A MEDICAL SCHOOL FOR THE 21ST CENTURY

NUS National University of Singapore
Yong Loo Lin School of Medicine

Our Vision

Inspiring Health for All

Our Mission

We nurture the doctors and nurses you would choose to care for your loved ones.

We seek new knowledge and solutions for better health.

We serve with humility, compassion, integrity and respect to improve life for all.

Our Values

Humility, Compassion, Integrity, Respect

Beginnings

The NUS Yong Loo Lin School of Medicine is unique in being Singapore's first and premier medical school. It has trained and educated the core of the country's medical professionals in a proud and distinguished history that goes back to its establishment in 1905.

The institution that began as the Straits Settlements and Federated Malay States Government Medical School, supported with funds contributed by the local business community, became the genesis of the National University of Singapore. Like the university, the college grew and expanded to meet the healthcare needs of a young Singapore that was then under British colonial administration.

A century later, the medical school that gave birth to the nation's leading university is also one of Asia's best medical education and research institutions. It continues to produce the majority of doctors for Singapore – men and women who pour themselves unstintingly into their professional calling to care for the sick and the dying, and to impart critical clinical skills to those who come after them.

The School's undergraduate and postgraduate nursing degrees also train professionals who are able to work effectively with their medical colleagues in managing the full spectrum of diseases that afflict Singaporeans and Asians.

NUS Medicine alumni now make up the majority of Singaporean medical practitioners, with many serving in senior clinical and leadership roles in public healthcare institutions and groups as well as private healthcare firms. Distinguished graduates include a past president of Singapore, cabinet ministers, a past Secretary-General of the World Health Organization, as well as heads of hospital groups.

Along the way, the School has burnished its reputation as a crucible of significant research spanning the basic as well as clinical sciences. Its faculty comprise academic clinicians and scientists who have forged their credentials locally and internationally.

A donor's transformational gift in 2005 further enabled the School to map new pathways of scientific enquiry into various causes and origins of key illnesses like cancer, cardiovascular disease, obesity, epigenetics and neurocognition. The gift from the Yong Loo Lin Trust also engendered a far-reaching revamp of the undergraduate education curriculum. This places the patient squarely in the centre of focus of everything that is now taught and done at the School, which was renamed in honour of its far-sighted benefactor.

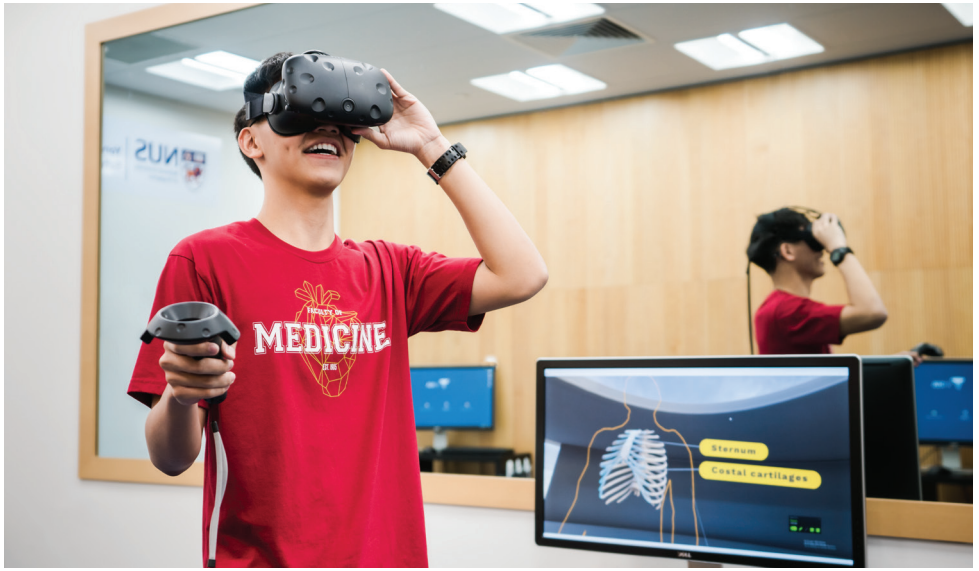
The School strives to fulfil its mission of contributing to excellent clinical care, training the next generation of healthcare professionals, and fostering research that will help transform the practice of medicine. Its 18 departments in the basic sciences and clinical specialties work closely with the Centre for Medical Education and the Centre for Biomedical Ethics to ensure that teaching and research are aligned and relevant to Singapore's healthcare needs.

In 2008, the School became an integral part of the National University Health System (NUHS), which also groups the National University Hospital, the NUS Faculty of Dentistry and the NUS Saw Swee Hock School of Public Health. The NUHS – incorporating Jurong Health Services – aims to develop and provide innovative, sustainable and value driven healthcare for Singaporeans.

Medical education at its best

Increasingly, graduates of the NUS Yong Loo Lin School of Medicine find themselves in the thick of action in hospital wards and clinics. They confront infectious diseases with genetic structures that can be traced back to humans as well as animal and bird species, while also stabilising patients with chronic illnesses and diseases often linked to sedentary lifestyles and unhealthy diets. At the same time, today's medical and nursing graduates also have to manage the healthcare needs of an increasingly older population, with the aim of helping Singapore's seniors age functionally.

These are the challenges that the School has been preparing its students to meet, through a rigorous clinical exposure programme that begins in Year 1 of its five-year medical undergraduate programme and culminates with students graduating with a MBBS degree. Students are grounded in basic medical sciences and taught physical examination skills pertaining to various systems and regions. A combination of multimedia and technology-enabled learning formats, together with guidance from pre-clinical and clinical tutors helps strengthen students' clinical reasoning abilities during their early years of learning.



The study of human anatomy is a cornerstone of medical and nursing education. Students attending classes in the subject embark on an enthralling sensory experience. They first gain hands-on experience working with human cadavers (dubbed Silent Mentors) and then manipulate a computer simulated human anatomy system, called the Virtual Interactive Human Anatomy (VIHA). Students are transported to a virtual dissection hall where they can perform localised or regional dissection repeatedly, in sequential layers, improving their 3-D spatial orientation of anatomical structures.

Service to the community is the School's founding ethos. Local and overseas community service opportunities abound for medicine and nursing students to participate. Students are encouraged to broaden their horizons by joining the Global Health and Leadership Programme (GoHelp). GoHelp provides experiential learning in the community and allows students to broaden their perspectives, foster their personal growth and develop in areas such as communications, community-mindedness and compassion. The five-year MBBS curriculum is thus designed to produce doctors who are clinically adept, caring and ethically grounded.

One such example is the Neighbourhood Health Service (NHS), which was started in 2008 to serve the residents of Taman Jurong. The student-led initiative has morphed into a comprehensive screening programme that covers all chronic illnesses as well as oral, vision and hearing health. It now has nationwide reach and scale, involving all three Regional Health Systems (NUHS, SingHealth, NHG) to serve over 5,000 residents in nine different districts.

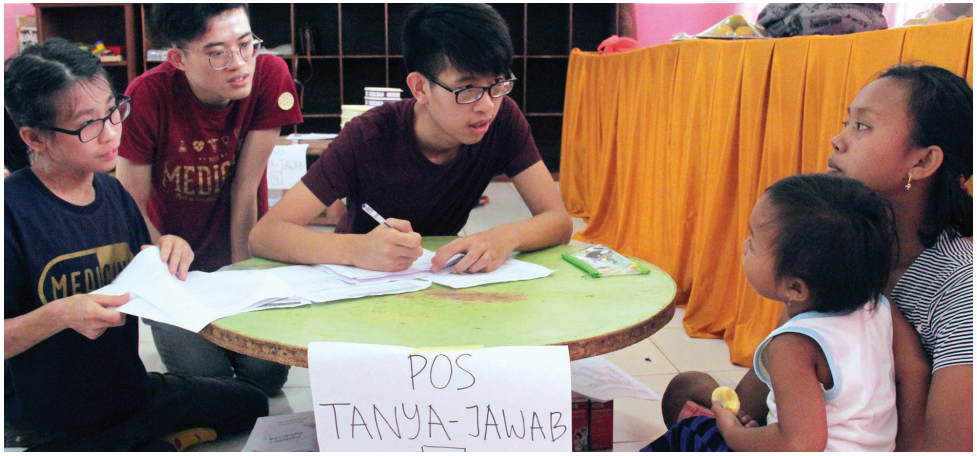
Learning also takes place through student-led programmes like the Medical Grand Challenge (MGC), which brings together students from various NUS faculties for a year-long exploratory journey. The students work in a collaborative, inter-disciplinary team setting to deliver out-of-the-box, impactful and innovative solutions for the unmet healthcare needs.

Early exposure to patients allows students to gain clinical experience and learn empathy and respect for patients, peers and colleagues while gaining valuable clinical insights. This learning is intensified and personalised through the Longitudinal Patient Experience, a unique programme that the School introduced in 2012 and which sees students keeping in close touch with patients coping with chronic illnesses over the course of their studies.

Students are also prepared early on to work as integrated members of a multi-disciplinary care team, with classroom and clinical training geared to nurturing and developing compassionate and innovative medical and nursing professionals. Teaching pedagogies are inter-disciplinary in nature, combining knowledge from Family Medicine, General Medicine, Palliative Medicine, Rehabilitation Medicine, Geriatric Medicine. First year students undergo caregiver training, which provide them an appreciation of the multi-dimensional nature of care provision for patients. Combined Teaching Sessions (CTS) in Phase III and IV, conducted as case-based discussions help to integrate discrete patient interactions and present a complete and holistic view of a patient's health journey.

As part of their undergraduate curriculum, students can get to spend a portion of their academic year overseas at affiliated institutions like Harvard Medical School, University of Cambridge, University of Oxford, Hebrew University of Jerusalem, Christian Medical College, University of Melbourne and Seoul National University. There, they are given opportunities to learn from senior medical staff and faculty, while observing as well as participating in clinical work under the supervision of experienced staff. Students also gain valuable knowledge and insights into a broad spectrum of diseases, some of which are not evident in Singapore and the Asian region.

Graduates then proceed to residency programmes conducted by the National University Health System and other healthcare groups, where they prepare for specialisation in various medical fields like anaesthesia, cardiology, oncology, paediatrics, surgery etc. The School also conducts graduate programmes leading to the award of PhD, MSc and MCI qualifications.



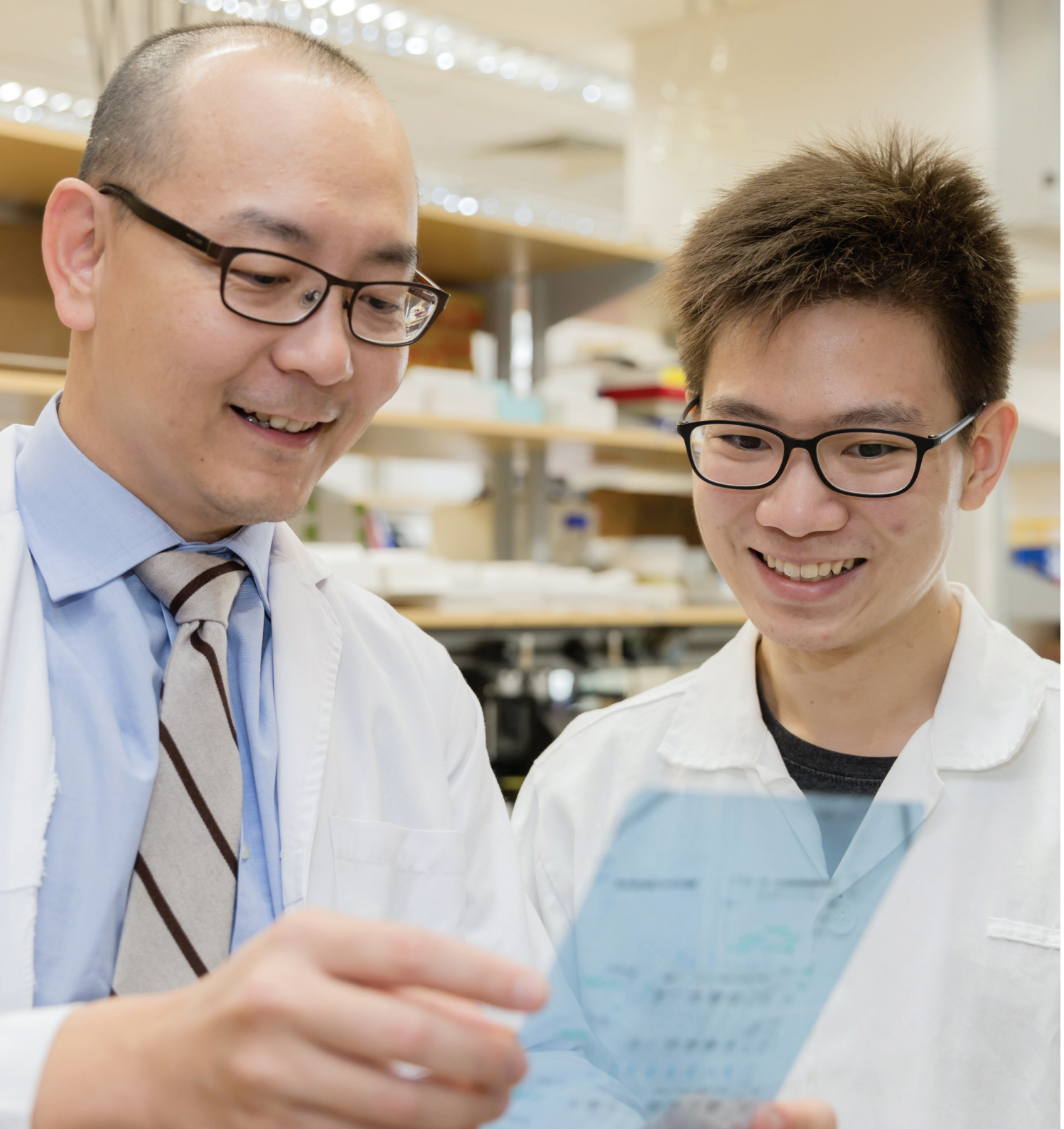
An abiding emphasis on research

Research at the NUS Medicine begins at the undergraduate level, where students are actively encouraged to devote a portion of their curriculum time to formal investigative work. This is facilitated through the student-initiated and led Wong Hock Boon (WHB) Society's research programmes. In naming the Society after the late Professor Wong Hock Boon, fondly regarded as the father of Singapore paediatrics for his landmark contributions to children's health, the School nurtures and sustains the lively spirit of scientific curiosity and inquiry that is its enduring hallmark.

Research plays an integral role in third year medicine student Nicholas Syn's education journey at NUS Medicine. Nicholas, who has been actively involved in cancer genomics and pharmacogenetic research, is currently focusing on various disciplines within surgery, including general surgery, orthopaedics and urology. He has published manuscripts in international peer-reviewed journals, including the Lancet Oncology, JAMA Oncology and Annals of Surgery.

"The impact of medical research and innovation is far-reaching. It can be especially rewarding to see a study of yours cited in guidelines published by international societies or widely-referenced resources and knowing that you have helped to make a difference to tens of thousands of patients whose management has been – in one way or another – improved because of your research. It is simply my niche way of contributing to society," he said.

"There are a host of research opportunities that are available to NUS Medicine students. There are multiple student societies such as the Wong Hock Boon (WHB) Society, which frequently organises research methodology workshops for students and the Clinical Specialty Interest Groups (CSIGs) which work closely with various sponsoring institutions to bring in specialty-specific research projects."



Research that saves lives

NUS Medicine fosters collaborative research in various programmes to drive and focus on bench-to-bedside-to-community translation of basic biomedical discoveries. Comprehensive investigations extend from basic discovery to the development of new approaches towards preventing, diagnosing and treating diseases. Research is supported by strong core facilities in investigational medicine, human imaging, molecular pathology, genomics, nutritional science, medical device development. These programmes are undertaken in conjunction or collaboration with leading clinical and biomedical institutions locally and overseas.

The quest for discovery and knowledge is exemplified best by the School's faculty, who are leading and principal investigators in many large-scale, multi-disciplinary and multi-centre basic and translational research programmes.

Established in 2018, the Medical Sciences Cluster (MSC) aims to facilitate collaborations and harness synergies among basic science researchers, as well as between researchers and clinicians. The focus areas within the Cluster are Neuroscience, Metabolic & Vascular Diseases, Cancer, Immunobiolgy, Infectious Disease and Host-Microbe Interactions and Synthetic Biology. The Cluster is also an enabler in the design and development of multi-disciplinary undergraduate and postgraduate educational programmes.

Summit Research Programmes (SRPs) bring together high-calibre investigators to form distinctive collaborative research programmes with high international impact. The SRPs will nurture early-career scientists to produce the next generation of biomedical researchers. The aim is to achieve significant improvements in disease understanding and clinical practice and innovations that will improve health outcomes and lead to societal and economic benefits for Singapore. The six programmes are:

Cardiovascular
Heart failure and coronary heart disease are both leading causes of death in Singapore and around the world. Researchers are using protein, microRNA and epigenetic markers, as well as developing new markers, to discover novel diagnostics and treatments for these conditions. They can take advantage of their large patient cohorts and strong collaborations to conduct clinical testing of candidate diagnostics and treatments.

Cancer
Cancer treatments often fail because of the resistance that cancer cells develop as they evolve. A new cutting-edge modality of treatment, using the patient's own immune cells is currently being developed and could potentially overcome resistance to chemotherapy and other cancer treatments. This treatment, known as Cancer Immunotherapy (T-cell therapy, therapeutic antibodies and vaccine therapy) is one of the most promising avenues for cancer treatment today. By discovering new targets for cancer immunotherapy, finding ways to enhance the immune response, and developing and testing new therapies in clinical trials, our researchers hope to make meaningful breakthrough in the field of cancer treatments which will eventually benefit the patients.

Growing Up in Singapore Towards healthy Outcomes (GUSTO)
Launched in June 2009, GUSTO is Singapore's largest and most comprehensive birth cohort study on mothers and babies. It aims to understand how pregnancy and early childhood conditions may affect the babies' growth and development. A number of findings with a translational and clinical focus have already emerged.

Findings showed that poor maternal mental health could be linked to increased neurodevelopmental disorders in babies, including anxiety, depressive or disruptive behavior disorders. This led NUH to implement surveillance and support for expectant mothers with mental health concerns in 2014. GUSTO has revealed that the discovery that gestational diabetes (GDM) was underdiagnosed in Singapore as screening only high-risk pregnant women (the previous standard practice in Singapore) missed as much as 50% of all cases.

Metabolic Diseases
The number of cases of type 2 diabetes in Singapore is skyrocketing and is projected to keep growing at a steep rate. To reverse the trend, the research team aims to develop new diabetes therapies and establish healthcare delivery models to enhance patient outcomes and improve physician adherence to best practices and

patient adherence to treatment. There are now a variety of tools that are currently being developed, including mobile applications, which allow patients to monitor their conditions electronically, connect with their healthcare provider, participate in decision-making and perform blood tests at home.

Synthetic Biology

Synthetic biology is the design and construction of novel, artificial biological pathways, organisms or devices, and the redesign of existing natural biological systems for purposeful function. The team of researchers in the synthetic biology programme aims to enhance and deploy microbiome therapy to new disease areas. They also work with industrial partners to develop new probiotics and methods for sustainable production of therapeutic chemicals.

Tuberculosis

Tuberculosis (TB) remains a leading infectious disease killer in the world. Furthermore, 60% of all TB cases are right here in Asia. The Tuberculosis SRP will leverage on access to the largest pool of TB cases in the world and infrastructure to develop and deliver new treatments for patients. Researchers use novel drug screening techniques, murine models and imaging methods to find and test new drugs and treatment combinations.

Delivering solutions for better health

Research at NUS Medicine is varied and vibrant. By combining knowledge gleaned from scientific inquiry with strong clinical expertise, we are improving healthcare for patients in Singapore and beyond.

Increased cure rates for child leukemia patients

Childhood Acute Lymphocytic Leukemia is the most common form of cancer in children and affects three out of every 10 children who are diagnosed in Singapore annually. Associate Professor Allen Yeoh from NUS Medicine's Department of Paediatrics, Associate Professor Tan Ah Moy of the KK Women's and Children's Hospital (KKH) and Professor Hany Ariffin from the University of Malaya have managed to raise cure rates for a group of child leukemia patients from 69.6 per cent to 91.6 per cent while also lowering relapses from 30 per cent to 13 per cent. The two-country study, named the Malaysia-Singapore (Ma-Spore) ALL 2010 is the first in the world to prospectively show that intensifying therapy for Ikaros gene-deleted children with ALL reduces relapse and improves treatment outcome.

Testing for HFMD before symptoms appear

Using saliva as a medium for the diagnosis of human diseases is now a reality as Associate Professor Justin Chu and his team from NUS Medicine Department of Microbiology and Immunology has developed a rapid test for detecting Hand, Food and Mouth Disease (HFMD) using miRNA in saliva, even before symptoms show. The team has accurately distinguished HFMD patients from healthy persons by around 90% in the Singapore cohort, and 80% in the Taiwanese cohort.

Extending healthspan and lifespan

Researchers from the School are also tackling issues related to ageing, to help find ways for people to continue to lead healthy lives as they age. For example, the 10-year Jurong Ageing Study aims to intervene and reduce mental health problems among the elderly and protect the brain from diseases such as Alzheimer's, dementia and depression. Studying the early predictors of muscle-loss and frailty in elderly has indicated that changes in posture to maintain gait speed preceded decline in gait speed. Work is also ongoing with NUS Engineering to harness technology to develop tools that would make a difference to patients' lives, such as a remote falls monitoring and diagnostic watch.

Inspiring health for all

The mission to educate and train committed men and women to care for Singaporeans' health in the 21st century continues apace at NUS Medicine.

Its other enduring principal mission – to seek new knowledge and solutions through research that will help to transform the practice of medicine – sees the School's scientists play pivotal roles in healthcare discovery as part of Singapore's Biomedical Sciences Initiative.

The School's Kent Ridge campus is designed to facilitate and promote cross and inter-disciplinary research efforts of staff and students, clinicians and scientists as well as their counterparts located just down the road at the Biopolis. The campus is also home to the National University Hospital, the Saw Swee Hock School of Public Health, the Faculty of Dentistry, the National University Cancer Institute, Singapore, the National University Heart Centre, Singapore as well as the National University Centre for Oral Health.

The teaching and research efforts at NUS Medicine also thrive on international collaboration with partners in universities and institutions around the world. Networking spans the oceans, linking the School with international medical institutions, which enable the School to continue to contribute meaningfully and dynamically to the growth and development of medicine in Singapore and the world.

Milestones

1905
The Straits Settlements and Federated Malay States Government Medical School is born at Sepoy Lines, offering a full-time five-year course to train doctors in medicine, surgery and midwifery.

1921
Another change in name takes place; the Medical School is renamed King Edward VII College of Medicine to reflect more accurately its status as an institution that provides tertiary-level education.

1926
The three-storey College Building, boasting Doric colonnade on the principal facade, opens.

1949
The University of Malaya is formed through the amalgamation of the King Edward VII College of Medicine and Raffles College. The College of Medicine assumes the identity of a university faculty – the Faculty of Medicine.

1962
The Singapore Division becomes a fully-fledged university – the University of Singapore. The Kuala Lumpur Division, now also a national university, keeps the name of University of Malaya.

1980
The University of Singapore merges with the Nanyang University to form the National University of Singapore at Kent Ridge.

2005
The Faculty of Medicine celebrates its centennial and is renamed the Yong Loo Lin School of Medicine in honour of a transformational gift.

2012
The Centre for Translational Medicine (CeTM) is officially opened by Singapore Deputy Prime Minister and chairman of the National Research Foundation, Mr Teo Chee Hean on 3 July 2012. It ia a focal point for education and research in Singapore and houses one of the region's largest simulation centres for medical and nursing students to learn and practise clinical skills.

2015
The School celebrates its 110th year. The Alice Lee Centre for Nursing Studies celebrates its 10th anniversary.

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