilingual Leaders" at the HQ Seminar Room. Nearly 40 young researchers, PhD students and postdoctoral researchers, as well as representatives from over 15 companies (MNCs, SMEs and start-ups) attended the discussion moderated by Ms Lisa Liaw (Council Member, SBF). The panellists include Dr Zhou Lihan (Co-Founder and CEO, MiRXES Pte Ltd), Dr Ronne Yeo (Co-Founder, Managing Director and CSO, Carcell Biopharma; Managing Director, EVX Ventures) and Mr Nilesh Wadhwa (Director, New Ventures & Transaction and Early Innovation Partner for Singapore, India and SEA, Johnson & Johnson). The participants had an insightful exchange with the industry leaders on their thoughts and experiences on leading and navigating through the biotech R&D and innovation space in Singapore and beyond.

LEARN HAPPENINGS

NUS PDA LEVEL UP

On 23 November 2022, research fellows Dr Wee Soon Keong, Dr Fang Yang and Dr Ekaterina Sviriaeva, represented LKCMedicine EArly Researchers' Network (LEARN) to participate in Postdoctoral Level UP event organised by NUS Medicine Postdoctoral Association (PDA) at NUS Yong Loo Lin School of Medicine MD4 building. Aside from networking with counterparts from NUS and learning more about their initiatives over food and games, both committees explored ideas on how to better serve and support the early career researchers community. The LEARN team is looking forward to hosting NUS PDA team at upcoming LEARN events, as well as the many opportunities to collaborate and grow together.

IN CONVERSATION

DR BARNABY YOUNG

Dr Barnaby is an infectious diseases consultant at NCID/TTSH where he is also head of the Singapore Infectious Diseases Clinical Research Network (SCRN). Over the COVID-19 pandemic he has been principal investigator for several large clinical studies. This includes observational studies of infection and vaccination (PROTECT and SCOPE respectively) and the clinical trials ACTIV-3/TICO which is an adaptive platform trial focusing on therapeutic monoclonal antibodies for COVID-19 and PRIBIVAC a heterologous COVID-19 booster vaccination. He is also a member of the DSRB Domain E board.

Dr Young earned his PhD as an NHG-LKCMedicine Clinician-Scientist fellow while helping the nation battle COVID-19. He is part of the COVID-19 Research Workgroup (RWG) that received the National Clinical Excellence Team Award 2021 for their instrumental contributions and significant achievements in COVID-19 research, and management of the pandemic response in Singapore and globally. He is among the first NHG clinicians to graduate from the LKCMedicine PhD by Research Programme. Launched in January 2016, the LKCMedicine PhD by Research Programme admits students from a variety of backgrounds, including natural science, medicine, social science, and engineering, and provides exposure to a range of topics and disciplines.

1) Please describe your experience in pursuing a PhD at LKCMedicine.
I had been considering pursuing a PhD since I was a medical student, as research has always interested me. During my infectious diseases specialist training, I received funding from NHG as part of the clinician scientist career scheme (CSCS). It gave me a great opportunity to get a foothold in research by conducting an observational study of patients receiving antibiotics and looking at stool metagenomics with Dr Nagarjan from GIS. After that, I felt I had a good grounding in research and wanted to spend more time focusing on one topic. So, studying for a PhD was the obvious next step. Being next door to NCID, LKCMedicine was the natural choice for me to pursue a PhD. Fortunately, my interests aligned with then LKCMedicine faculty Professor Annelies Wilder-Smith who agreed to be my supervisor.

2) Please describe some collaborative work that you have done with LKCMedicine.
At the beginning of my PhD, I worked with Asst Prof Lorraine Tudor Car on a systematic review of immune modulators in the treatment of severe influenza infection. This work was commissioned by the WHO for their severe influenza treatment guidelines, which were published in March 2022. Prior to the COVID-19 pandemic, the role of immune modulators in the treatment of severe respiratory viral infections was very uncertain. Several clinical trials during the pandemic (e.g. RECOVERY, ACTT, REMAP-CAP) though have established them as part of standard of care for treatment of severe COVID-19. They are likely to have an important role in severe influenza as well, although currently direct evidence remains limited.

3) What are some of your future (research) plans?
In the July 2022 NMRC grant call, I applied for a grant to conduct a COVID-19 human challenge study in collaboration with Professor Chris Chiu from Imperial College London. I was recently informed that I am awarded the grant, and I am looking very much forward to working out how to conduct the first human challenge study in Singapore! The study involves collaborators from NCID, LKCMedicine, and other academic institutions in Singapore, and I am hoping to be able to inoculate the first volunteers in 2024.

3) What are some of the most memorable research that you have done?
The first few months of the COVID-19 pandemic were an extraordinary period for everyone. As an infectious diseases consultant at NCID, I was very busy with clinical work. I was also fortunate to have been appointed to lead some of our research efforts such as the PROTECT observational study. Data from the study was of great interest both locally and internationally. I feel hugely privileged to have been a part of that research effort, and to generate data that had such an immediate clinical impact.

5) What is some advice you have for clinicians who are interested in pursuing a PhD?
Do it.

The major challenge in my PhD was figuring out all the steps in conducting an investigator initiated clinical trial – from designing the protocol and obtaining funding, to completing recruitment and sample collection on time, to analysing the data and writing up the manuscript. I had experienced those various parts as the site investigator for other clinical trials but doing the whole thing independently for the first time required a lot of hard work and effort. It would not have been possible without the support of several NCID-LKCMedicine joint faculty such as Professors Lim Poh Lian, David Lye and Leo Yee Sin

A PUBLICATION BY
LEE KONG CHIAN SCHOOL OF MEDICINE

A joint medical school by Nanyang Technological University, Singapore and Imperial College London

Headquarters & Clinical Sciences Building
11, Mandalay Road
Singapore 308232

Experimental Medicine Building
59, Nanyang Drive
Singapore 636921

www.ntu.edu.sg/medicine