



Yong Loo Lin
School of Medicine

NUS
MEDICINE
110

Medicine

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Dean's Message



Dear Friends,

Warmest greetings from the Yong Loo Lin School of Medicine!

2015 is a very special year, because we celebrate 110 years of the School. We have a line-up of exciting

events, including the Medical Dinner on 3 July 2015, the day when the School - and the NUS - began 110 years ago. More details of this important occasion as well as other key events will be given in the coming months, and I encourage you to stay tuned.

2014 proved to be an eventful and meaningful one, and I would like to share some highlights with you.

On 31 October 2014, we had the pleasure of hosting the NUS-Cambridge Joint Symposium 2014 on Infection and Immunity. The symposium provided a critical platform for the exchanging and updating of research ideas, and helped to cultivate cooperation between the researchers and students from the two schools involved.

As part of the long-standing tradition of recognising our clinical teachers, the School held a series of Appreciation for Clinical Teachers events at all the restructured hospitals in Singapore from September to December 2014. The initiative was to celebrate the teaching mission and to express our gratitude to clinical teachers who invested their time and effort in our medical students' education. We also

held our 2nd NUS Medical Alumni Year-end Get-together, the Jazz Nite, on 1 November 2014. The evening gave 100 alumni the opportunity to wind down after work and mingle with one another. Attendees were treated to a special piano performance by our very own alumnus Dr Jeevarajah Nithiananthan (Class of 1984).

As always, our students found time to care for others even as they coped with their very demanding study schedules. The Public Health Screening (PHS) 2014 was held on 11 and 12 October 2014. Now in its ninth year, the student initiative has been steadily advancing year after year. For PHS 2014, students focused on developing a comprehensive post-event follow-up programme by working with the National University Health System and its primary care partner the Frontier Family Medicine Clinic.

Last but not least, I would like to take this opportunity to thank each and every one of our faculty, staff, students and alumni for your invaluable contributions to the NUS Medicine community.

Wishing everyone good health, joy & fulfilment!

A/Prof Yeoh Khay Guan

Dean

Yong Loo Lin School of Medicine

NUS-Cambridge Joint Symposium 2014 on Infection and Immunity

The NUS-Cambridge Joint Symposium 2014 on Infection and Immunity was hosted by the NUS Yong Loo Lin School of Medicine on 31 October 2014. The third annual joint research meeting was opened by Mr Tom Crawley, Senior Science and Innovation Officer, British High Commission, at the NUS Centre for Life Sciences (CeLS) Auditorium and attracted a total of 137 like-minded researchers and students.

Representatives from NUS Medicine included Associate Professor Yeoh Khay Guan, Associate Professor Thomas Dick, Associate Professor Fu Xin-Yuan, Professor Nicholas Gascoigne, Associate Professor Paul MacAry and Professor Paul Tambyah. They were joined by Professor Kenneth Smith, Professor Patrick Maxwell, Professor Yorgo Modis, Professor Sharon Peacock and Professor Lalita Ramakrishnan from the Department of Medicine, University of Cambridge.

In addition to providing a platform for the exchanging and updating of research ideas, this symposium also aims to cultivate cooperation between the researchers and students from the two schools involved.

“The University of Cambridge is consistently ranked among the top universities in the world in Medicine and Life Sciences. Both our Schools share a long and rich history together, indeed, several of Singapore’s medical leadership are Cambridge alumni and many Singapore doctors have benefited from medical training in Cambridge. And of course we also share a common mission in academic medicine, in improving our knowledge and understanding in life sciences, with the ultimate aim of improving people’s health.”

- A/Prof Yeoh Khay Guan, Dean, NUS Medicine

Topics covered by speakers from both schools included the control of signal pathways in immunity, the use of Zebrafish as predictive models for human development and disease, insights into Mycobacterium tuberculosis, current microbial genomics and clinical diagnostics as well as updates on developments in the drug engineering of drugs to combat infections. 14 research students were also chosen to showcase their research in the form of poster presentations and discussions based on their submitted abstracts.

The next NUS-Cambridge Joint Symposium will be hosted by NUS again in the last quarter of 2015. For more information, you can visit their website [here](#).



Dean of NUS Medicine, A/Prof Yeoh Khay Guan, presenting a token of appreciation to Head of the School of Clinical Medicine, University of Cambridge, Prof Patrick Maxwell.



Prof Nicholas Gascoigne, Head of the Department of Microbiology, NUS, presenting his findings on the Control of Signal Transduction in Developing Thymocytes and Regulatory T Cells by Themis and PKC Theta.



(From left) Prof Lalita Ramakrishnan, A/Prof Eugene Liu, Prof Yorgo Modis, A/Prof Paul MacAry, A/Prof Thomas Dick, Prof Sharon Peacock and Prof Kenneth Smith.

Jazz Nite

A total of 100 medical alumni attended 'Jazz Nite', the 2nd Medical Alumni Year-end Get-together on 1 November 2014 at Blisshouse Theme Restaurant.

With a backdrop of a classic English garden setting, Jazz Nite kicked off with an informative yet delightful medical talk "The Fine Art of Moisturizing" by Dr Derrick Aw (Class of 1997). The evening showcased the musical talent of Dr Jeevarajah "Jazz" Nithiananthan (Class of 1984). Performing numbers like "The Entertainer", a ragtime favourite often played by ice-cream trucks in the United States today, and Ray Charles' popular revved-up version of the 1962 hit song "I can't stop loving you", Dr Jazz captivated the audience's attention and held them spellbound until the end of the magical night.



Dr Derrick Aw engaging the audience during his medical talk on "The Fine Art of Moisturizing".



For his final number, Dr Jazz performed a two-step piece "Mississippi Rag", receiving resounding applause and requests for encores from the audience.



Jazz Nite in full swing!



Dean of NUS Medicine, Associate Professor Yeoh Khay Guan (left) mingling with fellow alumni.



Alumni catching up with one another while soaking in the elegant English garden atmosphere.



Uncovering Bacteria's Achilles Heel

Over the last two decades, there has been a dramatic worldwide increase in the prevalence of type 2 diabetes, including in the Asia-Pacific region. Associate Professor Gan Yunn Hwen from the Department of Biochemistry looks into how bacteria evade the host immune system and establish infections, and why people with type 2 diabetes are more susceptible to disease than healthy people.

A bacterial pathogen that A/Prof Gan has worked on extensively is *Burkholderia pseudomallei*, which is endemic in Southeast Asia and northern Australia. Infection with the bacterium causes melioidosis, a disease with wide-ranging symptoms, such as severe pulmonary distress, that may progress to septicaemia and death if untreated. *B. pseudomallei* can also cause chronic infections and remain latent for many years without causing symptoms.

A/Prof Gan and her research team are trying to understand how *B. pseudomallei* causes disease. Their research has shown that two secretory systems in *B. pseudomallei*, the Type III (T3SS) and the Type VI Secretion Systems (T6SS), play an important role in disease. Bacteria with mutated T3SS or T6SS do not cause disease. T6SS mutants also fail to induce host cells to fuse, a feature of their non-mutated counterparts. The team is now investigating how the bacteria trigger cell fusion and why this is important for causing disease.

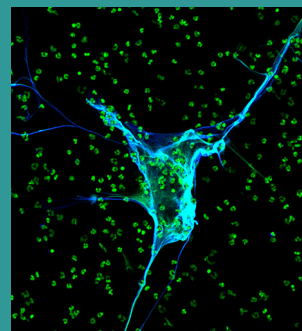
To further understand how bacteria circumvent the host immune response, A/Prof Gan is studying infections with the K1 and K2 serotypes of *Klebsiella pneumoniae* bacteria. These pathogens can cause liver abscesses, especially in people with diabetes in China, Hong Kong, Taiwan, Korea, and Singapore. A possible explanation for the increased susceptibility of type 2 diabetics to such infections is the decreased ratio of reduced glutathione to oxidized glutathione in poorly-controlled diabetes. This redox environment appears to suppress the killing of bacteria that have been phagocytosed by macrophages (see Facts Box). Its effect on other immune responses, such as the antimicrobial activity of neutrophils, remains to be determined. A/Prof Gan, together with Assistant Professor Sophia Archuleta and Professor Lee Kok Onn from the Department of Medicine, were recently awarded an Aspiration Fund grant to study such mechanisms of immune susceptibility in type 2 diabetes.



Today, a major challenge in controlling bacterial infections is the emergence of multidrug-resistant (MDR) or extensive drug-resistant (XDR) bacterial strains. Another focus of A/Prof Gan's

research is *Acinetobacter baumannii*, an increasingly drug-resistant bacterium that is responsible for a rising number of infections in Singaporean hospitals. Infections can be either hospital-acquired or community-acquired (acquired outside the hospital and long-term care facilities). With the help of seed funding from the National University Health System, A/Prof Gan is currently collaborating with other researchers to develop immunotherapies for these drug-resistant pathogens.

Facts box



A neutrophil forming neutrophil extracellular traps (NETS) that bind *Klebsiella pneumoniae* bacteria (bacterial DNA stained green) and release substances such as neutrophil elastase (stained blue) that kill the bacteria.

Effect of Glutathione Ratio (GSH/GSSG) on Immune Response in Type 2 Diabetes

- Decreased glutathione ratio in type 2 diabetes causes decreased IL-12 production.
- Decreased IL-12 production in turn causes reduced IFN- γ production by immune cells.
- Less IFN- γ leads to poorer killing by macrophages of *Burkholderia pseudomallei* and *Mycobacterium tuberculosis* bacteria.
- Need to determine whether the reduced ratio also suppresses other types of immune responses to *Klebsiella pneumoniae* in type 2 diabetes.

Appreciation for Clinical Teachers 2014

Associate Professor Fatimah Bte Abdul Lateef, Senior Consultant, Department of Emergency Medicine, SGH, receiving the Dean's Award for Excellence in Clinical Training from A/Prof Yeoh Khay Guan.



Medical students performing for their clinical teachers.



Medical students cheering their clinical teachers on at the SGH event.



A/Prof Yeoh Khay Guan (third from left) with the NUH winners of the Junior Doctor Teaching Awards.

The NUS Yong Loo Lin School of Medicine has a long-standing tradition of recognising the School's clinical teachers in the various restructured hospitals in Singapore. It does this through an aptly named 'Appreciation for Clinical Teachers' series, and conveys the School's gratitude towards the clinical teachers who invest their time and effort in our medical students.

From September to December 2014, Associate Professor Yeoh Khay Guan, Dean of NUS Medicine, and colleagues involved in medical education visited the restructured hospitals, namely Alexandra Hospital, KK Women's and Children's Hospital, Khoo Teck Puat Hospital, Singapore General Hospital, Tan Tock Seng Hospital, National University Hospital and Changi General Hospital, to thank the teachers.

In addition to sharing the teaching and posting scores with them, A/Prof Yeoh also recognised the outstanding contributions by various departments and individuals with awards such as the Dean's Award for Teaching Excellence, Dean's Award for Excellence in Clinical Training and the Junior Doctor Teaching Award. Certificates of Commendation were also presented to those named as Role Models by the graduating class of medical students.

Students from NUS Medicine also expressed their thanks by performing for their teachers at the various hospitals.

Public Health Screening 2014

The student-led Public Health Screening (PHS) was successfully held for the ninth year, on 11 and 12 October 2014. Over 500 medical and nursing students volunteered at Clementi Central to help more than 1400 participants learn about their health status and ways to safeguard it. Many partner organisations were also present in a joint effort to promote health and wellbeing through a series of public exhibitions.

The focus for PHS 2014 was to introduce an expanded and comprehensive post-screening follow-up programme for participants. The close partnership and collaboration between PHS, the National University Health System (NUHS) and its primary care partner the Frontier Family Medicine Clinic (FMC) were key to enabling the follow-up expansion. In particular, the partnership with Frontier FMC, a primary care provider in Clementi Central, was an entirely new concept that PHS 2014 had put in place to increase the effectiveness of follow-up for PHS participants.

The new follow-up programme has four phases which stretch over a six-month post-screening period and is projected to end by 31 March 2015.

In the first and second phases, PHS participants with abnormal screening results have the option of a free complimentary review at Frontier FMC, if they did not already have their own family physician. The first phase particularly caters to participants with abnormal results detected immediately during the screening, while the second phase caters to participants with abnormal blood test results that required more time for processing and risk stratification. The third phase involves reaching out to participants who had chosen to follow up with their family physicians or polyclinics, and the fourth phase involves house visits to participants who had defaulted on their follow-up appointments, in a bid to identify any barriers to follow-up and provide solutions wherever possible.

A total of 202 participants were referred to Frontier FMC in phases one and two, with 131 of them turning up for their appointments. In addition, approximately 160 participants were engaged in phases three and four of the programme.

It is the close collaboration between PHS, NUHS and Frontier FMC that have helped make this event a beneficial experience for participants, particularly in ensuring that as many as participants as possible who needed further evaluation and interventions were linked to appropriate care. Going forward, this expanded and comprehensive follow-up programme will continue to remain a cornerstone of future PHS events.



A Scientific Summer

My Harvard Internship Experience

By Ivan Seah (Phase II Medical student)

Renowned theoretical physicist, Stephen Hawking, once said, "Science is not only a disciple of reason but, also, one of romance and passion." My love for the medical sciences began with an article titled "Your Inner Healers" in the Scientific American magazine back in 2010. The article explored the concept of using induced pluripotent stem cells for the treatment of diseases. It was love at first sight as I found myself becoming increasingly curious about stem cells and their potential applications.

When the opportunity to be part of a stem cell research program in Harvard Stem Cell Institute (HSCI) during the summer holidays appeared, I applied for it without any hesitation. The HSCI Summer Internship Program (HIP) welcomed undergraduate students across the globe to partake in a 10-week research project. In HIP, students were paired up with faculty members in order to develop and carry out independent projects to answer relevant research questions in the stem cell field. Students were then expected to produce a scientific poster and oral presentation at the end of the program to share the project's findings.

With my interest in brain tumours, I found myself attached to a Massachusetts General Hospital (MGH) laboratory which explored the effects of oncolytic viruses on brain tumours. My project focused on using mesenchymal stem cells to deliver herpes simplex viruses into metastatic melanoma of the brain, a relatively common disease with poor prognosis.

Working in MGH did not disappoint. It was a melting pot of enthusiastic students, scientists and doctors, all united by a common goal of improving medicine through research. Due to the vast variety of people, scientific discussions were filled with creative and clever ideas. In particular, having the opportunity to bounce ideas off people who you only have the chance to read about back in Singapore felt utterly amazing. Professors Cliff Tabin, Steven Hyman and Connie Cepko were just part of the impressive repertoire of academics that HSCI housed.



Ivan (third from right) with the other interns from the Khalid Shah Lab, Massachusetts General Hospital.

Another of my favourite HIP experiences was meeting new people. Every person in the laboratory had a different story. In my laboratory, there were people from more than 7 different countries working together. As such, cultural exchanges during lunchtime were mind-blowing. At one side of the table, there could be conversations about Korean cuisine. On the other, another conversation about the competitive job market in populous China. The lunches like these not only filled my tummy but satisfied my intellectual appetite too.

To sum it up, spending my holiday working in the field of science was an experience of a lifetime. The prospect of contributing to a game-changing field in medicine, the chance to discuss ideas with medical pioneers and more importantly, the ticket to re-inspire my love for medicine were invaluable. These are the experiences that will one day shape me into the best doctor that I can ever be. I would certainly encourage my fellow medical students to pursue such an experience. Exploration is key in medical education. So, step forth and pursue your interests.

A Social Obligation to Do Good



With the intention of forming a medical network to help small clinics band together and cut costs, Make Health Connect (MHC) Asia Group created the first web-based medical claims system in Southeast Asia to simplify healthcare with information technology, back in 2000. The man behind the success is Dr Low Lee Yong (Class of 1987).

Today, the CEO and founder of the MHC Asia Group is helping medical students in financial need to achieve their own potential through the establishment of the MHC Bursary in September 2014. Beginning in 2016, the MHC Bursary will support at least one student at the NUS Yong Loo Lin School of Medicine every year.

Dr Low firmly believes that having business know-how is a gift that should be used to add value and touch lives. "What did MHC exist for? Is it to go into IPO? Is it to earn more money? I did a lot of soul-searching and I realised that MHC should exist to give back to society, to contribute to the less fortunate and help them get out of the poverty cycle," Dr Low says.

On choosing to give back to his alma mater, Dr Low explains, "Increasingly, there has been a lot of controversial news regarding medical ethics. In giving back to NUS Medicine, I hope to drive the message that as doctors, we have a social obligation to do good and be transparent."

The journey Dr Low took was one fraught with many difficulties and setbacks. He wants to share the lessons he learnt with the Bursary recipients. "When you have reached the bottom, the only way is to climb up. You can choose to stay down, wallow in self-pity and wait for others to help you, but you still have to pick yourself up.

"A rainbow usually comes after a heavy storm. Sometimes the end is so near, you just have to persevere a little longer to see the rainbow. There may be a lot of stumbling blocks along the way, but rise up and step on these stumbling blocks - you will not only become stronger but you will also gain new perspectives," he concludes.

**THE POWER
OF POTENTIAL**
REALISING POTENTIAL THROUGH PHILANTHROPY

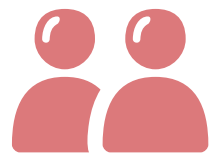
CATCHING UP ON GOOD TIMES

CLASS OF 1999 REUNION - 15TH ANNIVERSARY



3

Calling all alumni! Steps to Stay Connected



1

Update your particulars



with us via email (alumni.med@nus.edu.sg) and receive the latest news and events around school

2

Contact Us



to plan your next class gathering!

3

Choose your part/role



help us train the next generation of doctors.

- Admission selection committees
- Career guidance to students
- House mentor
- Mentor for student initiatives

Date	Event & Venue
Feb 2 - 3	Raffles Dialogue: The Future of Human Well-being and Security (HWS) The Ballroom, Raffles Hotel
Feb 4 - 8	12th Asia Pacific Medical Education Conference (APMEC) & 3rd International Conference on Faculty Development in the Health Professions (ICFDHP) University Cultural Centre, NUS
Feb 25 - 26	Fundamentals of Simulation-based Healthcare Education Workshop Level 3, Centre for Translational Medicine (CeTM), MD6, NUS
Mar 18 & 20	Oon Chiew Seng Distinguished Visitor Programme Peter & Mary Fu Lecture Theatre (LT35), Level 1, Centre for Translational Medicine (CeTM), MD6, NUS
Mar	BSL3 Laboratory Opening Ceremony Level 15, Centre for Translational Medicine (CeTM), MD6, NUS
TBC	Tahir Foundation Building Opening Ceremony Auditorium, Level 3, Tahir Foundation Building (TFB), MD1, NUS

Details may be subject to change without prior notice.

Medical Dinner 2015

Celebrate **110** years of NUS Medicine with us.

Venue	Fairmont Singapore
Date	Friday 3 July 2015
Time	6.30pm
Dress code	Formal

Visit <http://medicine.nus.edu.sg/corporate/meddinner15.html>

For more details, please contact:

Alumni – Email wai_mun_phoon@nuhs.edu.sg or luke_siah@nuhs.edu.sg

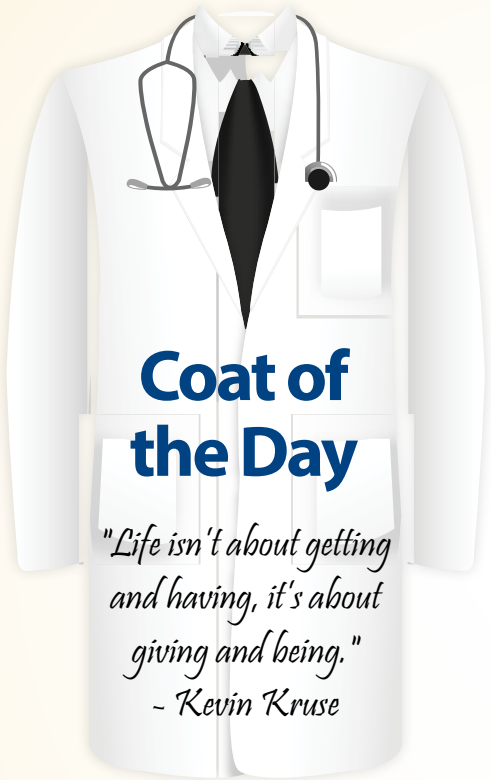
Others – Email justine_teo@nuhs.edu.sg or cynthia_ang@nuhs.edu.sg

Organised by:



Yong Loo Lin
School of Medicine





White Coat Humour

A woman brought her baby to see a doctor, and he determined right away that the baby had an earache. He wrote a prescription for ear drops. In the directions he wrote, "Put two drops in right ear every four hours" and he abbreviated "right" as an R with a circle around it. Several days passed, and the woman returned with her baby, complaining that the baby still had an earache, and his little behind was getting really greasy with all those drops of oil. The doctor looked at the bottle of ear drops and sure enough, the pharmacist had typed the following instructions on the label: "Put two drops in R ear every four hours."

Picture Quiz

Congratulations to our three winners!

The correct answer for last issue's Picture Quiz is:



- Wilnard Tan (Class of 2016)
- Wu Xiaotian (Class of 2017)
- Lin Huang Yu Norman (Class of 2019)

Winners will be notified by email on prize collection.

NUH Medical Centre



Yong Loo Lin
School of Medicine

Established in 1905, the NUS Yong Loo Lin School of Medicine was the first institution of higher learning in Singapore and the genesis of what would become the National University of Singapore.

The School offers one of the finest undergraduate medical programs in the Asia Pacific region and commands international recognition and respect, with latest university rankings from Quacquarelli Symonds (QS) again rating it as one of Asia's best. Globally, it is now ranked 21.

The School admits 300 students to its medical undergraduate degree programme annually. It strives to fulfil its tripartite mission of providing excellent clinical care, training the next generation of healthcare professionals, and fostering research that will transform the practice of medicine. It plays a pivotal role in producing future leaders in healthcare delivery, discovery and public service as well as in Singapore's Biomedical Sciences Initiative.

For more information about the Yong Loo Lin School of Medicine, please visit <http://medicine.nus.edu.sg/corporate/>



Which building am I in?

Submit your name, phase/course (for students) and answer to: alumni.med@nus.edu.sg

Contest ends on: 1st March 2015

First 3 correct answers will win a **\$10 Starbucks Card** each!

MediCine

is brought to you by the
Yong Loo Lin School of
Medicine, Dean's Office.

Please contact:

The Editor, MediCine
Yong Loo Lin School of Medicine, Dean's Office
1E Kent Ridge Road, NUHS Tower Block, Level 11 Singapore 119228
Tel: 6772 3804 | Fax: 6778 5743
Email: nusmed@nus.edu.sg | Website: <http://medicine.nus.edu.sg>