

# TRANSLATIONAL RESEARCH AND INNOVATION

Master's and PhD  
Research Programmes



Yong Loo Lin  
School of Medicine

# Why NUS Medicine?

The NUS Yong Loo Lin School of Medicine is consistently ranked among Asia's top medical schools by the Times World University Rankings and Quacquarelli Symonds (QS) World University Rankings. (*The Times World University Subject Rankings 2015-2016 and Quacquarelli Symonds (QS) World University Rankings by Subject 2016 list NUS Medicine as Asia's leading medical school.*)

Besides training clinicians, the School has also been producing outstanding master's and doctoral graduates to meet the demands of academia, the healthcare and biomedical sectors as well as the Singapore public service. Many of our graduate students are accepted for further post-doctoral training locally and in prestigious institutions overseas, with a significant number of them being offered faculty positions subsequently. Those who have chosen careers in the biomedical sector have found their training with NUS Medicine valuable.



The School offers state-of-the-art research facilities for biomedical investigation, such as:

- Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC) accredited laboratory animal centre (Department of Comparative Medicine)
- Centre for Health Services and Policy Research (CHSPR)
- Centre for Translational Research and Diagnostics (CTRAD)
- Clinical Imaging Research Centre (CIRC)
- Clinical Nutrition Research Centre Singapore (CNRC)

## Residential life and facilities

- Confocal Microscopy Unit
- Electron Microscopy Unit
- Flow Cytometry Laboratory
- Investigational Medicine Unit (IMU)
- Medical Engineering and Research Commercialization Initiative (MERCi)

The great diversity of our community creates a unique and intellectually energising learning environment, while the Kent Ridge campus offers a vibrant, invigorating and stimulating setting for activities ranging from sports and performing arts to music and photography.



## Research opportunities and collaborations

NUS Medicine is a gathering place for students and academics from all over the world. Internationally renowned academics and scientists hold seminars across the campus on a regular basis. Graduate students have the opportunity of meeting these distinguished experts on the Kent Ridge campus, in addition to interacting with many faculty who are involved in interdisciplinary research. Graduate students are thus mentored by experts from diverse disciplines and who bring a wealth of experience to their teaching.

“NUS Medicine is one of the most vibrant hubs for Biomedical Research worldwide. We can meet researchers with motivating research projects that will help us to expand our knowledge in the field of Biomedicine.”

### **MATIAS JOSE CALDEZ, ARGENTINA**

Biochemistry PhD  
January 2013 Intake  
National University of Misiones



## Departments and research programmes

### Departments

- Anaesthesia
- Anatomy
- Biochemistry
- Centre for Biomedical Ethics
- Diagnostic Radiology
- Medicine
- Microbiology and Immunology
- Obstetrics & Gynaecology
- Ophthalmology
- Orthopaedic Surgery
- Otolaryngology
- Paediatrics
- Pathology
- Pharmacology
- Physiology
- Psychological Medicine
- Surgery

### Research Programmes

#### CANCER

Cancer research is undertaken at the Cancer Science Institute of Singapore (CSI). Basic and translational studies are devoted to understanding the pathogenesis and treatment of cancer. This is enhanced through the close cooperation of basic-scientists and clinician-scientists at the CSI, the National University of Singapore and the National University Hospital. The researchers also work closely with the National University Cancer Institute, Singapore, a clinical cancer centre partner which includes their own faculty. Researchers have established two strong multi-disciplinary programmes, one in cancer stem cell and biology, focusing on basic studies, and a second in experimental therapeutics. State-of-the-art core facilities have been set up to complement these efforts, including the Centre for Translational and Diagnostic Medicine. The researchers have set their sights on being the premier cancer institute in Asia and a world leader in innovative research.

“I enjoy the vibrant research environment within NUS Medicine. It offers a wide variety of courses which are beneficial to the development of my generic research skills and techniques. I have been offered numerous opportunities to attend research conferences overseas as well as seminars conducted by NUS Medicine.

Such experiences have helped me to broaden my knowledge and expand my professional network, which are essential to career building and future collaborations.”

**ZHANG JIANBIN, CHINA**

Physiology PhD  
August 2011 Intake  
Zhejiang University



“Research collaborations among laboratories from various disciplines in medicine and with industry partners provide synergistic effects for novel discoveries.”

**PEH HONG YONG, SINGAPORE**

Pharmacology PhD  
August 2012 Intake  
National University of Singapore

**CARDIOVASCULAR DISEASE**

The Cardiovascular Research Institute at the National University Heart Centre aims to develop a translational programme of research ranging from laboratory to clinic and community, through integrated efforts from clinician-researchers undertaking large scale clinical cohort studies and smaller detailed mechanistic sub-studies linked with basic-scientists developing related animal models and biomarkers. Projects are focused on the cardinal cardiovascular diseases, including acute coronary disease, acute and chronic heart failure (and its substrate conditions) and cardiac valve disease (mitral regurgitation and aortic valve stenosis).

**DIABETES AND OBESITY**

Metabolic diseases in Asia have features that set them apart from what is seen in most Western countries, and show that ethnic differences are not fully understood. Research done in the West does not address the phenotype of Asian diabetes. The “Developmental Pathways to Metabolic Disease” research programme addresses the developmental origins of metabolic disease that could profoundly influence the way metabolic disease is considered, prevented, and treated in Asian populations.

**NEURO-COGNITION**

The Ischemic Stroke NRF Competitive Research Programme aims to study ischemic stroke with a focus on intracranial stenosis or intracranial vessel disease, which is the predominant stroke subtype among Asians. The Memory, Ageing & Cognition Centre Research Programme focuses on the study of vascular and neurodegenerative mechanisms in dementia through the identification of biomarkers and the study of its mechanisms, leading to potential therapeutic approaches.

**INFECTIOUS DISEASES**

The group is part of the Infectious Diseases Themed Group and the Infectious Diseases Interdisciplinary Programme, and collaborates extensively across NUS with the Department of Mathematics, Computer Science, Biological Sciences, and other research institutes and industry. The main areas of interest are antimicrobial resistance, device associated infections and emerging infectious diseases such as avian and pandemic influenza.

**EYE DISEASES**

The Department of Ophthalmology and the Singapore Eye Research Institute (SERI) conduct broad-based research that improves the understanding of how eye diseases develop, tests new diagnostic and treatment modalities, and facilitates these technologies for commercialisation. The former is particularly focused on sight-threatening disorders that are relevant to our society. The eye research team has established a high international profile for its work and is widely recognised for its cutting-edge research on vision sciences.

## Curriculum structure and requirements

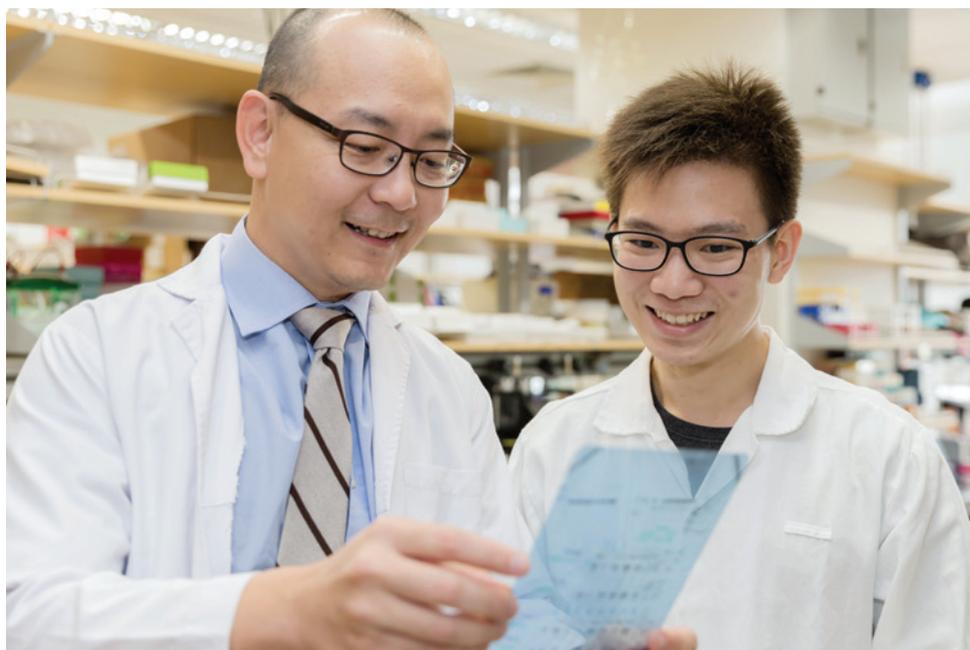
The key to producing high quality graduates lies in the quality of the mentors, who are themselves eminent scientists and clinicians in their respective fields. NUS Medicine augments graduate training by offering an extensive range of graduate courses to further equip students with the necessary knowledge and skills. Our students are highly sought after, not only for their technical know-how, but also for their excellent problem-solving skills and ability to think creatively. The research-intensive graduate programme at the School nurtures and trains highly competent biomedical scientists and clinician-scientists to lead and drive Singapore's medical biotechnology efforts.

At the end of their graduate training with the School, PhD graduates would be able to:

- a) acquire an in-depth understanding of their research field
- b) think independently and creatively
- c) identify important questions and formulate testable hypotheses
- d) run an independent research programme

MSc graduates would have acquired:

- a) the technical competence to support a research project under minimal supervision
- b) sufficient depth and understanding of their research field



“The graduate programme at NUS Medicine has been a rewarding experience for me. There is an excellent spread of scientific work, which has helped me pursue my ideal kind of PhD research. The state-of-the-art research facilities both in terms of modern equipment and personnel safety are impeccable. The School has symposiums, graduate seminars and talks by speakers around the world. The world-class amenities make campus and study life enjoyable.”

**SUSHMITA PODDAR, INDIA**

Microbiology PhD  
January 2012 Intake  
University of Delhi

Candidates admitted to the graduate programme will undertake research under the supervision of staff members from the School's departments for the period of their candidature, at the end of which, they submit a thesis which will be examined by a Board of Examiners. In addition to the research component, they are required to fulfill a coursework component to graduate either with an MSc or a PhD degree:

### MSc

A total of 16 modular credits comprising two core modules + elective modules (Level-5000)

### PhD

A total of 24 modular credits comprising two core modules + elective modules (Level-5000 & 6000)

Candidates deemed weak in English by the School would also have to sit for the Diagnostic English Test and take additional English Language courses conducted by the Centre for English Language Communication.

A student is required to pass a PhD qualifying examination within two years from the date of admission to be confirmed a PhD candidate. Only candidates who have fulfilled the criteria for the PhD degree will be awarded the PhD degree. All other candidates will have to fulfill the criteria for the MSc degree in order to be awarded the MSc degree. There is no specialisation of the degrees awarded.

The maximum period of candidature for MSc and PhD degrees is three and five years respectively.

# Admission requirements



## MSc Programme

- A relevant Bachelor's degree with at least a Second Upper (Distinction) Honours Class or its equivalent
- The degree of Bachelor of Medicine and Bachelor of Surgery or
- The degree of Bachelor of Dental Surgery and
- The ability to pursue research in the candidate's proposed field of advanced study

## PhD Programme

- A good Master's degree in a relevant discipline or
- A relevant Bachelor's degree with at least a Second Upper (Distinction) Honours Class or its equivalent
- The degrees of Bachelor of Medicine and Bachelor of Surgery or
- The degree of Bachelor of Dental Surgery and
- The ability to pursue research in the candidate's proposed field of advanced study

## Other Requirements

### TOEFL/IELTS

As the medium of instruction is English, applicants whose native tongue and medium of undergraduate instruction is not English must present TOEFL scores as evidence of their proficiency in the English Language. The minimum TOEFL score required is 580/237/85 for the paper-based, computer-based and internet-based tests respectively. For IELTS, the minimum score required is 6.5.

### GRE

Applicants (except NUS and NTU graduates from relevant disciplines) must also present GRE scores to support their applications. A minimum total GRE score of 320 for the verbal and quantitative sections and 3.5 for the analytical section is required.

## Application & Deadlines

Application must be submitted online at <https://goo.gl/jxELR4>.

There are two intakes per academic year, one in August and the other in January. All copies of the applications must reach the Dean's Office by 15 November (of the previous year) for the August intake, and by 15 May (of the previous year) for the January intake.

## Tuition Fees

Information on the annual tuition fees is available at the Registrar's Office website at <http://goo.gl/pAeVU2>.

## Admission Interview

Shortlisted applicants will be interviewed for admission in March and August for the August and January intakes respectively. For suitably qualified students, interviews may be waived at the discretion of the School Graduate Programme Committee.

## Scholarships and Financial Aid

Financial support in the form of research scholarships is available for qualified candidates. These range from S\$1,500 to S\$3,500 per month depending on the type of degree programme pursued. Some additional support for projects in certain strategic research areas is also available. There may also be opportunities for students to earn additional income as part-time tutors and demonstrators. Application for the research scholarship may be submitted online at <http://goo.gl/Nzp6BT>.



**CONTACT**

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