

Medicine

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A 57th Anniversary Class Reunion to Remember



Yong Loo Lin
School of Medicine

**NUS
MEDICINE
110**

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Dean's Message



Dear Friends

Warmest greetings from the NUS Yong Loo Lin School of Medicine! This year has certainly been very eventful, with Singapore celebrating its golden jubilee, and our school celebrating

its 110th. Allow me to share some of our major celebrations with you.

On 3 July, we celebrated our 110th anniversary at the Medical Dinner. Close to 1,000 alumni, graduating students, staff and friends came together to celebrate this significant milestone. It was marked by a special video featuring the school's evolution since its establishment, performances by talented students and Dr Jeevarajah Nithiananthan (Class of 1984), as well as a nine-piece big band Summertimes Nine.

Our Department of Microbiology also celebrates its 90th year. From harnessing the power of the innate immune response to destroy tumors, to discovering new drugs to treat antibiotic-resistant tuberculosis, the department continues to make significant strides in combating diseases and contributing to public health, research and education.

Moving on to our student activities, the 36th Asian Medical Students' Conference was

held in Singapore from 5 to 12 July 2015.

Organised by more than 100 NUS Medicine students across three phases, the conference was well attended by 450 medical students from more than 25 countries around the Asia-Pacific region. With the focus on "Geriatric Medicine – Embracing the Silver Tsunami", participants exchanged healthcare ideas, took part in community services and interacted with our local elderly.

In this issue's Alumni Voices, we are honoured to have Dr Sonny Yeoh share with us his heart-warming account of the NUS Medicine Class of 1958's journey from graduation to their 57th anniversary reunion, which was held this August.

Last but not least, I would like to take this opportunity to thank everybody within the NUS Medicine community for their invaluable contribution to the school.

Wishing everyone good health, joy & fulfilment!

Dr Yeoh Khay Guan
Dean
Yong Loo Lin School of Medicine



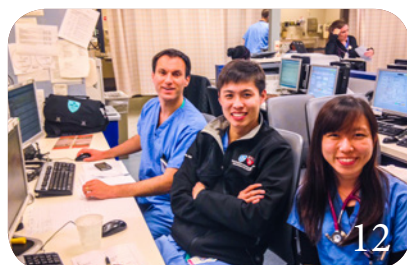
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Our Kind of Doctors



Students of the NUS medical school are being put through a clinical curriculum that gives increased emphasis to geriatric medicine. This is aimed at turning out doctors who are able to competently care for the increasing number of older people in the Singaporean population.

Forecasting, identifying and then preparing its graduates for emerging and future medical and healthcare challenges and roles is something that the School, established 110 years ago this July, believes is key to its ability to fulfill its mission as the fountainhead of Singapore's medical workforce.

From dysentery, kernicterus and malaria in the early years of Singapore, to SARS, bird flu, heart disease, cancer and diabetes today - the range of health issues tackled by graduates of the NUS medical school over the course of more than a century is a medical journey that parallels and traces Singapore's metamorphosis from a British colony in the 1900s to the modern city it is today, notes the Dean of the School, Dr Yeoh Khay Guan.

As Singapore grew, developed and prospered, the forerunner of the National University of Singapore similarly evolved. It is an integral part of the country's biomedical initiative, collaborating with other research-focused institutions here, like the Agency for Science, Technology and Research, the National Research Foundation and the Biomedical Research Council on innovative and important discovery work that will benefit Singapore's population health and that of Asian societies in general.

Alumni, the Core of Country's Healthcare System

While technology's role as an enabler allows the Yong Loo Lin School of Medicine today to ramp up its educational and research missions, the medical school hews closely to its founding vision – to train doctors for Singapore. Today, the School's graduates comprise the backbone of Singapore's healthcare system, with many in leadership roles, adds Dr Yeoh. "The great majority of doctors in Singapore are our graduates. We're proud of the health system and the standards that our graduates have built." A number of alumni have gone further, having been appointed to high public office, with a President, a Speaker of the House, three serving Cabinet ministers and a succession of Directors of Medical Services at the Ministry of Health at last count.

Training Tomorrow's Healthcare Professionals Today

An immediate challenge however is the population health issues presented by Singapore's growing numbers of senior citizens and the concomitant increase in age-related diseases. It has led the School to overhaul its undergraduate and postgraduate medical and nursing curriculum, expand its faculty teaching numbers and invest heavily in educational technology. The aim is to give the 300 young men and women who enrol in the MBBS as well as the 100 enrolled for the Bachelor of Nursing degree programmes every year a sound clinical foundation so that these doctors and nurses of the future are able to operate effectively in tomorrow's setting.

Rooted in the Community

Working with a multicultural population that will consist of a large number of aged people means NUS Medicine graduates must possess more than clinical knowledge. Strong people skills are essential to communicate sensitively and effectively with their patients. Empathy has to be a key trait of a doctor's demeanour, says the Dean. It is something that selectors look out for during admission interviews for the MBBS, where every candidate has a resume that includes sterling academic records.

"It's not just about the competent delivery of medical care. That is expected. Our graduates have got to have the DNA, the values of the School pulsing in them. We want doctors who understand what a privilege it is to serve, and whose care for their patients is motivated by compassion and respect."

It is a value that he wants NUS Medicine students to be bred on in their formative years at the School, whose establishment was due in large part to the generous support of the local community in the 1900s. "Singapore's early pioneers helped set up the medical school. We must always remember how we came to be and understand that the NUS medical school owes its birth to the people of Singapore and it's the people that we serve. That is our responsibility and privilege, it is the fundamental purpose of our existence as an institution of higher learning and it is also what sets us apart," says Dr Yeoh, who graduated in 1987.

The bonds between the School and the Singaporean community have been accentuated and strengthened in recent years through health screenings that cater to the residents of rental HDB apartments, lower-income families as well as the elderly. These yearly screenings are organised and led by medical students, who are also joined by their counterparts from Nursing and the Social Sciences as well as Dentistry in recent times. Residents whose screening tests require further investigation are then referred to polyclinics for follow-up treatment and attention.

The Patient in the Centre

The importance that the School places on inculcating a compassionate and competent approach to the practice of medicine is emphasized in the Longitudinal Patient Exposure programme as well as the medical ethics modules that all medical students undergo. The first lets students spend time with patients, interacting with and observing them through an extended period of time, in the community, while the sessions run by the School's Centre for Biomedical Ethics help deepen students' understanding of the issues that healthcare professionals grapple with in the course of their work and which centre on the patient's wellbeing.

This focus on the patient shapes the undergraduate curriculum at NUS Medicine. It is constantly reviewed and updated to ensure that students are fully equipped and prepared to function effectively and independently and also as members of integrated care teams attending to the complex and varied needs of patients. Adds Dean Yeoh: "We make sure our students are trained rigorously and training is aligned and contextualised for Singapore's needs. We're constantly innovating and incorporating best-evidence pedagogies into the learning environment, such as collaborative learning, inter-



professional education, team training, embedding our students in healthcare teams in hospitals and clinics, and using technology and simulation to enhance learning."

Insightful Learning

To teach well, one must first learn well. For an institution dedicated to the advancement of medical knowledge, that translates into a lively research environment that features key programmes – undertaken in collaboration with research institutions and universities – in diseases afflicting the population, such as dementia, cancer, heart disease and diabetes. Another major research effort – Growing Up in Singapore Towards Healthy Outcomes or GUSTO – studies the effects of nutrition and the environment upon babies in their mothers' wombs. Each of these programmes has produced new knowledge that is adding to and in some cases, revolutionising the way the disease is being perceived and approached clinically and from population health perspectives.

The quality education and head-turning research at NUS Medicine has not gone unnoticed – and the School has been consistently ranked as one of Asia's leading medical schools by Quacquerelli Symonds and the Times Higher Education World University Rankings. But rankings do not tell much about what makes a medical school unique or special in the eyes of the nation and community that it serves. Nor do they remind people about its *raison d'être*.

That is the responsibility of the men and women who teach and learn there, and who help shape Singapore's own unique approach to the practice of medicine as well as the planning and delivery of healthcare. And so, as the NUS medical school looks to the next 100 years, its work to turn out doctors with "heart and soul" remains a constant. Says Dean Yeoh, "When all is said and done, we would like our students to be physicians with a big heart, the sort of doctors you and I would want to look after us when we need medical care."

Medical Dinner 2015



The Medical Dinner 2015 on Friday, 3 July, saw close to 1,000 alumni, students and guests congregate for a night of fun, food and conversation at the Raffles City Convention Centre, Singapore.

A major highlight in the School's calendar, the annual dinner gathers alumni across the years and welcomes the latest batch of graduating students from the NUS Yong Loo Lin School of Medicine, Alice Lee Centre for Nursing Studies (ALCNS) and Department of Pharmacy, NUS Faculty of Science into their respective professions.

This year's dinner was especially significant as NUS Medicine celebrated its 110th anniversary along with NUS' 110th anniversary and Singapore's 50th anniversary. Guests were treated to a video

which traced the School's evolution from its beginnings at Sepoy Lines in 1905 till the present day and chronicled the development of the School in its continual quest to pursue biomedical illumination and application in the service of mankind.

In a blast from the past, icons in Singapore medicine, the College of Medicine and Tan Teck Guan Buildings, were resurrected in the form of commemorative memorabilia for sale. A silent auction of three paintings by local artist Eng Siak Loy depicting Singapore scenes was also held. All proceeds went towards helping financially needy medical students achieve their dreams.

The event was graced by NUS President Professor Tan Chorh Chuan, NUS Deputy President (Academic Affairs) and Provost Professor Tan



From left: Dr Tan See Leng, Group Chief Executive Officer and Managing Director of Parkway Pantai Limited, and Dato' Mohammed Azlan Bin Hashim, Chairman of Parkway Pantai Limited, presenting Prof Tan Chorh Chuan, NUS President, and Assoc Prof Yeoh Khay Guan, Dean of NUS Medicine, with a cheque for S\$3 million, for the establishment of the Parkway Pantai Professorship in Medicine and Healthy Ageing at NUS Medicine.



NUS Medicine Class of 1971 celebrating their 44th anniversary.

Eng Chye and National University Health System Chief Executive Professor John Eu-Li Wong, amongst other distinguished guests from the various healthcare clusters in Singapore.

Dato' Mohammed Azlan Bin Hashim, Chairman and Dr Tan See Leng, Group Chief Executive Officer and Managing Director of Parkway Pantai Limited, also graced the occasion to present Professor Tan Chorh Chuan, NUS President and Associate Professor Yeoh Khay Guan, Dean of NUS Medicine, with a cheque for S\$3 million, which will enable the setting up of the Parkway Pantai Professorship in Medicine and Healthy Ageing at NUS Medicine.

The Professorship will provide direction and support for more extensive research into the causes, as well as prevention of neurocognitive and orthopaedic illnesses associated with ageing, such as dementia and bone, muscle and joint disorders.

Throughout the night, dynamic renditions of classical jazz tunes were served up by nine-piece big band Summertime Nine, as guests enjoyed catching up with each other. NUSMed classes of 1959, 1965, 1969, 1970, 1971, 1980, 1992, 1995 and 1997 took the chance to celebrate their own anniversaries as well.



Phase III medical student Ms Soh Ser Yee dazzling the crowd with her piano virtuosity.



Dr Chan Kong Thoe, alumnus from NUS Medicine Class of 1954 (left), having a chat with Prof Tan Chorh Chuan, NUS President (right).



Prof Hooi Shing Chuan, Vice-Dean (Education), NUS Medicine (back row, fifth from left), and Assoc Prof Lau Tang Ching, Assistant Dean (Education), NUS Medicine (back row, sixth from left), with the graduating batch of medical students.

Medicine's Backroom Boys

Out of sight is not out of mind for the Department of Microbiology and Immunology at the NUS Yong Loo Lin School of Medicine. As it reaches its 90-year milestone, the Department's work on tiny disease carriers that threaten to invade our bodies has contributed greatly to medical knowledge.



Public health was an issue that Singapore struggled with throughout much of the 19th century and early 20th century. Smallpox and tuberculosis were rampant, while venereal disease was problematic. In 1911, malaria accounted for 20 deaths a day in Singapore.

Those were the circumstances in which the Department of Microbiology and Immunology was born in the predecessor of the NUS. For the next 90 years, the Department would go on to make significant strides in combating these diseases and contributing to public health, research and education.

Asian Flu Virus Isolated, SARS Pathogenesis Studied Here

The Department has roots in the Departments of Bacteriology and Parasitology, established in 1925 and 1950 respectively. It was not until the 1950s, however, that the Department made its first major breakthrough.

In 1954, the Department built its very first air-conditioned laboratory, which allowed tissue culture work to be performed for the very first time. Three years later, Professor Lim Kok Ann (Head of Department, 1959-1977) and his team isolated a new pandemic strain of the Asian influenza virus, which led to the development of a vaccine. The Department's contributions to public health did not stop there.

When Severe Acute Respiratory Syndrome (SARS) struck in 2003, the Department collaborated with institutions and hospitals in Singapore and overseas to investigate SARS pathogenesis, and to study patients with antibodies. "We also worked with a Dutch company and collaborated to generate monoclonal antibodies that neutralised the SARS virus," reveals Associate Professor Vincent Chow, the Head of Department from 2002-2005. "We are like the backroom boys. You don't always see us, but that doesn't mean we are not there."

"Even today, the Department continues to work with regional and international colleagues," says Professor Nicholas Gascoigne, the current Head of Department. An example of a regional collaboration is a recent publication from Associate Professor Lee Yuan Kun's team on the diversity of gut bacteria in children, in collaboration with colleagues in Indonesia, Thailand, China, Japan and Taiwan. The Department also works closely with the Cambridge Infectious Disease and Immunology faculty to work on diseases relevant to Southeast Asia.

Anchor Department

Aside from addressing public health challenges, the Department is the anchor that coordinates modules on microbiology, infectious diseases and immunology. As a result, students from Medicine, Dentistry, Science and Nursing have all benefited from the Department's work over the years.

As healthcare becomes more collaborative, the Department is pulling various disciplines together so that doctors, nurses, dentists and scientists of the future can be fluent in the language of microbiology. "We view microbiology and immunology as core knowledge for medical students, and aim to give them a solid grounding in the aspects that are crucial to other practice," Prof Gascoigne states. Assoc Prof Chow concurs: "It's not about turning them into microbiologists; it's about giving them the concepts and principles of microbiology that will help them in their clinical practice."

Pathogens are evolving all the time, and the Department must adapt in order to stay relevant in protecting Singapore's public health. One way it does so is by doing what it has effectively done for the past 90 years: educating and training students so that they are prepared for the challenges of tomorrow.

**"You don't always see us, but that doesn't mean we are not there."
– Assoc Prof Vincent Chow**

Towards Genetic Therapy: Delivering Genes into Cells Using Novel Non-Viral Vectors

Gene therapy, or the manipulation of genes to correct disease, has been a buzzword since it was first tested in humans in 1990. Viral and non-viral vectors such as liposomes have been used to deliver DNA into target cells. Alternatively, naked DNA vectors such as plasmids and minicircles have been explored as gene delivery vehicles. However, DNA in these vectors is usually silenced in primary cells (cells taken from the body and cultured, vs cell lines).

That's where the work of Assistant Professor Volker Patzel of the Department of Microbiology comes into play. Asst Prof Patzel is no stranger to nucleic acids, having researched RNA since he was a PhD student at the German Cancer Research Center in Heidelberg. Following a postdoc at the Max-Planck Institutes, he joined NUS in 2009.

Asst Prof Patzel's research at NUS involves naked dumbbell-shaped vectors. Consisting of a closed DNA loop resembling a dumbbell, these vectors lend themselves to gene delivery for several reasons (see **Facts Box**). The Patzel lab is using the vectors to manipulate gene expression in three ways: 1) RNA-guided genome editing, 2) suicide gene therapy, and 3) somatic cell reprogramming (see **Figure**).

The first project involves editing the genome using the innovative CRISPR-Cas9 system. The Patzel lab has adapted the dumbbell-shaped vector to carry the genes for CRISPR-Cas9. Once inside the nucleus, a small guide RNA directs the Cas9 enzyme to a target DNA sequence, where Cas9 cuts both DNA strands. The double-stranded break triggers mechanisms in the cell that repair the cut. Thanks to this powerful technology, a faulty gene that causes a disease can be repaired with surgical precision. Mutations can also be introduced during editing to study their effects on gene function or to destroy aberrant genes. The team is optimizing the guide RNA structure for greater efficiency and using new guide RNAs to target different disease genes.

The Patzel lab is also exploring the use of dumbbell-shaped vectors that carry "death signals" for suicide gene therapy. When these molecular grenades are introduced into cancer cells or virus-infected cells, they fuse the death signal to target cell messages through a process called RNA trans-splicing, causing the cells to self-destruct.



FACTS BOX

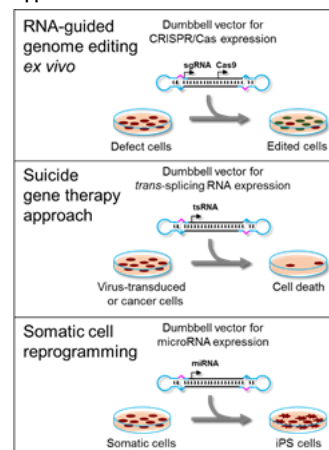
Advantages of Dumbbell-Shaped Vectors for Gene Delivery

- Closed loop structure increases resistance to enzymatic breakdown
- Small size (contains minimal DNA sequence) facilitates cell entry
- Once inside cell, flexible ends aid passage through nuclear pore complex into nucleus
- Lack extra-genic sequences, thus do not trigger transgene silencing in primary cells
- Option to link helper functions such as fluorescent labels to the single-stranded loops

The third research focus uses the dumbbell-shaped vectors to deliver microRNAs (miRNAs) into cells to inhibit specific genes and reprogram the cells. For example, somatic cells (any cell in the body besides the sperm and egg) can be reprogrammed to produce induced pluripotent stem cells for research and transplantation uses.

Asst Prof Patzel continues to improve the dumbbell technology. He is exploring putting cell-penetrating peptides on the vectors to further ease their entry into cells. He also hopes to collaborate with clinicians to study the application of dumbbell-shaped vectors in humans.

Figure. Dumbbell-Shaped Vector Applications in the Patzel Lab



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Outstanding Research Student clinches the Chua Toh Hua Memorial Gold Medal



Dr Ng Cheng Teng has been awarded the Chua Toh Hua Memorial Gold Medal for Academic Year 2014/2015. This is a university level award given to the Doctor of Philosophy graduate with the most outstanding research work done in Life Sciences.

Dr Ng Cheng Teng graduated with a PhD in June 2015 from the NUS Yong Loo Lin School of Medicine, under the main supervision of Professor Bay Boon Huat, head of the Department of Anatomy. Her thesis was on the “Biological Effects of Gold Nanoparticles in the Lung.” Having shown exceptional promise and accomplishment at an early stage of her PhD candidature, she was awarded the President Graduate Fellowship in 2013.

Her PhD work has demonstrated that the presence of gold nanoparticles (AuNPs) is likely to induce undesirable biological effects in the lung through the generation of oxidative stress, culminating in cellular damage and inflammation. The results from this nanotoxicological study has provided data that will help to address the health concerns associated with AuNPs, which will lead to the safer use of AuNPs for biomedical applications and the industry.

Advances in nanotechnology have given rise to the rapid development of many novel applications in the biomedical field. Therefore, this raises the need to elucidate the safety and health risks of these nanomaterials. The hypothesis for her study was that AuNPs exert both cytotoxic and genotoxic effects in lung cells in vitro and in vivo. Initial efforts made to validate the internalization of AuNPs in human lung cells by various microscopic methods, which showed that AuNPs were taken up by clathrin-mediated endocytosis. Subsequently, she demonstrated that AuNPs were able to generate oxidative stress, concomitant with an increase in the expression of anti-oxidant genes. AuNP treatment also induced cytotoxicity of small airway epithelial cells (SAECs). Moreover, the Comet assay revealed the presence of DNA fragmentation after AuNP exposure in SAECs, concurrent with up-regulation of the

DNA repair Xeroderma pigmentosum gene.

Next, a genome wide microarray study revealed altered gene expression which included serum amyloid A-1 (SAA1), toll-like receptor 2 (TLR2), miR-155 and protein S alpha 1 (PROS1). Co-immunoprecipitation assay and in silico modeling were performed with TLR2-SAA1 in SAECs and positive results observed, confirming TLR2-SAA1 protein-protein interaction. There was also concomitant activation of NFkB activity, suggesting that SAA1-TLR2 interaction could activate NFkB.

From the epigenetic studies, the findings suggested that miR-155 and histone deacetylases activity could regulate the expression of PROS1, but not DNA methylation in AuNP-treated MRC5 lung fibroblasts. Up-regulation of miR-155 was confirmed by the luciferase assay in AuNP-treated cells, and silencing miR-155 established the PROS1 gene as a putative target gene. Nuclear chromatin condensation and re-organization were also observed at the ultrastructural level in the treated cells.

A co-culture system coupled with whole proteome analysis, using the stable isotope labeling by amino acids in cell culture (SILAC) -mass spectrometry based approach, revealed a significant perturbation of cell motility and extracellular network in the underlying lung fibroblasts, demonstrating that AuNP treatment could induce bystander effects in neighbouring unexposed fibroblasts.

Finally, a proof of concept study was performed in male Wistar-Kyoto rats injected with AuNPs intravenously. The biodistribution analysis confirmed the accumulation of AuNPs in the rat lungs. Systemic inflammation was observed as evidenced by the increase in serum transforming growth factor beta, interleukin 6 (IL-6) and IL-1 α . Prolonged blood coagulation time was observed in the AuNP-treated rats, implying that AuNP exposure could potentially lead to bleeding diathesis. Moreover, there was also inflammation of lung tissues in AuNP-treated rats, as evidenced by the presence of lymphocytic infiltration, influx of macrophages and increased IL-1 α expression in the tissues. A miRNA expression profiling study showed that expression of miR-327 was significantly decreased in the single dose AuNP injection.

Dr Ng has co-authored a total of nine papers in reputable journals during her candidature, including two first author papers in the high impact journal “Biomaterials”. She was also selected to represent NUS Medicine for the 6th HOPE Meeting, held in Japan in March 2014, which was organised by the Japan Society for the Promotion of Science for excellent doctoral students and young researchers selected from countries/areas in the region to engage in inter-disciplinary discussions with Nobel laureates and other distinguished scientists.

36th Asian Medical Students' Conference

The 36th Asian Medical Students' Conference (AMSC) was held in Singapore from 5 – 12 July 2015. An Asian Medical Students' Association (AMSA International) annual event, it attracted 450 medical students from more than 25 countries around the Asia-Pacific region. Participants took part in a fun-filled three-day, two-night conference, presenting posters and discussing healthcare ideas on the theme "Geriatric Medicine – Embracing the Silver Tsunami", as well as taking part in community services and interacting with our local elderly.

Exploring the Conference Theme

During the academic workshops, participants learnt about skills that can help them better understand the challenges faced by the elderly. At one specific workshop, participants had to wear broken glasses and read fine-print on medication packs, and wear rolled-up magazines on their fingers to pick up small tablets, experiencing challenges that are part of daily living for the elderly.

With that experience, participants took part in exciting group discussions "problems elderly face in society", alongside three other topics related to geriatric medicine, namely "models of care for the elderly", "a community for the elderly, an elderly for the community" and "combating ageism". Some presented their opinions using detailed mind-maps and elaborate diagrams, while others brought laughter to the panel discussions with their serious acting and creative skits.



Students having a tour at the Centre for Healthcare Simulation, Centre for Translational Medicine, NUS.



AMSC attendees trying their hand at Chinese paper cutting.

Experiencing Singapore

On the third day of the conference, participants visited various healthcare institutions across the island, ranging from acute hospitals to community hospitals to hospices. Some even got to experience first-hand different simulation centres that help train local medical students and young doctors.

Participants also enjoyed an afternoon of sightseeing and bonding at Kampong Glam, Little India and Chinatown, rounding off with a unique experience at the Singapore Night Safari. To add on to the cultural experience, Cultural Night introduced the snacks, games and cultural activities of different nations. Participants came dressed in various cultural costumes, and got to try out the Indian henna painting, calligraphy from Japan and traditional snacks from Thailand.

Engaging the Community

To complete the local experience, participants had the chance to engage with the local elderly community, looking at the old and new Singapore through the companionship. The experience was a unique eye-opener for many, such as James George Tsakisris from Australia who saw how "the elderly were beaming with pride as they shared about their stories."

For others, it was a learning experience. Santosh Upadhyaya from Nepal could relate to the difficulty in communication due to language barriers. "I was comparing them with Nepalese elderly. They would not be regarded as a problem in Nepal as most of the elderly do not even get enough food and are working for survival. (I hope that) in the near future, Nepal will develop, and my knowledge and experience in Singapore will be useful."

11th Student Medical-Nursing Education Conference

By Justin Ng (Phase II medical student)
Co-director of 11th SMEC 2015

2015 marks Singapore's golden jubilee – a year apt for us to review how Singapore's healthcare system has evolved in complexity over the years since her independence. Quality healthcare today entails a multi-disciplinary healthcare professional team caring for a single patient, replacing the concept of "one doctor to one patient".

On 15 August 2015, we were delighted to welcome 350 first-year medical and nursing students from the NUS Yong Loo Lin School of Medicine (NUSMed), Duke-NUS Graduate Medical School (Duke-NUS) and NTU Lee Kong Chian School of Medicine (LKCMedicine), to the Centre for Translational Medicine (CeTM) on NUSMed's campus for the 11th Student Medical-Nursing Education Conference (SMEC) 2015. It was our greatest honour to be able to host eminent pioneer generation healthcare professionals as speakers and provide them with a platform to share their knowledge and insights with a new generation.

Our guest-of-honour and former School Health Service Director, Dr Uma Rajan, started the morning with a heart-warming lecture, sharing both her life and her medical career with us. From monochrome pictures to color films, she discussed her journey as a medical school student and as a young doctor; the challenges she had to face as she pioneered the health booklet and become the School's Health Service Director; and her own personal life as a cookbook writer and an avid dancer. Dr Rajan's stories were a great inspiration to me, and I believe to our participants as well.

A distinguished panel – including Dr Rajan, Professor Pierce Chow of Duke-NUS and Senior Nursing Officer Madam Lee Yoke Yin, former

Deputy Director of Nursing, SingHealth Polyclinics – then tackled topics like the future of research, the inter-professional relationships between nurses and doctors, and what the next generation of healthcare professionals could look forward to upon graduation.

Following the panel session, students participated in small-group sharing sessions, where they listened to first-hand accounts from patients, doctors and nurses. Networking sessions allowed students to mingle and discuss some of the medical dilemmas they may face as future healthcare professionals.

Concurrently, a total of 36 poster presentations from our seniors, classified into three categories: Science and Its Clinical Applications, Epidemiology and Quality of Public Health, were presented to a panel of 12 judges hailing from various tertiary institutions. It was indeed a very exciting morning as participants put their best foot forward to impress the judges, garnering 6 Distinction Awards and 9 Merit Awards.

To me, the conference was an amalgamation of little heart-warming moments – listening to the stories of Dr Rajan, watching students listen intently to the patient-professional healthcare teams (which reminded me of that moment when I was a participant just the year before), and their smiles at the end of the day. To put it simply, it was an experience that I would not trade anything for.

I strongly believe that 12th SMEC 2016 would be an even more impactful and meaningful event as SMEC continues to evolve from year to year on a grand scale. See you all here at NUSMed for 12th SMEC 2016!



Blazing through Boston

By Zan Ng Zhe Yan (Phase V medical student)



Our three-person team at our work stations in the Emergency Department of the Massachusetts General Hospital, Boston. From left: Junior resident Yanik Bababekov, M.D., senior resident Zhi Ven Fong, M.D., and Zan Ng.

As part of the Phase IV curriculum at the NUS Yong Loo Lin School of Medicine, three full months at the end of the academic year are designated for electives, where students get the chance to arrange and attend clinical postings that they are most passionate about—both locally and overseas. Personally, America has always been a dream destination for me, because the amalgamation of outstanding surgical and medical expertise, fertile grounds for cutting-edge research, pro-teaching environment, and abundance of leading physicians and surgeons in their respective fields promise an invigorating electives experience to all who venture there. Thanks to a longstanding partnership between NUS Medicine and Harvard Medical School, a total of fifteen students from my batch were given the coveted opportunity to participate in month-long clerkships at Harvard-affiliated hospitals across Boston.

I was offered the Emergency Care clerkship at the Massachusetts General Hospital, where I was embedded in a team comprising a senior surgical resident, a junior surgical resident and myself, and worked on the Surgical Consult in the Emergency Room. The call schedule of 24-hour-on, 24-hour-off shifts was unforgiving, but the experience was definitely unparalleled. Under the supervision of the residents, I was given the responsibility to assess and evaluate

surgical patients, perform procedures like suturing of lacerations, investigations like FAST scans, and assist in central line and IA line insertions, scrub in for surgeries for patients the team admitted, and present at handover rounds every morning. The variety of cases was titillating (including air transfers from neighboring states), the opportunity to learn alongside other final year students from Harvard stimulating, and the willingness of the residents to teach and mentor me is something that I will be forever grateful for.

Perhaps the most remarkable experience during this elective was the privilege to learn from world-renowned visiting experts who lectured in the famed Ether Dome, a National Historic Landmark where the first public demonstration of anesthesia by sulfuric ether was performed in 1846. Sitting in a theatre steeped with such history, amongst scores of leading healthcare professionals in the country and listening to pearls of wisdom, was awe-inspiring and humbling all at once. As time flew by, besides gleaning clinical insights from evaluating patients and didactic teachings, I also developed a better understanding of the intricacies of the American healthcare system in terms of healthcare financing and delivery of care.

The demanding clinical schedule notwithstanding, I had an amazing time exploring Boston on the weekdays and indulging in short

My Story



White House, Washington D.C.



Ether Dome, Bulfinch Building, Massachusetts General Hospital, Boston.

weekend getaways with friends. Before the clerkship commenced, I crossed over to Cambridge to visit Harvard University, lost myself among the myriad exhibits at the Museum of Fine Arts, embarked on the Boston Freedom Trail on a snowy day, savored the amazing lobster rolls and clam chowder at Quincy Market, and explored the Boston Common, Trinity Church, Chinatown, and Boston Public Library. My first free weekend was spent in Michigan attending the Hash Bash, driving for five hours to Niagara Falls, Ontario to see the famed Falls, and cruising through the derelict streets of Detroit. This was followed by a day trip to Portland, Maine to enjoy fresh lobsters and see the picturesque lighthouses and forts which it boasts. No trip to the States is complete without stopping by Washington D.C., where we visited the myriad monuments and memorials on the National Mall, and explored the many Smithsonian Museums. On free evenings between shifts, I went for concerts by the Boston Symphony Orchestra, tried out delectable seafood and Italian cuisine in Boston's North End, and watched the Boston Marathon 2015. My trip concluded with a four-day sojourn in New York City, where the bustling street life, musicals, fine dining, cherry blossom festivals, concerts at Carnegie Hall, a visit to the Statue of Liberty, and speed shopping at the outlet malls formed a memorable part of my stay in America.

All in all, this was a life-changing journey which broadened my worldview and changed my perspectives on many issues, including healthcare and beyond. Venturing out of one's comfort zone and daring to take a plunge into the unknown (albeit with an open mind) is probably the first step to rediscovering oneself, and rediscovering one's place in this world. I would unhesitatingly encourage fellow medical students to embark on similar journeys during the electives period, and perhaps emerge a little wiser, a tad more polished in clinical skills and knowledge, and hopefully more ready to serve as a doctor in the complex society we live in today.



At our apartment; a stone's throw away from the Massachusetts General Hospital.



Finish line of the Boston Marathon 2015.

A 57th Anniversary Class Reunion to Remember

By Dr Sonny Yeoh (Class of 1958)



Day One reunion dinner at Straits Café, Rendezvous Hotel Singapore.

It was in October 1952 (63 years ago) that a batch of about 100 freshmen (from Malaysia and Singapore) matriculated at the Faculty of Medicine, University of Malaya in Singapore. It was the first time that the King Edward VII College of Medicine had accepted so many students in a single academic year. Our class was also unique that there were at least 10 ladies in the group. After six years of strenuous studies, about 60 of them graduated in May 1958 and by then, the graduates had bonded so well they had morphed into a close-knit family.

Since 1958, our class has held numerous reunions with the following milestones:

Silver Jubilee (25th) at Sentosa Island, Singapore in January 1983

30th anniversary at Awana Genting Highlands, Malaysia in December 1988

Golden Jubilee (50th) at Cameron Highlands, Malaysia in September 2008

There were also a number of mini reunions in between those years. By then, we suddenly realised that quite a number of fellows had left us permanently. So it was decided that henceforth we must

have an annual get-together instead. They were as follows:

51st anniversary in Malacca, Malaysia in 2009

52nd anniversary in Singapore in 2010

53rd anniversary in Perth, Australia in 2011

54th anniversary in Melbourne, Australia in 2012

55th anniversary in Kuala Lumpur, Malaysia in 2013

56th anniversary in Penang, Malaysia in 2014

We can safely claim that no other group of graduates has had so many reunions after their graduation.

For our 57th anniversary this year, the celebrations started with a bang at the Rendezvous Hotel in Singapore, with a scrumptious buffet dinner at Straits Café. Everyone received a door gift of a beautiful custom-made glass paper weight. 15 doctors from the Class of 1958 showed up as well as seven other doctors from the Class of 1957. Together with their spouses, a total of 36 people were present.



Classmates reminiscing the good old times at their former examination hall, which has been converted into a lecture theatre, at the King Edward VII building.



Dr Sonny Yeoh (left) dedicating a song to the birthday girl and organiser of the reunion, Dr Tan Kheng Lian (right).



Day Three reunion dinner with NUS President Prof Tan Chor Chuan (Back row, eighth from the left) and wife Dr Evelyn Lee (Seated, third from the left).

A trip down memory lane on 15th August 2015

This was probably the high point of the three-day get-together. The afternoon was devoted to a tour of our former campus at Sepoy Lines which has changed and improved tremendously over the years.

The old examination hall at King Edward VII building has been converted to a very impressive lecture theatre. I think the grand staircase on the ground floor was not there before.

Tan Teck Guan building was beautifully preserved. The frontage remains the same but the anatomy dissecting room is now a well-equipped gym. I recall we had histology classes on the first floor. The original anatomy lecture building is no longer there.

It was good to see the buildings of Harrower Hall and King Edward Residential Halls as well, but their interiors were all partitioned. What we missed most was probably Ah Leng's canteen overlooking the former cricket playground.

The medical museum at SGH Bowyer Block showed how much medicine has advanced over the years. All these places evoked a big

dose of nostalgic memories.

The second high point of this day was when all of us adjourned at the former residence of Tan Sri Tan Chin Tuan at Cairnhill Road. It was also the birthday of Dr Chew Kheng Lian (our reunion organiser). She laid out a sumptuous dinner for her classmates and also for her close friends and relatives. Needless to say, it was an evening to remember.

On the third day, the afternoon was spent at Gardens by the Bay and the reunion was brought to a close with dinner at Majestic Bay Restaurant hosted by the Singapore colleagues.

The dinner was graced by the presence of Prof and Mrs Tan Chorh Chuan. We felt so honoured and privileged by their presence. Prof Tan surprised everyone with an exclusive souvenir – a reproduction of his recent ink painting of the King Edward VII College building. This made a perfect ending to our reunion, which was arguably the best one so far. We certainly owe a big thank you to Prof and Mrs Tan Chorh Chuan.

Final thought: Dare we think of a Diamond Jubilee (60 years) in 2018?

Catching up on Good Times



**Class of
1980**



**Class of
2005**



**Class of
1975**



**Class of
1990**

For class reunion services, please contact us at **6772 3804** or email alumni.med@nus.edu.sg



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The next closing date for I2D Grant Pre-proposals is Friday 18th December 2015, 5pm.



MENTORING



DEAL FORMATION



FUNDING



INNOVATION TO PROTECT (I2P)

- Funding of patenting expenses for an innovation that is commercialisable

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- For innovations that have demonstrated initial proof-of-concept in *in vitro* and *in vivo* research / laboratory models
- Development of the innovation by creating a practical, deliverable plan with commercialisable outcomes
- Up to \$250k for 1 year

INNOVATION TO IMPLEMENT (I2I)

- For innovations that have successfully completed I2D phase
- Implementation of the innovation, in conjunction with a commercial partner
- Up to \$1M for 2 years

Eligibility: Principal investigator must hold a primary appointment in a local public hospital / public health institution / national specialty centre / Academic Medical Centre and be salaried by the institution.

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Date	Event & Venue
Nov 4	Dialogues Auditorium, Level 1, NUHS Tower Block, NUS
Nov 14	WHB Society Symposium & Mentor Appreciation Lunch 2015 Lecture Theatre 35, Centre for Translational Medicine (CeTM), MD6, NUS
Nov 16	Advance Simulation Faculty Development Workshop: Working with Simulated Patients (SPs) Centre for Healthcare Simulation (CHS), Level 3, Centre for Translational Medicine (CeTM), MD6, NUS
Nov 18 - 20	3rd NUS-NUH International Nursing Conference & 20th Joint Singapore-Malaysia Nursing Conference Furama RiverFront Hotel
Dec 13	Playhouse 2015 University Cultural Centre, NUS
Jan 13 -17	13th Asia Pacific Medical Education Conference (APMEC) NUS
Jan 14	Association of Academic Health Centers International's (AAHCI) Southeast Asia Regional Meeting 2016 SMART Classroom, Level 4, Centre for Translational Medicine (CeTM), MD6, NUS
Jan 20	Pitch for Funds Round Staff Lounge, Level 1, NUHS Tower Block, NUS
Jan 26 -27	NUS Medicine 6th Annual Graduate Scientific Congress (AGSC) 2016 Auditorium & Staff Lounge, Level 1, NUHS Tower Block, NUS

Details may be subject to change at the discretion of the respective departments without prior notice.