

MediCine

A publication of the Yong Loo Lin School of Medicine ■ Issue 26 / May 2018



**THEY NEED YOUR
HELP TO SLEEP
SOUNDLY AT NIGHT**

DEAN'S MESSAGE



Dear Friends,

The NUS medical school has produced close to 10,000 graduates over the course of its 113-year history. All have gone on to serve the nation and community in a variety of roles. Some have risen to the highest posts in the land, others have assumed various public and leadership duties, while most have worked faithfully and quietly in the background. Whatever their calling after medical school, it would be fair to say that generations of the men and women of Singapore's oldest and foremost medical school have played significant roles in the development and transformation of the country's healthcare system.

While the heads of the School during the early years were British expatriates, our own alumni have held the post of Dean since 1956. They served their alma mater with dedication and distinction, each helping to take the School to higher levels of academic standards.

I am pleased to inform you that this tradition continues as I hand over the reins shortly to my successor. The new, 17th Dean of our School is an alumna, a clinician-scholar who heads Singapore's largest and most comprehensive birth cohort study of how mothers' diets and lifestyles during pregnancy affect their babies' growth after birth. Associate Professor Chong Yap Seng is an obstetrician whose research programme, Growing Up in Singapore Towards Healthy Outcomes (GUSTO), is an important nation-wide medical study that gathers data from mothers and their babies, from pregnancy till their children are three years old. The study has already provided us with insights and understanding in the prevention and management of important diseases like obesity and diabetes in Singapore.

I am confident that under Yap Seng's able leadership, Singapore's oldest and foremost medical school will remain true to its time-honoured calling and continue to serve the nation and the community through our dedication to teaching and research excellence.

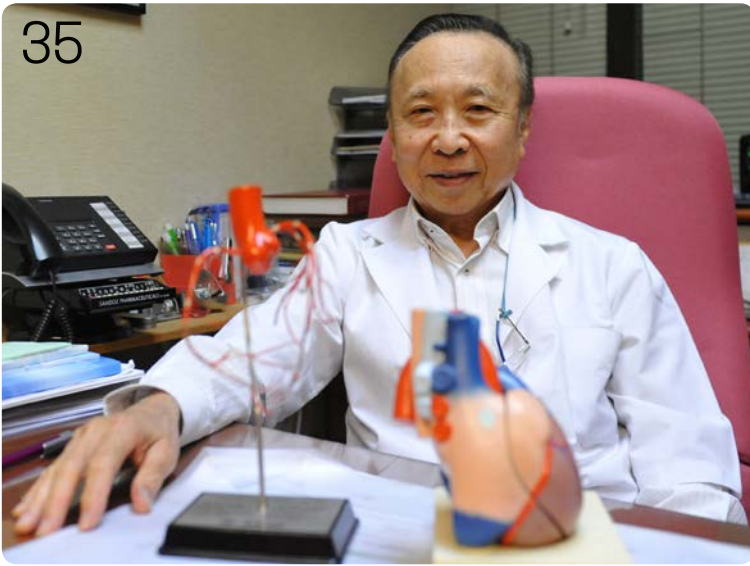
Welcomes are in order too for the incoming Class of 2023: may these young men and women also embody the values that we hold dear and like their seniors, become compassionate and skilled doctors and healthcare professionals. We also congratulate the graduating Class of 2018! They enter an exciting world of medical and nursing practice, where their skills and knowledge will be complemented and supported by a host of new medical technologies that are transforming the way healthcare is delivered. Their qualities of leadership will be called upon to help lead in the transformation of healthcare delivery to further improve services to our people.

Our work also continues apace in our classrooms and laboratories. Recently, researchers from the Department of Microbiology and Immunology found the protein that the EV71 virus rides on to infect the central nervous system in Hand, Foot and Mouth Disease, while another team from the Department of Physiology, the Cancer Science Institute of Singapore and the Department of Biomedical Engineering has developed a way to grow liver cancer cells in synthetic scaffolds made of a plant-based hydrogel. Their stories are told in this issue of *Medicine* and I hope you will enjoy learning more about their work.

Thank you for your support for the School and happy reading.

Khay Guan

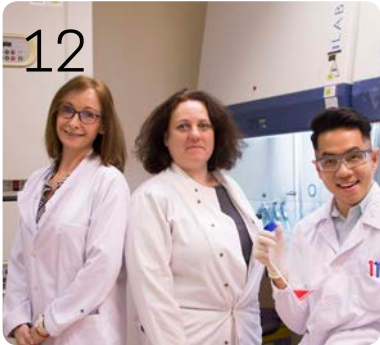
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MediCine

is published quarterly by the Communications Office of the NUS Yong Loo Lin School of Medicine.

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NEW DEAN APPOINTED FOR NUS MEDICAL SCHOOL

NUS Medicine alumnus and Vice-Dean for Academic Medicine, Associate Professor Chong Yap Seng, will be the 17th Dean of the Yong Loo Lin School of Medicine, when he succeeds Associate Professor Yeoh Khay Guan on 1 January 2019.

Assoc Prof Yeoh, who has led the School since 2011, will be assuming full-time duties as the Deputy Chief Executive of the National University Health System, of which the School is a founding institution.





A Senior Consultant in the Department of Obstetrics & Gynaecology at the National University Hospital, Assoc Prof Chong is also the Executive Director of the Singapore Institute for Clinical Sciences (SICS) under the Agency for Science, Technology and Research (A*STAR). He headed the Medical Education Unit of the School from 2004 to 2014, and has been Vice-Dean (Academic Medicine) since 2015. He has also been Director of the A*STAR-NUS Singapore Centre for Nutritional Sciences, Metabolic Diseases, and Human Development since 2014, and the Executive Director of SICS since 2015.

NUS President, Professor Tan Eng Chye, said, "We are delighted with the appointment of Associate Professor Chong Yap Seng as the next Dean of NUS Medicine.

"He is an outstanding and multiple award-winning clinician-researcher, educator and administrator, and a home-grown talent. He has a clear vision and strategy for further deepening the impact of the region's leading medical school. Yap Seng deeply appreciates the significant role our medical school has played in the island's healthcare landscape since 1905, and its mission of nurturing future generations of doctors and nurses for the nation. We entrust NUS Medicine to Yap Seng with great confidence."

Led ground-breaking research in fetal growth and early child development

A respected scholar and researcher in fetal growth and early development, and an eminent medical professional well-known among both the international and local medical and academic community, Assoc Prof Chong has received numerous awards in teaching, research and clinical service. Last year, he was named the National Outstanding Clinician Scientist at the Singapore Ministry

of Health's National Medical Excellence Awards. He was also conferred the Mentoring, Innovation and Leadership in Educational Scholarship Award (2015) at the Asia Pacific Medical Education Conference, NUS.

The Dean Designate has an impressive research track record, particularly in winning big grants, and has received more than S\$100 million in research grant funding to date. He is the Lead Principal Investigator of the National Medical Research Council's Metabolic Translational and Clinical Research Flagship Programme, with a S\$25 million grant awarded in 2009 and renewed in 2014. He is also the Co-Investigator of several large A*STAR Strategic Positioning Fund and Industry Alignment Fund-Pre-positioning grants, as well as being the Lead Principal Investigator of the Growing Up in Singapore Towards Healthy Outcomes (GUSTO) study, Singapore's largest and most comprehensive birth cohort research effort.

"I am deeply honoured to be given the privilege of leading Singapore's oldest and biggest medical school. Like the majority of doctors in Singapore, I am an alumnus and am aware of the central role the School plays in healthcare. Building on the work of my illustrious predecessors, I will do my best to ensure that the School continues improving the health and lives of Singaporeans through excellence in education, research and innovation, and a full-hearted commitment to service."

Prof Tan Eng Chye also expressed his heartfelt thanks to out-going Dean, Assoc Prof Yeoh Khay Guan, for his stellar leadership of NUS Medicine. "Khay Guan, who is also a Medicine alumnus, has led the School with great distinction and care, while concurrently blazing a trail as an outstanding clinician-investigator and gastroenterologist and Deputy Chief Executive of the National University Health System."



15TH APMEC LOOKS AT TECHNOLOGY'S ROLE IN MEDICAL EDUCATION

By Professor Matthew Gwee,
Centre for Medical Education

Asia Pacific Medical Education Conference (APMEC) had its humble beginnings way back in 2003 when the conference series was initiated by the then – Medical Education Unit (MEU) – now referred to as the Centre for Medical Education (CenMED), Yong Loo Lin School of Medicine, National University of Singapore. APMEC has progressed considerably over the years, starting with only about 100 participants. The 2018 conference saw a phenomenal increase in the number of participants to more than 13-fold, a clear reflection that the series has strong appeal and is indeed serving the needs of our community of educational scholars, not only in our region, but also beyond.

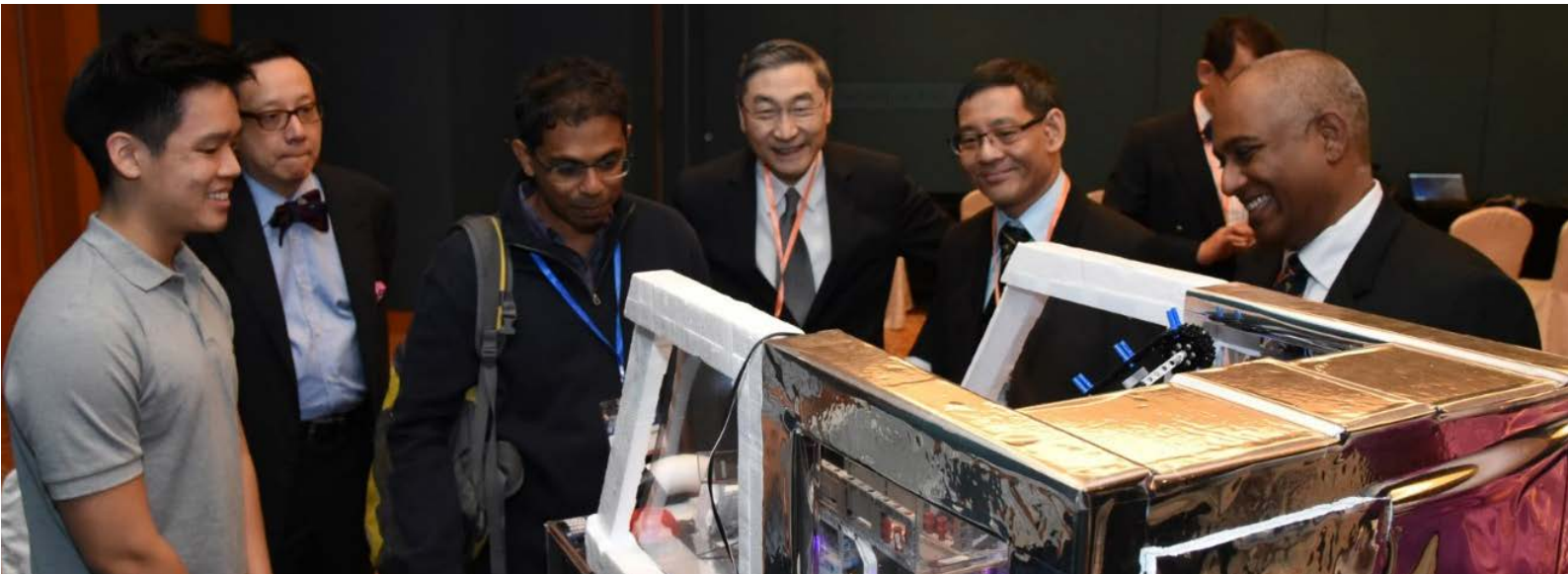
The chosen 'theme' for APMEC 2018 was "Technology: Enhancing Education for Improvement of Patient Care" (Trend, Issues, Priorities, Strategies). Firstly, it reflects the interdependence of education and practice in patient

care. It also seemed to present a strong appeal to our participants, reflected in the substantial increase in the number of participants attending APMEC 2018! Moreover, technology-enhanced learning is now omnipresent in education and we need to educate, train, equip and transform a generation of digital natives to become the new generation of healthcare practitioners who readily and literally obtain information (text, images, live videos) at the click of a button! Technology has now become so pervasive in practically every aspect of our lives. Thus, it was in such an educational context that the theme was specially selected for APMEC 2018.

"When we are sick and most vulnerable, human beings will still prefer to engage and "trust" a fellow human being." (Hooi, Samarasekera and Pan, 2017)

Although the theme for APMEC 2018 tends to suggest that "... technology [including artificial intelligence] and science will radically transform the practice of medicine in the future..." (Hooi, Samarasekera and Pan, 2017) a balanced view on the role of technology in the education and training of future healthcare professionals must prevail. Otherwise, we run the risk of educating and training healthcare practitioners who are so highly dependent on technology for patient care, and who have forgotten the need for the comforting touch of a physician's hand and the consoling and re-assuring voice of the physician when a fellow human being is ill!

DOSSIER



*“The conference keynote and plenary lectures were very good. Inspiring and insightful speakers.”
“Effective organised- good range of sessions...”*

The APMEC 2018 Programme had been organised to provide participants with an update of how modern day technology, including artificial intelligence, can supplement and complement the clinical expertise of healthcare practitioners, especially in respect of “soft” skills in the attitudes (affective) domain; such a combination (i.e. technology plus human responses) can be expected to optimise health benefits to patients. Feedback from some of our participants (see quote above) provide us with ample evidence that APMEC 2018 (especially our keynote speakers) have enlightened participants with a fair and balanced view of the role of technology in the education and training of healthcare practitioners in the 21st century.

A key highlight of APMEC 2018 was the formation of the Asia-Pacific Bio-medical Science Educators Association Leadership Forum on “The Future of Medical Education

in a Technology Advanced World. The forum presenters included the deans of medical schools from Singapore, Malaysia, Philippines, the Senior Vice President of ACGMEI and the head of the Australian Workforce Development Agency. Another key feature was the launch of the Learning Lounge, which showcased the latest technology in medical education. It also highlighted NUS Engineering student innovations in Robotics, which could be used to assist the elderly in our communities to engage in daily activities. Concurrently, the third volume of The Asia Pacific Scholar was launched during the conference. More than 200 abstracts were presented during APMEC 2018 (see table below for the winners and runner-ups for Free Communication and Best Abstract for Poster Presentation).

APMEC 2018 had the overwhelming support of participants. A balanced view on the role of technology in the education and training of future healthcare practitioners was presented to participants by keynote and plenary speakers.

Award	Name	Abstract Title	Institution, Country
Free Communication			
Winner	Elise Paradis	An Ethnographic Study of Health Information Technology Use in Three Intensive Care Units	University of Toronto, Canada
Runner-up	Sabrina Lau	Burnout in Internal Medicine Residents: A Study on Prevalence and Factors in a Three-year Junior Residency Program	Tan Tock Seng Hospital, Singapore
Best Abstract for Poster Presentation			
Winner	Gayathri Devi Nadarajan	Simulated Task Trainer to Teach Minor Surgical Procedures- Moving From 'Learn One, See One, Do One' To 'Learn One, See One, Practice One, Do One'.	Changi General Hospital, Singapore
Runner-up	Chee-Chew Yip	Teaching the Torchlight Eye Screening Test (TEST) To Nurses and Opticians to do Community Eye Screening: Is it Feasible?	Khoo Teck Puat Hospital, Singapore



VIETNAMESE MEDICAL EDUCATION THROUGH SINGAPOREAN EYES

By Julia Ng Yu Xin and Yeow Wei Xuan Marcus,
Phase II Medicine students

As part of a community outreach project to further the partnership between NUS Medicine and Vietnam Military Medical University (VMMU), a team comprising five medical students, two nursing students and two doctors embarked on a trip to Hanoi. It was indeed a privilege to be able to visit one of Vietnam's top universities as well as interact with the senior leadership of the university, nursing, pharmacy and both military and civilian medical students. It was a memorable experience and we are very thankful to both NUS Medicine and VMMU for the opportunities that we have had.

It was our first visit to Vietnam for many of us. This community outreach trip had given us opportunities to explore the heart of the city, understand the workings of the Vietnamese healthcare system and work with the VMMU staff and students. Such opportunities would not have been possible if not for the warm hospitality of VMMU, who were our partners and generous hosts for the entire

trip. We held many discussions during the trip, covering a range of topics from national healthcare policies to sharing about our individual school's medical curriculum.

This allowed both sides to glean much insight about the other's experiences. The exchanges were an eye-opener to Vietnamese society; the stories that were told gave us an understanding of Vietnamese students' university life, while the friendships that we made will endure way beyond the short stay that we had there. What we heard, saw and learned will go a long way in our personal growth and help us to contribute to the future collaborations between NUS Medicine and VMMU.

We also had the opportunity to go on a guided tour around the city centre to explore the rich culture and beautiful architecture of Hanoi. During the tour, we stopped by a pork noodle (Bún chả) restaurant for lunch, and later found out that it was the same Bún chả restaurant which the former President of the United States, Barack Obama visited during his visit to Hanoi. We even sat on the same seats that he and his entourage used.

The five-day trip was too short and was over before we knew it. It was definitely a trip to remember and we will continue to share our experience for years to come. We would recommend VMMU to anyone who is considering doing an elective or exchange programme.

DOSSIER



VMMU Headquarters, Hanoi.



Discussion at the Community Health Centre, Vinh Tuong District.



Mid-career professionals checking out nursing's career prospects with prospective employers.

NUS OFFERS TWO-YEAR NURSING DEGREE PROGRAMME

ACCELERATED PATHWAY TRAINS GRADUATES FOR CAREERS IN NURSING

To enable more mid-career professionals to join the healthcare sector as nurses, the Alice Lee Centre for Nursing Studies (NUS Nursing) is introducing an accelerated undergraduate nursing degree programme this July. The two-year Bachelor of Science (Nursing) programme is offered under the Ministry of Health and Workforce Singapore's degree level Professional Conversion Programme for Registered Nurses.

Under the Programme, course fees of S\$74,500 will be fully sponsored and trainees will receive training allowances of \$2,170 to \$2,520 per month throughout

the two years of study. Upon graduation, they will be given a one-time Career Transition Bonus of \$2,000. Employers will also receive an on-the-job training incentive of \$18,000 for every mid-career degree-trained Registered Nurse that they hire.

The two-year full-time programme is designed to meet accreditation standards of the Singapore Nursing Board. The rigorous and intense programme has 22 modules to equip students with nursing theory and concepts, as well as 1,320 hours of clinical experience in community and hospital settings to translate nursing knowledge into practice.

Said Professor Emily Ang, Head of NUS Nursing, "While the course runs for just two years, it is an intensive and thoroughly absorbing one. We have taken care to ensure students receive the same thorough grounding in the key nursing disciplines as the regular BSc (Nursing) programme, and are equipped to work competently in the wards and clinics alongside nursing and medical colleagues.



Mid-career switchers to nursing at the career preview to launch NUS' two-year BSc (Nursing) programme.
(From left to right): Lim Han Kee, Ong Teng Teng, Dr Shefaly Shorey, Dr Amy Khor and Neo Yi Ling

Career preview

About 100 participants attended the career preview to launch the new programme in February. At the preview, Dr Amy Khor, Senior Minister of State for Health, met nurses who had joined the profession from other occupations. Mr Lim Han Kee, 38, a Nurse Manager at Tan Tock Seng Hospital, was a Laboratory Technologist for two years before switching to nursing. It was a career he felt better suited him as it involved more interaction with people.

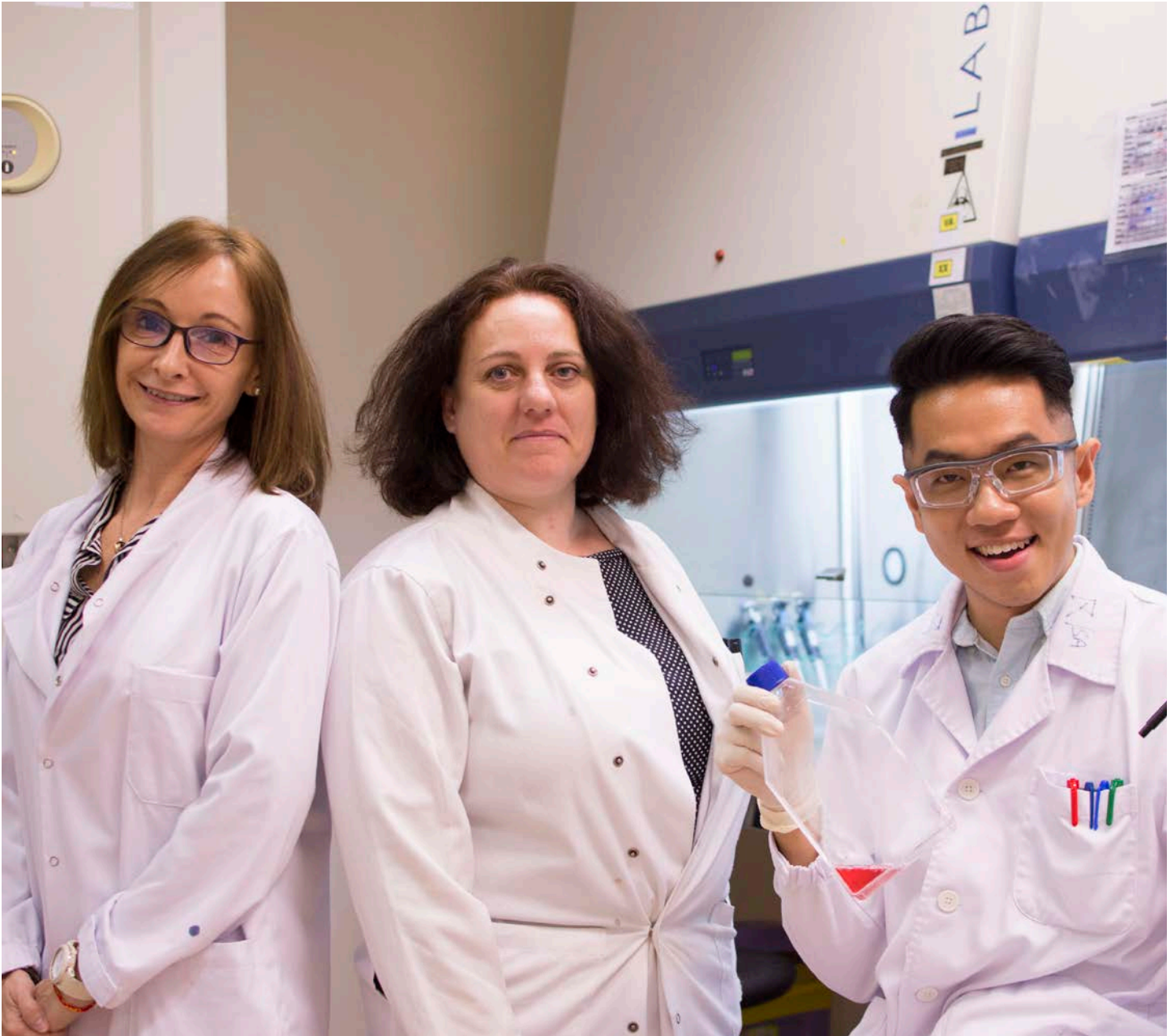
"Nursing has a structured career advancement pathway, good training opportunities and competitive salaries," said Mr Lim.

Another mid-career crossover is Ms Ong Teng Teng, 42, a Year 2 student at NUS Nursing. She had been a flight stewardess with Singapore Airlines for 10 years, stopped work to start a family and was inspired to join the nursing profession by the nurses who took care of her newborn son during his illness. She took a nursing course at the

Institute of Technical Education in 2008, graduated with a Diploma in Nursing in 2013 and enrolled for her first degree at NUS Nursing in 2016.

"The diversity and breadth of nursing work now allow nurses to hone different expertise in different specialisations. With a degree specialisation, more mid-career professionals will be attracted to nursing," she said.

Thirteen years ago, Dr Shefaly Shorey was a school teacher. The assistant professor at NUS Nursing decided on a career in nursing after being touched by the care her terminally ill grandmother-in-law received from nurses.



(From left to right) Associate Professor Sylvie Alonso, Dr Isabell Bonne and PhD student Issac Too have identified a host protein, prohibitin (PHB), that is used by EV71 to attack and infect brain cells.

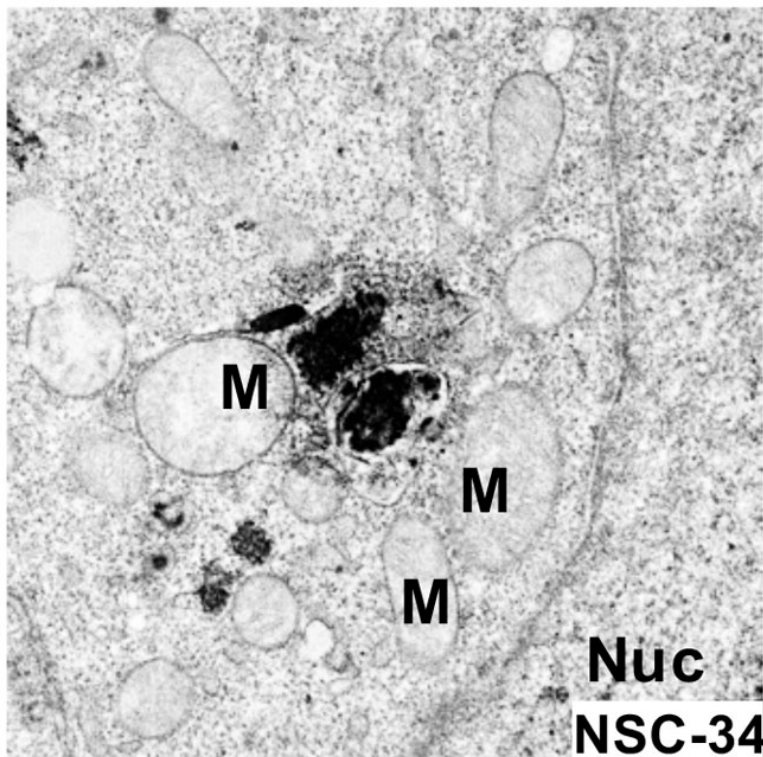
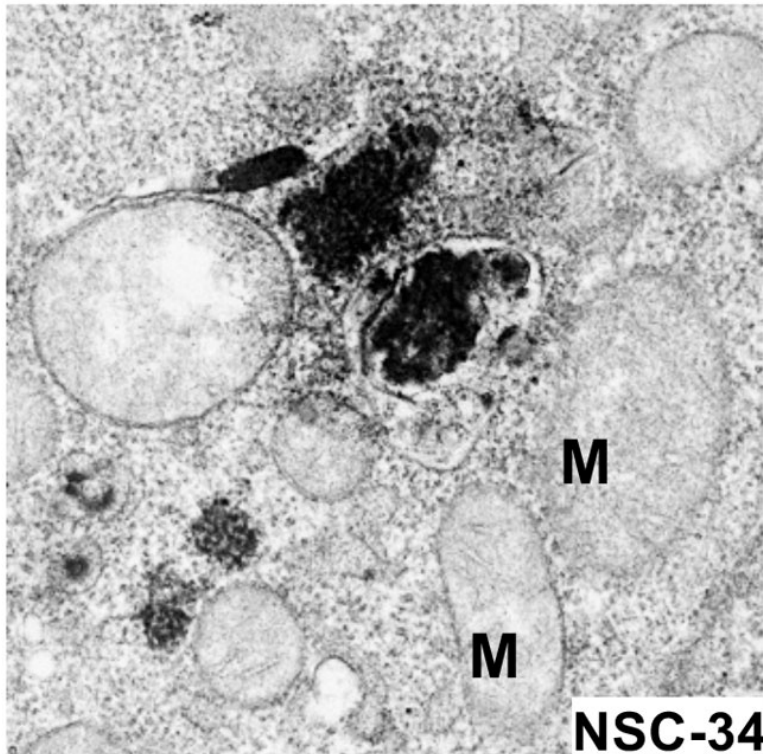
FOUND - PROTEIN USED BY VIRUS TO INFECT CENTRAL NERVOUS SYSTEM IN HAND, FOOT AND MOUTH DISEASE

By Dr Khor Ing Wei, Dean's Office

Infection with enterovirus 71 (EV71) is the main cause of hand, foot and mouth disease (HFMD), a highly

contagious disease that usually affects children younger than five years.¹ In most cases, the disease causes relatively mild symptoms such as fever, skin rashes and mouth ulcers. However, in a small proportion of patients, the virus infects the central nervous system (CNS) and can cause potentially fatal conditions such as pulmonary edema and brainstem encephalitis. If the patients survive the CNS infection, they may still experience longer term effects, including cognitive problems.

The mechanisms by which EV71 infects and replicates in the CNS are not well known and have been the subject of much active research. Earlier this year, researchers at NUS Medicine were the first to identify the host protein, prohibitin (PHB), that is exploited by EV71 to infect and replicate in the CNS. The study was published in



Electron microscopy images of infected motor neuron cells.

the Jan 2018 issue of the prestigious microbiology journal PLOS Pathogens.

The authors, who included graduate student Isaac Too and Associate Professor Sylvie Alonso from the Department of Microbiology and Immunology, focused on PHB out of a panel of proteins that changed in expression during EV71 infection of motor neuron cells. PHB, which occurs both on the cell surface and in mitochondria, is involved in many cellular processes. When the researchers blocked PHB on the cell surface using a specific antibody, the amount of virus in the cell decreased.

In addition, since PHB is also present in the mitochondria, the researchers examined its role in the replication of the virus inside motor neurons. True enough, they found that reducing the amount of PHB in the cells decreased replication of EV71. As further confirmation, a cancer drug that inhibits PHB (Rocaglamide A) hampered the replication of EV71 in the CNS, delayed the start of neurological symptoms and prolonged survival in preclinical models.

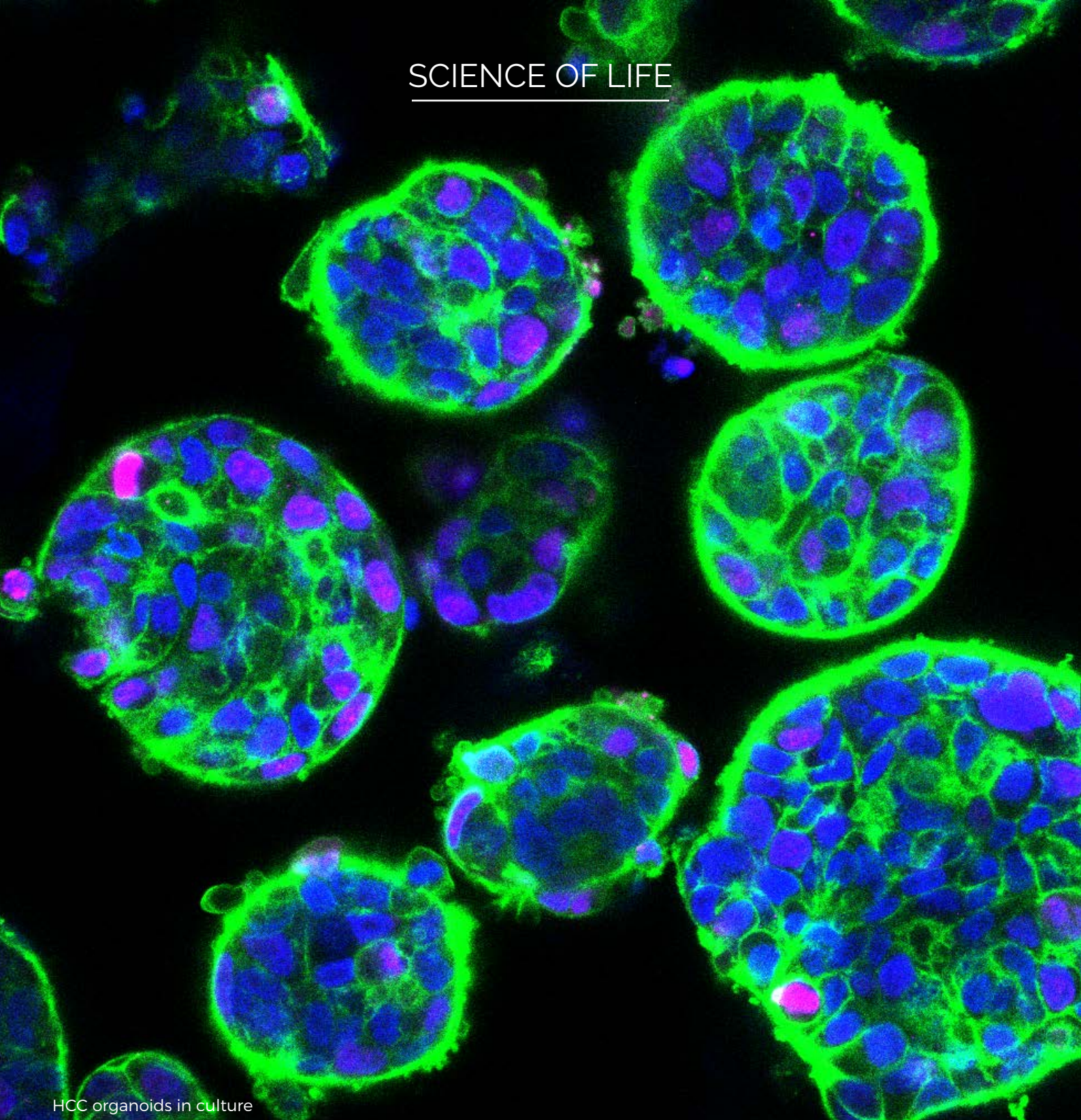
These various pieces of evidence indicate that PHB is involved in both EV71 entry and replication (making more copies of the virus) in neurons of the CNS, and that EV71 replicates in the mitochondria of these neurons (which was previously unknown). This discovery could pave the way for the development of treatments for the potentially life-threatening forms of HFMD.

Said Assoc Prof Alonso, "The identification of this protein opens up the possibility now to focus on drug development, since we have shown that targeting this protein allows us to fight the virus. We hope that as we accumulate more knowledge on this virus, pharmaceutical companies will decide to include EV71 in their R&D portfolio to support the research efforts led by academic institutions".

Added Associate Professor Lee Yung Seng, Head of Paediatrics at the National University Hospital, "Essentially, the team has found the protein which allows the virus to get to the brain and cause complications. This protein represents a target for the development of specific treatments that are aimed at preventing this."

References

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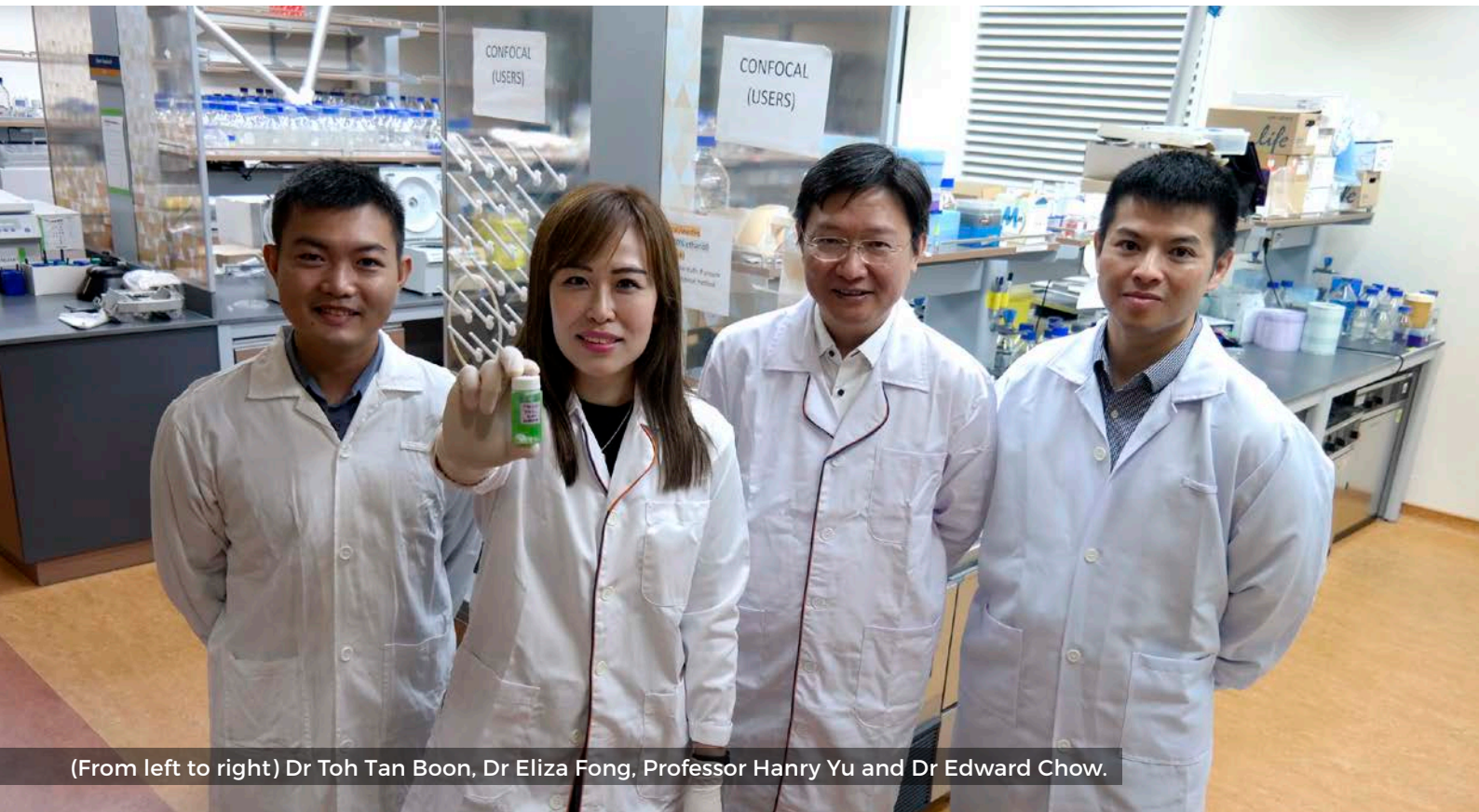
HCC organoids in culture

RECREATING LIVER TUMOURS AS ORGANOID FOR FASTER, MORE ACCURATE DRUG SCREENING

By Dr Khor Ing Wei, Dean's Office

Hepatocellular cancer (liver cancer) is the second leading cause of cancer deaths in the world, responsible for almost 750,000 mortalities in 2012.¹ In Singapore, it ranks as the third and fourth leading cause of cancer death for men and women, respectively. Liver cancer claims so many lives because diagnosis often occurs only when the cancer has already advanced. Available treatments are also sorely lacking, with only three approved drugs besides chemotherapy.²

An essential part of developing new treatments is to test potential candidate drugs in preclinical models; only the most effective candidates will move on to being tested in



(From left to right) Dr Toh Tan Boon, Dr Eliza Fong, Professor Henry Yu and Dr Edward Chow.

humans. For liver cancer, a big challenge is that current preclinical tumour models do not closely reflect features of the liver tumour and the tumour environment in humans. This causes many potential drugs to fail when they are tested in humans.

To more closely mimic the features of human tumours, researchers have developed models of liver tumours called patient-derived xenografts (PDX). This involves taking a small tissue sample from patients. Although these models provide a more accurate picture of how effective potential cancer drugs would be in humans, they are also expensive and time-consuming to create. Growing these PDX cancer cells in culture would be more cost effective for drug screening. However, so far, attempts to culture these cells fail to reflect the 3D tumour structure and the tumour environment.

"THESE TUMOUR AVATARS HAVE THE POTENTIAL TO REVOLUTIONISE THE DEVELOPMENT OF LIVER CANCER DRUGS."

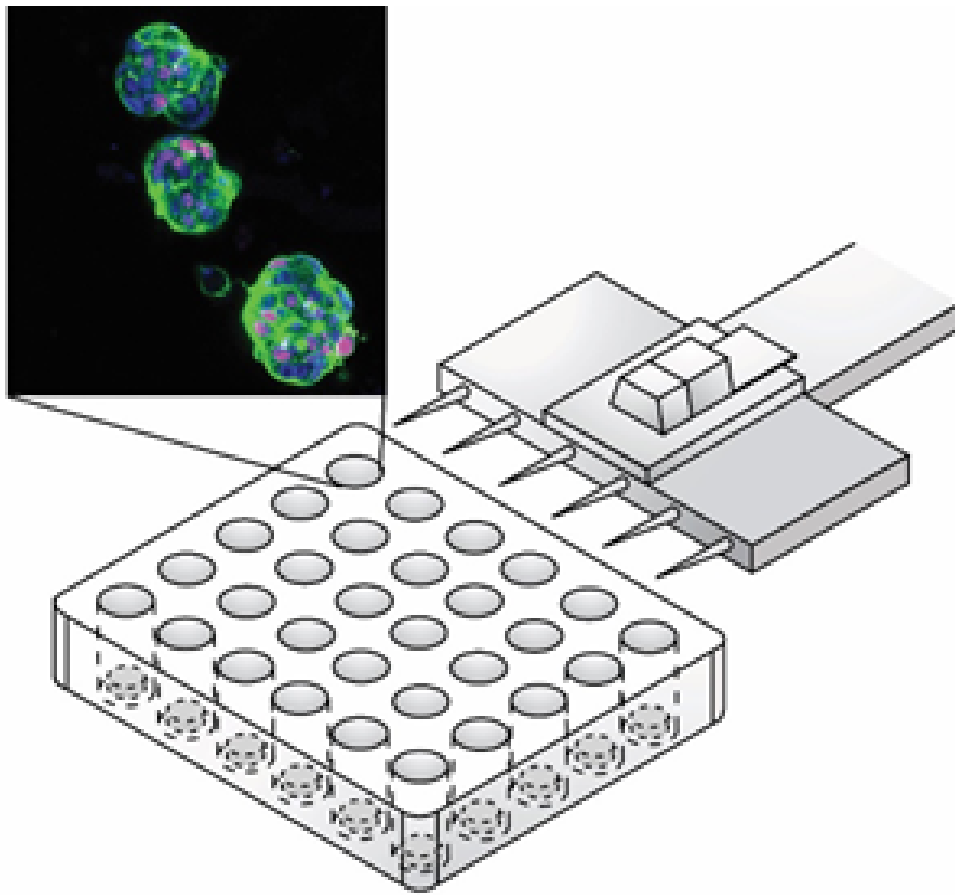
Led by Dr Eliza Fong and Dr Toh Tan Boon, an interdisciplinary team of researchers at the NUS Departments of Physiology and Biomedical Engineering, the Cancer Science Institute of Singapore, the Institute

of Bioengineering and Nanotechnology, A*STAR and the National Cancer Centre Singapore has now devised a new method to grow PDX liver cancer cells in culture.

As described in their recent paper in the leading bioengineering journal *Biomaterials*, this method involves growing the cells on synthetic 3D scaffolds made of a plant-based porous hydrogel³. By optimising the biochemical and mechanical properties of the spongy scaffolds, the researchers developed a framework to help the liver cancer cells maintain their proper shape and function and grow as organoids. The team grew organoids from PDX taken from 14 liver cancer patients.

After growing the organoids for between one and three weeks, the team verified that the liver cancer cells in the organoids were alive and reproducing. Liver cancer cells usually contain specific genetic changes that are absent in normal liver cells. Most of the 14 organoids retained the same key genetic changes that were in the source PDX cells. They also maintained an important feature of liver tumours called intra-tumour heterogeneity, in which distinct populations of liver cancer cells are present within the same tumour and affect its response to treatment. The presence of this feature was another advantage for drug screening that the organoids possess over traditional cell culture methods, in which all cells are identical.

As a bioengineer, Dr Fong finds the success of the



Liver cancer organoids amenable for personalised drug testing

engineered organoids to be particularly rewarding. "This study truly epitomises the positive synergy we can achieve in growing patient tumours outside the body by marrying advances in tissue engineering with cancer biology," she said.

Another attractive feature is the small size of the 3D scaffolds containing the organoids – a mere 100 microns. That is the diameter of a human hair. The tiny scaffolds can easily fit inside the well of a 96-well microtiter plate, a standard platform for high-throughput drug screening, which involves testing many drugs at the same time. Through this technology, one PDX can be used to produce tens to hundreds of such organoid-containing scaffolds. Combined with their ability to retain the genetic features and heterogeneity of the original liver tumours, these tumour avatars have the potential to revolutionise the screening and development of liver cancer drugs.

Dr Henry Yu, Professor of Physiology at NUS Medicine and Group Leader of Tissue Engineering at the Institute of Bioengineering and Nanotechnology at A*STAR, as well as the last author of the study, pointed out that "the spongy scaffolds developed to keep normal liver cells happy also preserve the important properties of liver cancer for drug testing. This allows patients to choose the best treatment based on the drug testing results on their own liver cancer cells."

Dr Toh echoed these words. "Having a reliable platform

to grow liver cancer patient-derived cells is a major step in personalized medicine as we can now use them for increased throughput drug sensitivity testing," he said.

Commenting on the clinical impact of the team's work, Associate Professor Dan Yock Young, Head, Department of Medicine at the Yong Loo Lin School of Medicine and the National University Hospital said, "Liver cancer is the second most lethal cancer in the world with few chemotherapy options. This is in part due to our inability to customise effective therapy for individual cancers. The ability to grow cancer cells in vitro gives us the ability to conduct high-throughput drug testing to validate drug efficacy before they are used on patients. This is a key step in guiding the use of effective chemotherapy and minimising treatment futility."

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Healthcare students' avatars with their patient in a virtual hospital ward.

3D VIRTUAL WORLDS A PROMISING TOOL FOR INTER-PROFESSIONAL EDUCATION

Educators across three institutions of higher learning (National University of Singapore, Nanyang Polytechnic and Singapore Institute of Technology) have implemented and evaluated a novel way to train healthcare students from different disciplines together.

Using a research grant from the Singapore Millennium Foundation, Associate Professor Liaw Sok Ying from NUS Alice Lee Centre for Nursing Studies led a team of educators, clinical experts and computer technologists to create a virtual world online where healthcare students can interact with one another and their “patients” using life-like, animated avatars.

From October to December last year, she pilot-tested the virtual simulation programme – dubbed CREATIVE –

on six teams of final year healthcare students from the three tertiary institutions. They included medical, nursing, physiotherapy, occupational therapy, pharmacy and social work students from NUS, the Singapore Institute of Technology and Nanyang Polytechnic.

Learning to work as a team, virtually

Grouped into teams of six each, the students were directed to take on multi-disciplinary bedside rounds in a virtual hospital and handle care planning, which allowed them to communicate amongst themselves, and with the “patient” and his family.

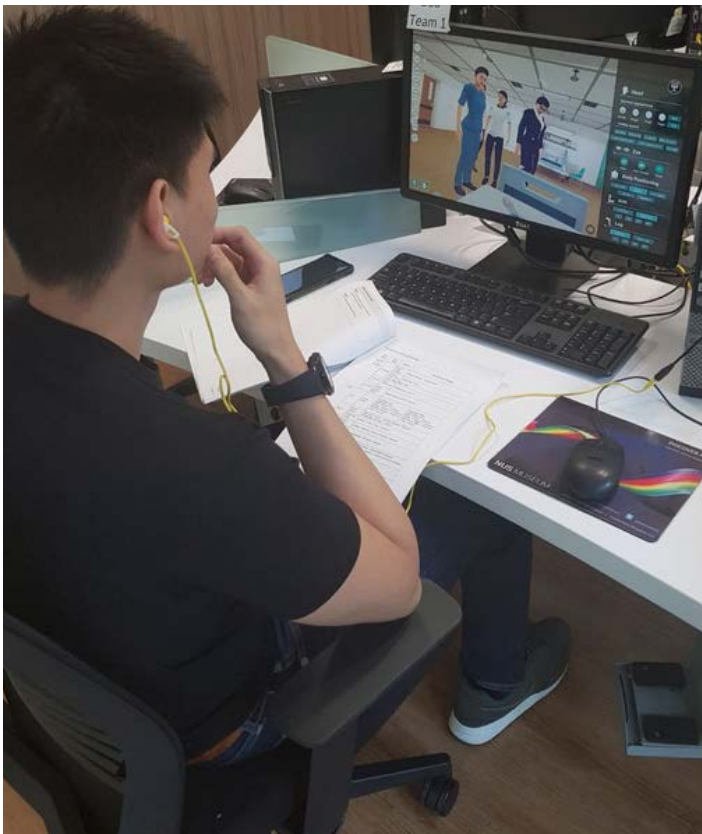
Applying an experiential learning approach, the teams role-played the scenarios related to multi-disciplinary team care. This was followed by a team debrief to allow the students to reflect on their learning experiences. The learning, which featured standardised patients, was guided by facilitators.

Assoc Prof Liaw said, “The virtual environments as a learning tool has great promise for improving healthcare students’ perception of inter-professional collaboration. It also better prepares them in interacting and communicating with one another and promoting multi-disciplinary teamwork. There is much potential for using the virtual simulation platform to deliver more collaborative healthcare learning activities across training institutes.”

IN VIVO



Healthcare students in pilot tests for the CREATIVE (Create Real-life Experience And Teamwork In Virtual Environment) programme.



Significance of study

As Singapore's population ages, healthcare providers are seeing more patients with multiple chronic conditions, leading to the increasing importance of coordinated, team-based care to deliver optimal patient outcomes. Effective multi-disciplinary teamwork is essential to provide high quality patient care.

This requires healthcare workers to communicate with and understand one another's roles and responsibilities. For healthcare professionals with different backgrounds to be grounded in team-based care delivery, they must first be provided with opportunities to learn with one another, added Assoc Prof Liaw.

While educators have acknowledged that inter-professional education (IPE) is essential to the development of a collaborative, practice-ready health workforce, there has been a dearth of IPE activities across tertiary institutions to broaden learning opportunities among diverse healthcare student teams. This is largely due to the different student schedules as well as the fact that the three institutions campuses are located away from each other.

"3D virtual environments are thus a viable, innovative tool that can transcend space and time, by bringing learners together from different local - or even international - health education campuses," Assoc Prof Liaw said.



Phase III medicine student, Teo Jun Hao giving standardised patient, Mr Francis Leong a physical examination.

“ACTORS” HELP MEDICAL STUDENTS AND RESIDENTS PRACTICE THEIR SKILLS

By Dr Khor Ing Wei, Dean's Office

The doctor came into the clinic, where a distraught woman was waiting for him. The woman was overwhelmed by her many responsibilities, including the stress of caring for a son who had motor tics. The mother expressed her worry and frustration via an escalating level of emotion, to which the doctor responded with a long monologue about her son's condition and possible treatments for it.

This seemingly routine doctor's visit was actually not at all routine and, in fact, not even a real one. The doctor was a medical resident preparing for a postgraduate (Masters in Medicine) examination and the mother was a “simulated patient (SP)” who was acting the part. For the rest of the day, she would reprise her role for other residents in the course.

If SPs sound like a strange concept, given that there is no shortage of real patients, they actually serve a very important role in training medical students and residents in skills such as communication and conducting a physical examination.

For example, after the mock doctor's visit, the course coordinators held a debrief session with the SP and the resident who was being evaluated. The SP gave candid and specific comments on the resident's performance, saying that she thought he had given too much explanation and had not addressed all of her character's concerns and questions. The teaching point in this case was to listen carefully to what the patient's mother had to say. If the resident had listened more (instead of trying to get all of the facts about motor tics), he may have discovered that the mother was highly stressed for many reasons and that her stress could have partially caused her son's motor tics.

SPs come from any walk of life, such as Mr Francis Leong, 70, who retired from an engineering career 18 years ago and found himself with time on his hands. He joined a singing group and found out about the SP programme at Tan Tock Seng General Hospital from his friends in the group. Later on, he joined the SP programme at NUS Medicine.



He values the programme because learning the scripts and scenarios helps him “gain memory benefits and stave off dementia.” He also feels that “SPs give students a chance to practice their skills” so they are better equipped when they interact with real patients, especially in difficult scenarios.

Mr Yeo Jun Yu, 33, is a part-time fitness trainer who found out about the programme through his mother, a staff nurse at NUH. His favourite part of being an SP is the acting, which he describes as “very interesting and fun.” He especially enjoys portraying very difficult patients. Although he has a certain amount of scope in portraying a part, he points out that the level of emotion is usually determined beforehand when the case writer meets with him.

“I have to present the same level of emotion for each student, to keep it fair,” says Mr Yeo.

Both Mr Leong and Mr Yeo joined the NUS Medicine SP programme when it started in 2012, when recruitment was more informal. Now, most SPs are recruited through the programme’s annual SP Day in May or June. Candidates go through an interview, during which they are evaluated on their motivation as well as ability to act and provide constructive feedback. Selected SPs undergo a basic skills course that lasts for a day and a half and provides them

with tools to communicate their responses to students. SPs who perform well will be invited for further training, which includes the Master Interview Rating Scale (MIRS) and Physical Examination Training Associate (PETA) courses. PETA-trained SPs can give layperson feedback to students about their physical examination techniques.

Dr Nicola Ngiam directs the SP Programme at NUS Medicine, supported by three SP educators. These educators manage the use of SPs in undergraduate, postgraduate, and Nursing and Dentistry courses, respectively.

“When we first started the programme, we mainly used SPs for assessment needs,” says Dr Ngiam. “But, after a couple of years, we realised there was a lot more that SPs could offer.” In collaboration with the Eastern Virginia Medical School in the United States, she and her team trained the SPs in portraying emotions and communicating effectively. The SPs are now used in both teaching and assessment activities.

This means many opportunities for SPs to help train our medical students and stretch their acting legs. Mr Leong, for one, relishes every minute of it. “I don’t hold back – whether I’m supposed to act angry or sad, I give it my all,” he says, smiling broadly.



BLENDED LEARNING AT NUS MEDICINE

*By Ms Liu Ching Man, Dr Lee Shuh Shing and
Dr Gominda Ponnampereuma, Dean's Office*

The Yong Loo Lin School of Medicine has adopted blended learning as part of its instructional approach to the education and training of medical and nursing undergraduates. But what exactly does “blended learning” mean? And why is it important for educators to embark on “blending”? What are the resources needed and how does blended learning take place in a medical school?

What is blended learning

NUS has been actively promoting blended learning as a key strategy for effective teaching and learning. It is versatile, because it gives students control over when, where and how quickly learning takes place. This is possible because blended learning combines online and face-to-face (F2F) instruction, to create an integrated cohesive learning experience. It is one that is characterised by a reduced number of F2F meetings, with some lectures, assignments or group work done online.

Graham (2005) defined blended learning as a combination of F2F instruction with computer-mediated instruction, and highlighted the fact that with technological innovations, the two modes will progressively converge as technology advances.

Why blended learning

Blended learning can be justified using many learning theories. Since there could be different approaches to blended learning, often the theoretical basis may depend on the individual approaches adopted. However, in general, it is convenient to explain the theoretical basis using the two major, relatively recent educational theories: cognitivism and constructivism. Cognitive learning theory in general explains how information is processed in the brain, while learning is viewed as a process of making meaning in constructivist learning theory. The learner interacts with experience and environment in the construction of knowledge. The process is essentially learner-centered (Ashworth, Brennan, Egan, Hamilton, & Sáenz, 2004). Hence, the two theories are synergistic.

It is important for NUS Medicine to consider our current teaching and learning environment, clarify our aim in embarking on blended learning and better understand the benefits of F2F versus computer-mediated instruction.

In so doing, teachers can strategise and blend the two instructional modalities effectively, thereby creating a flexible, responsive and spontaneous learning atmosphere for our students (Osguthorpe & Graham, 2003). Table 2 (page 23) provides a summary of why and how NUS Medicine adopts the blended learning effort.

Suggested approach for blended learning in NUS Medicine

Successful blended learning relies on the planning and execution of the learning experience. With the transfer of some control from teachers to students, the roles of the instructor and learner must be clearly communicated. For successful implementation of blended learning that goes beyond didactic learning, educators should follow the twelve principles of e-learning theory by Mayer, Sweller and Moreno. Educators who are keen to adopt a blended learning approach, but lack the know-how or experience should be assured that IT infrastructure and support are in place to help them get started. Those who are already constantly improving on their pedagogies should also be aware of the IT infrastructures available, and how they can make use of these resources to deliver their lessons and communicate expectations to students.

The three must-know IT tools, but not limited to, for blended learning that are available to all teachers and students are: Panopto, Entrada, and Poll Everywhere.

- Panopto is a Video platform to manage, live-stream, record and share video across NUS, supports webcasting, and the creation and sharing of e-lectures. Apart from providing webcasting services for all didactic lectures at NUS Medicine, educators can potentially use Panopto to record an e-lecture to enable students to learn at their own time and convenience.
- Entrada is NUS Medicine's Event-based learning management system, with curriculum mapping and personalised events calendar. Educators can use the event scheduler to scaffold the entire learning experience for any teaching activity, from pre-event all the way to post-event. Students can then be guided through the required preparation before the lesson. They will be informed about what to expect during the lesson, as well as encouraged to participate in after-lesson activities to complete the learning cycle.
- Poll Everywhere is a live, interactive PowerPoint-integrated classroom response system. Educators can set up and administer live quizzes to facilitate and elicit active student participation. It is especially useful when deployed during classes to transform the monotony of a didactic session into shorter, manageable large group lecture style segments, interspersed with interactive and interesting live polls which students can actively participate in.

1. Before class		
Online Content	Students view narrated presentation, learn the didactic contents or revisit earlier lectures online. Tips for success: It is highly advisable to segment the lecture by building in activities for students to apply what they have learnt. E-learning offers many facilities to build in such learning activities.	Panopto
Online Quiz	Identify weak spots, and check that preparation is done.	Entrada Quiz
2. In-class Activities (i.e. interactive lecture/centralised teaching sessions)		
Large /small group active learning	<ul style="list-style-type: none"> • Review of online contents • Address weak spots and explain complex theoretical concepts • Check understanding using learners response system (Examples of different approaches: Collaborative Learning Cases, tutorials/ laboratory/practical sessions, self-directed training sessions, bed-side tutorial/ case discussions, projects etc.)	Poll Everywhere
3. After Class Review		
Small group / Individual active learning	Active problem solving Peer learning	Entrada (Eg. Forum, quizzes, assignment etc.)

Table 1: A suggested approach to blended learning

		Pure F2F instruction	Computer-mediated instruction
Our teaching and learning environment	Desired outcome	<ul style="list-style-type: none"> • Human connection • Student participation limited • Standardised • Flow and pace is controlled 	<ul style="list-style-type: none"> • Flexibility (time, locality) • Student Participation maximised • Individualised • Flow and pace can be multi-directional
Our Teachers <ul style="list-style-type: none"> • Strong and experienced basic medical science teachers • Clinician educators • Other healthcare specialists 	Integration and collaboration between disciplines, to plan and deliver a more coherent and clinically relevant curriculum.	<ul style="list-style-type: none"> • Social presence in F2F environment to develop trust and overcome cultural barriers • Allows for generation of rapid chains of associated ideas in a facilitated environment • e.g. for Interprofessionalism, integrated medicine, multi-disciplinary teaching 	<ul style="list-style-type: none"> • Remove constraints of time, locality for teachers • e.g. deliver web-lectures instead of physically travel to lecture theatre at a fixed timing • Cost effectiveness e.g. rare or high risk specimens can be quickly and safely replicated or simulated
Our Students <ul style="list-style-type: none"> • Large cohort size (>300) • Diverse talent and background • Digital natives (Tay, 2007) 	Every learner can minimally achieve the desired outcomes of the curriculum, and given space to grow to maximum potential, and where necessary given timely intervention.	<ul style="list-style-type: none"> • Time efficiency and standardised materials and quality for large cohort in a controlled pace for focused theme e.g. Centralised Teaching Sessions in place of numerous small group tutorials in different hospitals • Vital opportunity to apply and practice F2F social interaction, code of conduct and communication skills with teachers, future colleagues, healthcare team and patient 	<ul style="list-style-type: none"> • Increased range of personal choice for learners in terms of time, place, pace or path • Personalised and on-demand • Variety and richness of multimedia learning tools to cater to different learning styles or teaching needs • Assessment for learning that is instantaneous and targeted e.g. learners response system
Our Curriculum <ul style="list-style-type: none"> • Normal health, structure and function in first year • Disease state and abnormal structure and function in second year • Foundational exposure to clinical settings in third and fourth year • Student Internship Programme in final year 	Clinically relevant medical curriculum that is horizontally and vertically integrated, delivered as much as possible in a spiral, and just-in-time fashion.	<ul style="list-style-type: none"> • Clarifying and explaining complex theoretical concepts to a large group efficiently through controlled and directed didactic sessions that directs the flow of thoughts • Richness of environmental stimulus for acquiring complex skills needed for navigating real life situations e.g. exposure to clinical settings; social cues in soft skills training; nurturing the humanism 	<ul style="list-style-type: none"> • Create space in timetable by transferring pure didactic, rote learning online where students can control the pace and repeat as many times as necessary • Safe and cost effective environment for repeated experimentation for high stake skills e.g. patient safety, procedural skills training, communication • Cost effectiveness in developing, sharing and reusing quality learning materials • Ease of revision, e.g. students can revisit e-learning materials from earlier years to strengthen connection

Table 2: Why and how to strategise blended learning effort

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Background

The past decade has seen a rapid increase in the amount and variety of data, including personal information, being gathered and linked together. This Big Data, as it is sometimes called, has a variety of potential applications in commerce, policy, education – and particularly in healthcare. Researchers can use Big Data to develop improved diagnostic techniques, screening programmes, personalised therapies and preventative measures. Clinicians can also leverage rich patient data to further tailor treatment plans and recommendations.

But the volume, variety, and linkability of Big Data also exacerbates key ethical challenges in privacy and patient protection. Informed consent has traditionally been the mechanism to ensure individuals have adequate understanding of and control over how their data is being used. However, the sheer amount of Big Data being gathered increasingly makes obtaining consent for each and every use of personal data impracticable.

At the same time, the protective measure of anonymisation is increasingly under strain in the Big Data era. Sensitive personal information, if obtained by the wrong individuals, could lead to discrimination, embarrassment, stigma or other deleterious effects. Anonymisation of personal data is meant to prevent data holders from being able to ascertain the identities of individuals in a given dataset. However, even if direct identifiers such as names and NRIC numbers are stripped out, the richness of Big Data (particularly as diverse datasets are linked together) makes re-identification increasingly possible.

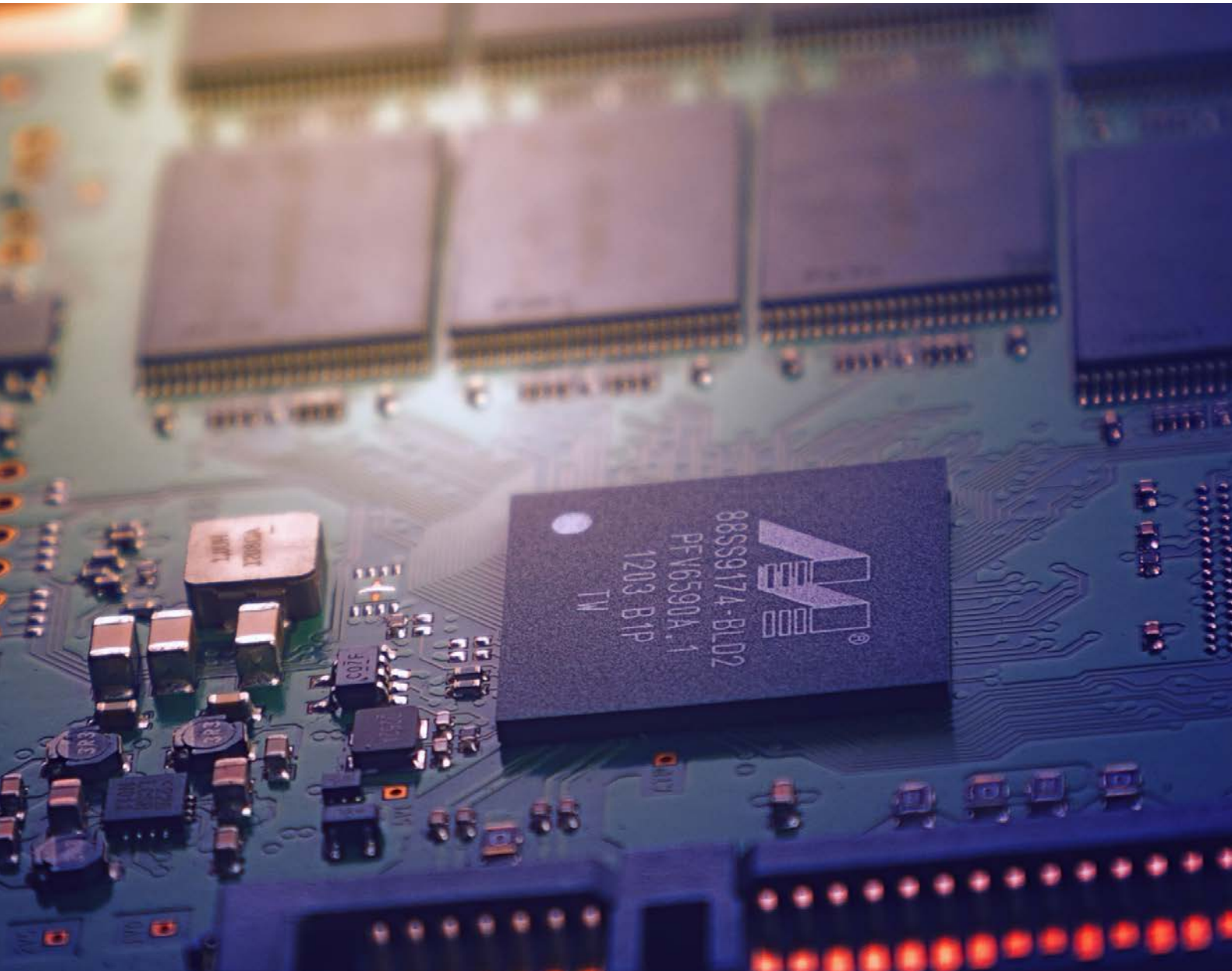
While these issues are not entirely new to the field of data ethics, the increasingly sophisticated capabilities in Big Data science makes them more pressing and necessitates fresh approaches to patient privacy and data governance. The Science, Health and Policy-relevant Ethics in Singapore (SHAPES) initiative at the Centre for Biomedical Ethics (CBME) has recently commenced a Big Data ethics project. The project focuses on contexts where Big Data is being used to improve health and healthcare.

Development of an ethics framework

The SHAPES Team has convened a Working Group comprising local and international experts and has tasked it with producing an ethical decision-making framework. An ethical decision-making framework is a tool that we use to help us think through complex issues to arrive at ethically acceptable decisions. Such frameworks are not guidelines and do not provide the answers per se, but they highlight important considerations and ways of thinking about ethical issues.

The Working Group identified substantive and procedural values that relate to the area of Big Data. Substantive values are those used to justify decisions while procedural values are those which govern the decision-making process. Substantive values include, but are not limited to: integrity, privacy, and stewardship. Procedural values include values such as engagement, accountability, and transparency. Identifying the underlying values helps us to think through the ethical issues that arise in a variety of Big Data activities. The framework being developed by the Working Group discusses how these and other relevant values relate to a number of Big Data domains.

One such domain relates to open science and large data repositories. For example, ethical and governance challenges arise in relation to sharing and exploiting data in generalist or community-specific scientific repositories.



Such repositories house research products and datasets from a variety of fields in addition to biomedical data and could theoretically be used to generate knowledge in areas previously unimagined.

In considering issues that are prominent in open science, we highlight the interests of the various stakeholders. For example, there is a tension between the need to protect privacy and requirements to openly share data. There are also considerations in relation to ownership and access control of data and the fair attribution of intellectual contributions. The fair distribution of benefits and burdens that arise from the use of openly available data must also be taken into account and deserves special consideration.

Other domains that the framework will examine relate to precision medicine; big data as a source of real world evidence; AI-assisted clinical decision-making; governance in cross-sectorial big data; public-private partnerships; and

vulnerabilities and power.

Plans going forward

The SHAPES Big Data project explores these and related issues not as a mere academic exercise: a key goal is also to assist stakeholders such as clinicians, researchers and data governance personnel in making ethically sound decisions on the use of Big Data. Co-chaired by Associate Professor Tai E Shyong (NUHS) and Professor Graeme Laurie (University of Edinburgh), the Working Group will present a draft framework for public consultation by March 2019. During the consultation process, there will perhaps be an opportunity for the NUS medical community to provide feedback on the Big Data Ethics Framework.

The final version of the Ethics Framework will be shared with stakeholders by the end of 2019.

SHAPES is supported by the Singapore Ministry of Health's National Medical Research Council.



IT WON'T KILL YOU TO TALK ABOUT IT

By Dr Noreen Chan
Head & Senior Consultant, Division of Palliative Care,
National University Cancer Institute, Singapore (NCIS)

“Be careful then, and be gentle about death. For it is hard to die, it is difficult to go through the door, even when it opens.”

D H Lawrence, All Souls' Day

Those of us working in Palliative Medicine do not receive gifts from appreciative patients or their families. After all, the patients and families we serve may be grappling with weighty issues like dying and death. So it is always a surprise to receive a note of gratitude from a bereaved

family, and over the years, at least a quarter of the Thank Yous have been about conversations.

For example:

“Appreciate very much the conversation that we had when my daddy was first referred for palliative care. Thank you for asking the hard but much needed questions, and also for clearing the doubts that I had.”

“Thank you for eloquently touching on those end-of-life issues, which had allowed us to come to terms with the situation despite the rapid course of the disease.”

The importance of having “The Talk”

Surely all of us, as we approach the end of our lives, would want treatment that is aligned to our goals and preferences. But how would our families and medical teams know what we want if we had never talked properly about it? Studies indicate that such conversations hardly happen, or happen very late, and tend to revolve around procedures and treatments, rather than personal values.



Visitors - Please Note

The subject of death will be featured in the next section.
Parental guidance is advised.

访客请注意

以下展厅探讨死亡课题, 本馆建议儿童在家长的陪同下观看。

Pelawat - Sila Ambil Perhatian

Tema kematian akan diser tuh dalam pameran seterusnya.
Bimbingan ibu-bapa dinasihatkan.

관람객 여러분

다음 전시관은 '죽음' 에 관한 내용을 다루고 있습니다
부모님의 지도를 권장합니다.

御観覧の皆様への御注意

次のセクションでは死を扱っています。
お子様へは適切なアドバイスをお願いします。

வருகையாளர் - அன்புகூர்ந்து கவனிக்கவும்

அடுத்த காட்சிக்கூடம் மரணம் பற்றியது.
பெற்றோர் துணை அவசியம்.

Chers visiteurs - Merci de bien vouloir noter que la mort et les

rites qui l'entourent seront développés dans la prochaine salle.
Un avis parental est souhaitable pour les enfants

It is ironic that many of us put more thought and energy into planning a holiday, than we do in planning for our old age. As the saying goes, if you fail to plan, you plan to fail. Neither is the talk just about making a will, or what kind of funeral you want, although those topics do crop up. If I had to summarise, it would be about what matters to you, now and in the future, especially towards the end of your life.

Why is it so hard to talk about it?

Illness, dying and death have long been considered taboo topics across many societies. Just think how many euphemisms we have for the word “died” – kicked the bucket, pushing up daisies, or as some say in the Netherlands “hung up his clogs”.

At the Peranakan Museum in Armenian Street, a display on funeral rituals merits a Parental Guidance advisory! (above)

Jokes aside, it is a difficult topic, as it forces us to confront our fears, and brings up memories, regrets, emotions

and anxieties. Healthcare professionals are as human as anyone else, and since there is little or no training available, it is perhaps no surprise that they might avoid the issue altogether.

Yet all of us will die one day, so this is relevant to everyone and important enough that the whole of society should “own” the issue, rather than just leave it to particular groups like healthcare professionals.

How to start “The Talk”

The Singapore Hospice Council recently devoted an entire issue of its newsletter Hospice Link (available in English and Chinese) to the theme “The Power of Conversation”, sharing how discussions can be held gently and sensitively for old and young. I myself have had “The Talk” with adolescents, and with parents of very ill children.

Atul Gawande, in his bestseller book “Being Mortal”, recounts how he had to have this tough conversation with his own father who had been diagnosed with cancer. He used a 7-point tool called the Serious Illness Conversation



Guide which had been developed by Dr Susan Block and others as part of a comprehensive care approach for selected patient groups, called the Serious Illness Care Program by Ariadne Labs. In parts of the US, efforts are under way to ramp up training, as reported in Doctors Learn To Talk To Patients About Dying (Kaiser Health News).

My version, which I call “The Talk”, follows a similar outline. It has four broad categories:

- What do you understand about your illness and what does it mean for you?
- What is important to you - what do you want, what would you like to avoid?
- If your condition were to deteriorate in the future, what would be important to you then, e.g. where would you want to be, who would you want to be with?
- Who would speak for you if you could not speak for yourself?

This has been further adapted at the National University Hospital into a conversation tool which we call the GAP (or Goals And Preferences) chat.

“Pearls on a string”

Although I may call it “The Talk”, it is in reality more likely a series of talks that we have with one another. As healthcare teams journey with their patients and manage their illness, we should also be gaining an understanding of who the persons are who live with these illnesses and how they want to live their lives.

Outside of healthcare, we can talk with our family or friends, in almost any kind of setting. In some countries, they have Death Cafes which provide coffee, cake and a safe space to talk. And so, like pearls on a string, we thread these conversations, making a necklace that grows and changes as we ourselves grow and change.

Seriously, it won't kill you to talk about it. You might feel uncomfortable or emotional, but the elephant in the room will not go away just because you ignore it. Ironically, in talking about death and dying, you may discover a deeper understanding about yourself, and gain precious insights on how to LIVE.

*A man asked my friend Jaime Cohen:
“What is the human being’s funniest characteristic?”*

Cohen said: “Our contradictoriness. We are in such a hurry to grow up, and then we long for our lost childhood. We make ourselves ill earning money, and then spend all our money on getting well again. We think so much about the future that we neglect the present, and thus experience neither the present nor the future. We live as if we were never going to die, and die as if we have never lived.”

By Paulo Coelho - Like the River Flows



THE SUM OF ALL FEARS

Life as a new doctor is fraught with risks. It is also stocked with opportunities for personal and professional growth and development. Dr Wong Wen Kai (Class of 2017) shared his experiences and perspectives.

I just graduated from medical school last year, and have been spending my past 10 months working as a House Officer in our public healthcare system. I'm not part of any residency programme, so I can't offer much in the way of practical advice on how to get your dream specialty.

Instead, today I hope to share on some of the "softer" things about life as a junior doctor.

Becoming a doctor is scary. I'm certain many of you would remember the warnings the admission officers and speakers at the Open Days gave freely when you were considering enrolling as a medical student. If you were like me, you would have just chuckled and put those warnings aside. After all, how bad could it be to be in a well-paying and generally well-respected profession?

And if you were just like me, you'd slowly realise the deep

horror of being entrusted with someone's life shortly after the adrenaline of completing your final exams wears off. Taking that leap to become a clinician is tough. The hours are long, the expectations heavy, and the emotional burden can be overwhelming at times.

My friends and I recently conducted a survey of the current House Officers practicing in Singapore, with 200 respondents. We asked these junior doctors how they felt about work, what were their stressors, and how work was impacting their well-being and mental health.

The most cited source of job dissatisfaction was working hours. We found that the median working hours for junior doctors was 12 hours a day, usually with an additional half day each weekend. Of those surveyed, 70% said that they had these working hours or worse. Add on the one or two calls (overnight duties on top of regular office-hour work), and we found that between 19% and 36% of junior doctors were working more than 80 hours a week. The hours don't get much better - our senior clinicians pour in long hours to make sure patients are well cared for too.

Hours alone don't make the profession tough; after all, many others outside of medicine work equally or even longer days. The expectations placed on doctors, and the emotional weight that comes from failing to meet those

expectations is a different story. Someone once told me: “When you’re taking exams, the passing grade is 50%. But when you’re treating patients, your passing grade has to be 100%. Your patients and their families expect you to not make errors.”

The stress of having to keep up with those perceived expectations can erode a soul. We all want to give our best to our patients, but it isn’t always possible. More often than not, we find ourselves juggling a busy team list, responding to requests for instantaneous updates from family members, trying to cope with the idiosyncrasies of senior clinicians, and filling in the endless paperwork that seems to come with residency and being a doctor. I can’t even begin to count the number of times I’ve woken up in the middle of the night with palpitations because I thought I had missed out on something important for my patients.

What then when we fail and patients die? Watching someone you’ve cared for every single day choke to death on their last pained breaths - that scars you. You watch the family members around the now lifeless body, choking down tears amidst howls of grief. You can only say “I’m sorry about what has happened” as your mind races to figure out where you went wrong.

SOMEONE ONCE TOLD ME: “WHEN YOU’RE TAKING EXAMS, THE PASSING GRADE IS 50%. BUT WHEN YOU’RE TREATING PATIENTS, YOUR PASSING GRADE HAS TO BE 100%. YOUR PATIENTS AND THEIR FAMILIES EXPECT YOU TO NOT MAKE ERRORS.”

And then an uneasy guilt sets in. The guilt of wondering if the finger will be pointed at you if the witch-hunt begins, as has happened to doctors before you. We like to think that we are professionals who are above this, but it happens and happens too often. I remember a Facebook post from one of my batch-mates that sums this up well: “We can die, patients cannot die”.

It is no wonder then that so many doctors suffer from significant emotional backlash. In the same survey, we found that 47.5% of respondents scored above the cut-off point on a depression screening tool known as the PHQ-2: 18% were at risk of developing major depressive disorder (that’s **THREE TIMES** the national prevalence rate), with 67% showing significant symptoms of burnout.

47.5%

Scored > 3 on the PHQ-2

18.0%

18% at risk of developing MDD

67.0%

Scored > 3 on a burnout scale

I’m not telling you all this to scare you away from being a doctor. For all the difficulties, being a doctor brings with it a unique joy that you’d be hard pressed to find elsewhere. I’m sharing this because I believe it is important we confront and understand the challenges, to diagnose the issues that plague doctors, and to find preventive mechanisms as a community and as individuals.

If I may be so bold, I’d like to share with you three things I tell myself, to cope with the difficulties of being a new doctor.

1. Be more than just a doctor.

When we spend so much of our lives in the hospital or with our patients, it can be easy to forget that being a doctor is just one aspect of who we are. While that identity is important to many of us, we need to actively remind ourselves that being a doctor is not our only identity. Being able to keep some distance from your job means that you are less likely to feel like your life is over when something inevitably goes wrong in your practice. You need to have a life outside of medicine too. Go out and enjoy your hobbies, spend time with your family, and discover life outside the hospital. You need to understand more than medicine in order to empathise with the myriad of patients who come to you for healing.

2. Know yourself.

While it is important to ask yourself what kind of specialist or generalist you want to be, it is more pertinent to know who you are as a person. Take time to ask yourself what your character flaws as well as strengths are, and what makes you different from those around you. You may find that those are just two sides of the same coin.

This understanding is important because it helps you figure out what kind of doctor you are, and helps you set realistic expectations for what kind of clinician you strive to be. For example, I know I’m not exactly the brainiest around and embracing that has helped me put away the anxiety of not being on the Dean’s list or having a thousand research publications to my name. Instead, I know I wear my emotions on my sleeves and that’s something I use to heal my patients. It helps me identify role models, and because of that I’ve been able to better utilise my emotions to connect with patients. As the months pass, I find myself holding on to the hands of wailing old ladies and comforting them after they hear that they have cancer or that they may never walk again. Knowing where I excel helps me build on it and gather professional satisfaction. Knowing yourself also means recognising your flaws. Wearing my heart on my sleeve also means that I showcase my anger and unhappiness in more spectacular fashion. The recognition of this flaw has helped me find mechanisms to reduce those instances and grow as a

human being. The day before I started life as a House Officer, I sent out a text to a trusted friend to help me with this:



She still scolds me when I'm less than professional. While it may be a bitter pill to swallow when it happens, I wouldn't have it any other way.

3. Love Fast, Forgive Easily

Working with other doctors with their own flaws and quirks in a high stress environment means that there will be times where you get angry with them. Throw in the general competitiveness of getting into a specialty and the baseline egotistical nature of doctors, and it is not hard to imagine that things can get ugly very quickly. I've seen more senior clinicians hold very public grudges against each other than I would have liked.

Even as junior doctors, we argue and fight. When others put you in a tight spot, it is easy to assume the worst of them. I remember being incredibly annoyed with a fellow HO

WHEN WE SPEND SO MUCH OF OUR LIVES IN THE HOSPITAL OR WITH OUR PATIENTS, IT CAN BE EASY TO FORGET THAT BEING A DOCTOR IS JUST ONE ASPECT OF WHO WE ARE. WHILE THAT IDENTITY IS IMPORTANT TO MANY OF US, WE NEED TO ACTIVELY REMIND OURSELVES THAT BEING A DOCTOR IS NOT OUR ONLY IDENTITY.

when they left me to set an intravenous plug for a patient for four nights in a row. Even with ultrasound guidance, the anaesthetists couldn't get the plug in, and there I was every night trying to set a plug. In that moment, it was easy for my mind to assume that my fellow HO was being lazy. While it was tempting to assume the worst of him and form a grudge, I found that forgiveness went far further even when it was difficult to. We eventually talked it out and he apologised for missing it out. He helped me a tonne when I was struggling later in the posting.

You'd also be surprised how much your colleagues care for and love you. I've been going through a really rough patch the past two weeks. I had delirious patients swearing at me at the top of their lungs whenever I walked past. I had been disappointing my boss each morning round. One of the patients I had been caring for in the past two months had died. And perhaps most importantly, my personal life was a mess. I was completely burnt out from work, often sitting in front of the computer in the office and not being able to move because of all the weight on my mind. I couldn't eat or sleep for days, and I was withdrawing from the other HOs and doing excessive amounts of work to keep myself distracted. While they were my batch-mates, I didn't feel like we knew each other well enough for them to care or for me to share what I was going through. Against all my expectations, they reached out to me and showed me a great deal of love and understanding when I was being difficult. They are the reason why I was able to drag myself out of bed and come and talk to you today.

There's enough stress and unhappiness without us having to fight and compete against each other. So love fast, and forgive easily; you'll find it returns to you a thousandfold when you need it the most.

All the best with the rest of medical school, and I look forward to seeing you in the wards.

From a presentation delivered to NUS Medicine students on 24 February 2018 at the NUS Medical Society Career Fair.



EAT WELL, LIVE STRONG

We are what we eat, or fail to eat. Assistant Professor Faidon Magkos, Department of Physiology and Professor Brian Kennedy (Director, Centre for Healthy Ageing, National University Health System) explain why nutrition plays such a key role in healthy ageing.

Life expectancy has increased sharply over the past 150 years, from <50 years in 1850 to >80 years at the present time in many developed countries. This is a result of better medical care and living standards and has dramatically increased the number of elders. As the body grows older, there is a gradual deterioration of physiological function at the cellular level, which eventually manifests at the organ and whole organism level.

Ageing in humans is associated with a reduction in physical stature, a decrease in total body lean mass (mostly because of decreased muscle mass), an increase in fat mass (i.e. obesity), and accumulation of fat in the intra-abdominal area (i.e. central or android obesity). Furthermore, even after adjusting for these changes in body size and composition, ageing is accompanied by a decrease in daily total energy expenditure; this results from a reduction in resting metabolic rate (because of a decrease in organ size and

organ-specific metabolic rate), and a reduction in exercise-induced thermogenesis (because of reduced participation in vigorous physical activities).

All these age-associated changes in physiological and metabolic function increase the risk for developing many chronic diseases. In fact, as people live longer and the age distribution of the population shifts toward a greater number of older adults, there is an increase in the prevalence of all age-related diseases, predominantly cancer, cardiovascular and cardiometabolic diseases (e.g. heart disease, diabetes), and neurodegenerative diseases (e.g. Parkinson's and Alzheimer's).

Diet can have a big impact on health, regardless of age, and adopting healthy dietary habits can help prevent, delay the onset, or even possibly treat many chronic diseases. Good nutrition can therefore promote healthy ageing by not only increasing years of life (i.e. "lifespan") but also, and perhaps more importantly, by extending healthy active years (i.e. "healthspan"). The role of nutrition as one ages becomes ever so more important because ageing can compromise one's ability to meet nutritional requirements at a time when specific nutrient needs may be high (i.e. "nutritional frailty").

Many older adults experience changes in taste and smell, loss of appetite, dental and chewing problems, and limitations in mobility that restricts access to high quality



food and as a result, adopt a nutrient-dense diet. Age-related changes in gastrointestinal absorption and nutrient utilisation and the use of medications can further increase specific nutrient needs.

In fact, several nutrients are inadequately consumed in relation to health risk among older adults: these include protein, omega-3 fatty acids, dietary fiber, carotenoids, calcium, magnesium, potassium, and vitamins B6, B12, D, and E. This is the result of inadequate consumption of fruit, vegetables, legumes, whole grains, nuts or seeds, fish, lean meat, poultry, and low-fat dairy products, and excessive consumption of refined grain products, processed and fatty meats, fried foods, solid fats, and added sugars.

Sarcopenia is a hallmark of ageing and is defined as the progressive loss of skeletal muscle mass, quality, and strength. The term comes from the Greek words σάρκα (sarka), meaning flesh, and πενία (penia), meaning poverty. Sarcopenia in older adults is typically characterised by reduced muscle area and muscle fibre number and size (particularly for fast twitch type II fibres), and results from an imbalance between muscle protein synthesis and breakdown. What is less clear is how ageing affects protein requirements and whether a protein-rich diet or dietary protein supplementation could be beneficial. Evidence from large cohort studies suggests that the loss of lean (muscle) mass with age is partly mediated by inadequate consumption of dietary protein. Other nutritional factors such as vitamin D status have also been linked to age-related declines in muscle mass and functional capacity. The muscle protein synthesis response to major nutrient and hormonal stimuli, such as insulin, glucose and amino acids, diminishes with advancing age, which favors a negative protein balance even in the face of adequate nutrient supply.

Neurodegeneration often occurs in older adults. A wealth of epidemiologic evidence suggests that a Mediterranean diet pattern (rich in fruit, fish, vegetables, and olive oil) may lower the risk of both mild cognitive decline and Alzheimer's disease. On the other hand, randomised controlled trials that evaluated the effects of dietary supplementation with various nutrients (vitamins B6, B12, C, E; folate; omega-3 polyunsaturated fats) failed to provide consistent evidence

of a beneficial effect. This underscores the importance of promoting food-based approaches rather than nutrient-specific ones to maintain cognitive function in the elderly.

A healthy eating pattern for older adults should focus on:

- 1) Plant-based foods, such as vegetables, fruits, whole grains and beans, which are rich in fibre, vitamins, minerals, and phytochemicals that can help prevent cancer and heart disease, maintain a healthy weight and promote good digestion
- 2) Lean meat foods, such as fish, poultry and low-fat dairy products, which are rich in protein, calcium, vitamin D and other nutrients that can help maintain muscle mass and function, and bone integrity
- 3) Whole-grain bread and pasta products, and other unrefined carbohydrates such as brown rice, wild rice, oatmeal, quinoa, barley, and spelt, which are rich in fibre that can improve gastrointestinal function (slow digestion, prevent constipation, protect epithelial lining), lower blood sugar and cholesterol levels (cardiometabolic risk factors), and thereby help decrease risk of diabetes, heart disease, and cancer
- 4) Healthy fats, such as olive and canola oils, and omega-3 fats in fish like tuna and salmon, which are rich in monounsaturated fatty acids, low in saturated fatty acids, and contain little or no cholesterol and can therefore help protect against all age-related diseases

On the other hand, older adults should limit consumption of red meat (beef, lamb and pork) and processed meat products (ham, bacon, sausage and bologna), saturated fat (found predominantly in meat, full-fat milk, cheese, eggs, butter and lard), salt (found in processed foods such as soups, sauces, processed meats, frozen dinners, chips and crackers, but also table salt added on food).

Sensible dietary choices with respect to quality and quantity, but also the maintenance of a physically active lifestyle, and avoidance of tobacco in any form, are all important components of a healthy lifestyle that can help achieve and maintain good health with advancing age. Eating a healthy diet may not always be easy, but it is worth it when it comes to enhancing healthspan and lifespan.



FEELING HISTORY'S PULSE

VETERAN CARDIOLOGIST HELPED MAKE MEDICAL HISTORY

From an eyewitness's perspective on the race riots of 1965 to pioneering and participating in groundbreaking medical innovations that included helping to save the life of Singapore's first President, cardiologist Dr Low Lip Ping has some interesting stories to tell.

It all began when the Class of 1965 alumnus' interest in the study of medicine was stoked by his father's own passion for the subject.

In the 1920s, the senior Low had won a scholarship to the then – King Edward VII College of Medicine.

However, plans changed when Dr Low's grandfather shuttered his provision shop, and his father had to forgo medical studies to work at the Singapore General

Hospital (SGH) as a pharmacy dispenser to support his family. Although he did not say it, Dr Low's father had hoped that his son would succeed where he could not and become a doctor.

Dr Low's family had moved into the staff quarters at SGH, and the young Lip Ping grew up in the hospital grounds, interacting with the staff there.

When Low junior graduated from Raffles Institution, he did well enough to enter medical school as a sophomore, or "super freshies" as they were nicknamed, under a special scheme at that time.

Medical school in the 1960s was quite different from medical school today.

"Teaching methods were quite straightforward. For anatomy – we had cadavers, at that time, there was no shortage of cadavers, so we could do our anatomical dissection on real dead bodies. In my middle years, I became acquainted with bacteriology and parasitology reports as there were a lot more parasites and bacteria including worms, amoeba, malaria, tuberculosis, torula, cholera, typhoid etc.then," Dr Low said.



Dr Low Lip Ping, his family physician daughter Dr Lynn Low and his grandson Jason Tong, who is a Phase III medical student at NUS Medicine.

In his final year, Dr Low passed his examinations with flying colours. He topped his cohort and was awarded a medal on convocation day.

A moment to remember

After graduation in May 1965, Dr Low worked as a houseman at SGH's Department of Surgery Unit B, then the Department of Paediatrics (East Wing), followed by one year as a medical officer in the University Department of Clinical Medicine (Medical Unit II) before he switched to specialise in cardiology, starting as a Research Fellow in the same department under the guidance of Dr Charles Toh and the late Professor Khoo Oon Teik, before becoming a Lecturer, Senior Lecturer and eventually Associate Professor in the University of Singapore's Department of Medicine.

Singapore was then enduring a period of intense turmoil.

"At that time, there were racial riots, and I remember we were quite tense in the hospital, because we were told we might see people coming in injured. But amongst the students, there wasn't any kind of resentment against ethnic groups. In fact, we had quite a big percentage of Malaysians, at least 30 or 40 per cent, including Malays from Malaya – because it was a period of transition when the University of Singapore was University of Malaya in Singapore when I first enrolled," he said.

Dr Low was also working on the night Singapore separated from Malaysia.

"That evening, I was assigned to the theatre, and we took a break from surgery. We were sitting in the doctor's lounge room, and then the television came on. It was that scene – when our first Prime Minister Lee Kuan Yew teared."

Helping to make medical history

In the 1960s, the population suffered from infections,

poor housing and overcrowding, bad nutrition, as well as a lack of clean water.

Shortly after, in the 1970s, there was a change in cardiovascular disease patterns among the population that prompted SGH to establish its first coronary care unit to help patients with heart attacks and investigate the causes of coronary heart disease.

"When I was a student, it was quite common to get rheumatic fever, a condition that follows an infection of the throat by a bacteria called beta-haemolytic streptococcal infection, and then subsequently you would develop an immune reaction. Part of the immune reaction would affect the joints, but sometimes, and more seriously, it would affect the heart valves. Patients ended up with rheumatic heart valve disease," Dr Low said.

"And then things changed due to our economic status. We started to see more and more coronary heart disease. At that time, we didn't know the significance of risk factors like blood cholesterol, blood pressure, diabetes, smoking and obesity, which caused a lot of cardiovascular disease, apart from rheumatic heart disease, and in particular coronary heart disease. We began to see more and more people coming to hospital, dying of heart attacks and so on, so it was decided that maybe that was one area to look at."

When Dr Low went to study in Duke University in 1972 for a year, he, as well as other local doctors, learnt how to do coronary angiograms, echograms for the first time. These doctors returned home and started offering diagnosis and treatment using these techniques in the late 1970s.

And this was only the start of many more cutting edge procedures and medical knowhow in the field of coronary care in Singapore.

ALUMNI VOICES

A young Dr Low Lip Ping (back row, ninth from the right) in medical school in 1961.



Dr Low was part of the first medical team to insert a catheter and a pace maker for a patient in Singapore.

“Nobody had actually put in a catheter to do temporary cardiac pacing or implanted cardiac pace maker. But I saw these patients all needing it because some would come into the hospital with very slow heartbeats, and if don’t help them, then eventually they would collapse and die. So I went to the library and I took a book that described cardiac pacing by one of the pioneers in the UK, London. I read it from cover to cover three times, and went to source for pacing catheters that we could use for cardiac pacing,” he said.

His team managed to seek funding from the Osaka Rotary Club through the Singapore National Heart Association for the equipment, and they prepared for the first patient who needed cardiac pacing.

In 1968, a patient with a very slow heart rate and had to be resuscitated every now and then, was transferred from the Toa Payoh Hospital to SGH. Dr Low inserted a temporary pacing wire, which could not be taken out unless she had a permanent pacemaker implanted. After raising funds for the permanent pace maker, and reading up on the medical procedure, Dr Low placed a pace maker in the same patient, together with his team. The first pace maker lasted 11 months, and he subsequently performed two more procedures and kept the patient alive for another six years.

“Unfortunately after five to six years the patient died, not because of a heart problem, but a stroke,” he said.

In the early 1970s, defibrillators were scarce, and there was no optimum method of performing cardiopulmonary resuscitation (CPR).

SGH’s coronary care unit owned a defibrillator, which

Dr Low put to good use when a patient suffered a cardiac arrest in the hospital. This patient then became Singapore’s first patient to be successfully defibrillated from the procedure.

And having a President for a patient

During his stint as a fellow in SGH’s coronary care unit, he also had the honour of defibrillating Singapore’s first president Yusof Ishak not once, but twice. President Ishak went to Australia and developed atrial flutter-fibrillation while he was there. He then saw a cardiologist in Melbourne who told him to return to Singapore for medical treatment, as it was too heavy a burden to bear if anything happened to Singapore’s head of state while he was in Australia.

“I asked them (President Ishak’s physicians) what would happen if something adverse were to happen while he did the electrical cardioversion, and they said, “Then you would have to leave the service.” But I did it on him (President Ishak) and his heart went back to normal rhythm,” Dr Low recalled. He defibrillated President Ishak within five minutes, and the procedure was successful.

“Well it was a stressful moment, but I wouldn’t say it was the toughest because I had done other patients with similar problems,” he added. Dr Low performed the same procedure a second time for President Ishak a year before he passed on.

In 1980, Mount Elizabeth Medical Centre was just established and they were looking for doctors to start private practice in its premises. Dr Low left SGH to venture into private practice, where he has remained to this day. It’s a career that sports a most resounding coda – his daughter and 21-year-old grandson are following in his footsteps: she is a family physician who graduated from NUS Medicine and he a Phase III student at NUS Medicine.

Locked and loaded: Associate Professor Sim Tiow Suan (centre) and members of her Research Facilities Management team get ready for an inspection.



LEADER OF THE BAND

She is a gǔ-zhēng player who once performed for former Canadian Prime Minister, Mr Pierre Trudeau. As a past President of the Rotary Club of Orchard, she led initiatives to help the down and out. She is also the leader of an intrepid team that is dedicated to protecting the life and limb of everyone working in the laboratories and research facilities of the Yong Loo Lin School of Medicine. Meet Professor Safety – Associate Professor Sim Tiow Suan from the Department of Microbiology and Immunology.



Safely safely slowly catchee

Assoc Prof is adept at counting sheep. She chairs the school's Safety Committee, which was introduced in 2003 to ensure safe practices are observed in all department research facilities, including 14 departments with wet laboratories.

The committee comprises faculty representatives who are volunteers. Assoc Prof Sim also leads the Safety Committee on safety inspection rounds around the school's laboratories and facilities, supported by a 12-strong Research Facilities Management (RFM) team.

Ensuring staff compliance with safety guidelines was far from a walk in the park for Assoc Prof Sim in the beginning. She had to start off on a humble note. Prior to the committee's formation, she had single-handedly bore the brunt of safety work.

"It was very, very difficult at the beginning," Assoc Prof Sim remarked. Even after the Safety Committee was set up,

there was little knowledge for them to tap on because the importance of safety in the laboratories and facilities was not well-understood and appreciated then. Hence, the sleepless nights and sheep-counts.

"We started off knowing nothing because safety was not something that you must comply with then. There were no regulations we were actively engaged in enforcing," Assoc Prof Sim added.

As the pioneers of academic safety in NUS Medicine, she and her committee painstakingly boned up on all standing safety guidelines and requirements as well as government regulations before they started work as the School's safety champions.

Building the lab safety culture over time

Gradually, the committee also managed to stretch the scope of their responsibilities further, developing a

PEOPLE OF NUS MEDICINE



cohesive safety framework. Collectively, they work closely with researchers to maintain a positive safety culture. They assist Principal Investigators in seeking NUS Office of Safety, Health & Environment (OSHE)'s lab accreditation for managing research techniques and equipment and also provide hands-on training that complements OSHE's online-based safety programmes. These sessions also provide safety pointers adapted to the specific needs of researchers based on OSHE's guidelines.

"There was no good safety culture at the time. People were doing a lot of things incorrectly because they were not aware of the correct way to do things – of course everybody knew that we have to work safely, but how to work within the confines of safety regulations and to be safe was not established, and was not common knowledge to all," Assoc Prof Sim explained.

Nowadays, thanks to their hard work, dangerous safety lapses are a distant memory, and the number of non-compliance cases are at an all-time low. Most of these are also minor infractions, such as the incorrect labelling of chemicals and improper donning of personal protection equipment (PPE). Asked if she had ever encountered any tricky incidents, inappropriate waste disposal was quickly highlighted.

"The mixing of incompatible chemical waste due to improper disposal can result in explosions," said Assoc Prof Sim. Past incidents of improper waste disposal prompted OSHE to stipulate that all biological waste should be disposed of within three months. Subsequently, the Safety Committee took on the responsibility of waste management for all central research facilities in 2012, and have never looked back since.

Safety inspections by Assoc Prof Sim and the Safety Committee take place throughout the year. They keep an eye out for potential areas of concern at the labs and facilities they visit. Inspections can sometimes take an entire month to complete.

While there is a checklist to facilitate the inspections, the items to be checked vary every year depending on the safety regulations in effect. Laws governing the use and possession of research materials such as poisons and explosive precursors are regularly introduced or amended by government bodies such as the Ministry of Health (MOH) and the Singapore Civil Defence Force (SCDF). This makes the task more arduous as the committee needs to proactively update themselves on these changes so that they are always au fait with the current statutory requirements. In 2017, Assoc Prof Sim and the RFM team focused primarily on safety compliance pertaining to storage, inventory and access to biological materials regulated under the Biological Agents and Toxins Act (BATA).

Setting, keeping, sharing the standards

So, how does Assoc Prof Sim deal with recalcitrant who continually breach the rules?

An affable approach is always preferred, but infringements are usually recorded before notices of non-compliance are sent to Principal Investigators of facilities where infringements were identified. Incidents of non-compliance with standing safety rules are classified as minor, major or critical, the latter representing a total violation of safety protocol which may lead to mortality. Different countermeasures are taken depending on the extent of non-compliance, and these sometimes involve legal intervention.

But Assoc Prof Sim also emphasised that the purpose of safety inspections is not just to check for safety non-compliance, but also to identify, commend and share good safety practices within the research community. Ultimately, the intended key message is for researchers to recognise the importance of safety at work in the labs.

But it was a startling observation during one of their routine inspections which eventually led to the revelation of the RFM team's ultimate calling.

"We once visited a research floor where there was an emergency shower and eye-wash. However, there were no floor traps and if researchers need to use the equipment to flush off any chemicals, the effluent would have been all over the place!" Assoc Prof Sim recounted. They realised then that a total workplace safety culture should go beyond having the necessary equipment, to include research facilities and infrastructure that is built to cope with emergencies. This realisation prompted the RFM team

to examine how facilities could be managed and designed better to enhance safety.

"I think we have used safety, and integrated safety into facilities management and research laboratory design. It's more of applied safety now because we have adapted it to the laboratory infrastructure," Assoc Prof Sim said. Yet, it is safe to say that the integration of safety may have gone beyond facilities management and into their daily lives.

"Safety has become second nature at work and at home. It has come to a point where I am unconsciously inspecting fire extinguishers in shopping centres to see if they are being serviced!" said the former gǔ-zhēng player with the Singapore National Youth Orchestra (SNYO) in her formative years, and the only female member (also the youngest then) to play for the respected National Theatre Chinese Orchestra.

While she no longer participates in orchestral performances, the gǔ-zhēng still comes alive in her hands when she gives the occasional performance. These days, she also sleeps soundly at night.

Safety Day 26 July 2018

Held biennially, Safety Day is an occasion for safety to be emphasised and advocated within the university. Introduced two years ago, Safety Day has since become a time for everyone to share, exhibit and feature their achievements in safety. In 2016, representatives from the Ministry of Health (MOH), Ministry of Manpower (MOM) and Workplace Safety and Health Council (WSH) were also invited to have an open forum session on safety.

Organised by the Safety Committee with the assistance of the Research Facilities Management (RFM) team, the motto for Safety Day this year will be: A safe you is a safe me, titled as such in the belief that safety is a collective responsibility that should be shared by everyone. All 18 departments have been invited to host at least one booth at the event, and the organising body (RFM) hopes to host at least 20 to 25 booths on the day itself. There will also be a myriad of interactive games and activities to inculcate safety amongst the participants, so do visit the booths then to learn more about safety in NUS Medicine, and have fun!

WITH A LITTLE HELP

WUSHU ATHLETE ENCOURAGED IN TIMES OF NEED

Phase II medicine student Samuel Tan Wei Han's pursuit of his passion in wushu, the Chinese martial arts, was fraught with challenges. The recipient of the Chan Ah Kow Scholarship shares his road from recovery after a surgery to a podium finish at the 2017 Southeast Asian (SEA) Games, and how the opportunities and support given by the University and the people around him were pivotal to his success.

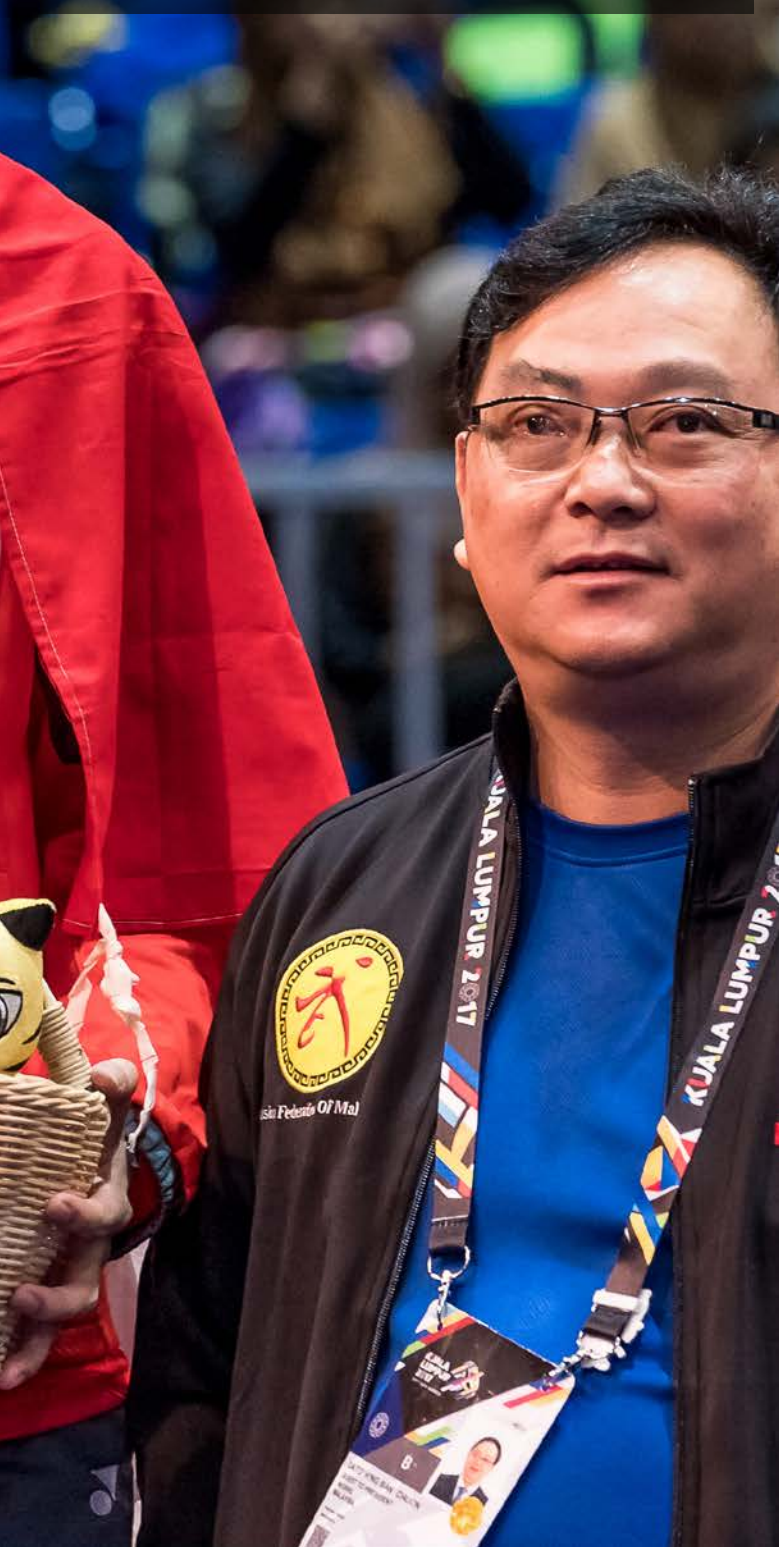


How did you feel about receiving the Chan Ah Kow Scholarship at NUS and what is its impact on your life?

The Scholarship has lightened my financial burden and empowered me to focus on my studies and my sport. I am very thankful to Professor Roy Chan for setting up the Chan Ah Kow Scholarship and I feel honoured to be a recipient as I feel that the scholarship is a reward for the past, motivation for the present and opportunities for the future.

Describe the challenges you had to overcome leading up to the 2017 SEA Games.

Just as the national wushu trials for the 2017 SEA Games were approaching, I was diagnosed with a slipped disc and unable to train properly due to the pain in my leg.



It was a rather distressing time as I knew that I was not able to perform to the best of my capabilities during the trials. However, the Singapore National Olympic Council and the National Wushu Federation still gave me the opportunity to compete despite my medical condition and I managed to do just enough to get through the trial. Despite knowing the risks involved and knowing that the average recovery time after surgery was estimated to be a year, I decided to go ahead with the surgery as I felt that this still gave me the best chance to compete at the SEA Games.

I went for a partial discectomy surgery in February, leaving me with six months to recover and prepare for the competition. I knew that I had to quicken the process of recovery, rebuild my fitness level and improve in my wushu skills. With my doctor's approval, I started on physiotherapy and rehabilitation exercises in March and went back for wushu and physical training in April. It was rather challenging to get back to where I was before as my muscles had already atrophied and my wushu moves and techniques had changed quite a bit. There was also this constant fear of a relapse whenever I was executing difficult movements during my routine. However, I did not give up and continued to strengthen my core and back muscles to prevent a reoccurrence of a slipped disc. The people around me – my parents, friends, coaches and the medical team - were always there, encouraging me and giving me the support I needed to continue.

During this edition of the SEA Games, I managed again to clinch a silver medal again. It felt really satisfying as I recalled the adversities I had to overcome to reach this point. As an athlete, I was finally able to fully appreciate the saying that the body can achieve what the mind believes.

What lies ahead?

I want to continue to represent Singapore in wushu and bring glory to the nation. My dream is to become an orthopaedic surgeon as I see it as a way of integrating my sporting experience with what I have learnt in medical school. This would allow me to help many groups of people – the young, old and definitely, athletes. I am extremely thankful for the opportunities given by the NUS Yong Loo Lin School of Medicine and the donors of the Chan Ah Kow Scholarship and I see my contribution as a way to show my gratitude.

The Chan Ah Kow Scholarship

The endowed Scholarship was established at NUS, with gifts received from the Medical Alumni Association, family and friends of the late Dr Chan Ah Kow. It is awarded to NUS Medicine students who excel in both the academic and sporting arenas. The late Dr Chan Ah Kow was a swimming coach noted for his experimental training methods. He trained his children extensively and his tireless and dedicated efforts enabled them to dominate the South East Asian swimming world in the 1960s and 1970s.

This story was first published on March 15, 2018 on NUS Giving at <https://nus.edu/2Jf42k3>

SCHEDULER

MAY
JUNE
JULY

19 May

Standardised Patient Day
Centre for Translational Medicine (MD6), NUS

03 July

Medical Dinner
Orchard Hotel Singapore, Orchard Ballroom, Level 3

14 July

RadioPath
Seminar Room, T06-02/03, Level 6, NUHS Tower Block

15 July

Commencement Ceremony
Universal Cultural Centre, NUS

18-19 July

Singapore Gastric Cancer Consortium (SGCC)
11th Annual Scientific Meeting
Auditorium, NUHS Tower Block

26 July

NUS Medicine Safety Day
LT 37 and Multi-Purpose Halls, Level 3,
Tahir Foundation Building (MD1), NUS

Details are subject to change.

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