

BLAZING A TRAIL
IN TOMORROW'S
MEDICINE AND SCIENCE



DUKE  **NUS**
GRADUATE MEDICAL SCHOOL SINGAPORE

OUR FIRST REPORT
From inception to June 2008



CREATIVE CONCEPT

The unfolding of the Duke-NUS story and the design of this inaugural Report is inspired by the prism. Duke-NUS is a unique entity that is a prism of fresh ideas, distinctive programs and an innovative curriculum. Just as a prism refracts pure light energy into a harmony of colors, so too does this burgeoning institution reveal the beauty of each hue within.

The intertwining slivers of blue and orange light convey the powerful inputs of Duke University and NUS. The diverse backgrounds and qualifications of our students are strong, yet colorful. Finally, our faculty and staff combine great talent that is pivotal to the future landscape of medicine and science.

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CHAIRMAN'S MESSAGE



Duke-NUS Graduate Medical School Singapore (Duke-NUS) strives to create physician-scientists who will shape the future of medicine. Borne from an agreement between Duke University and the National University of Singapore, Duke-NUS has already achieved – and in most cases, surpassed – the milestones set in 2005. Duke-NUS is well on its way to becoming an academic and research powerhouse in Asia.

Surpassing Milestones

Although still in our infancy, we have already surpassed many of the milestones we originally set out. We targeted to attract a faculty of nine directly from Duke University by June 2011. We have already recruited 16 (with a full-time equivalent of 10.4), seven of whom hold full-time posts with the School. The establishment of the Signature Research Programs (SRP) and recruitment of program leadership is three years ahead of schedule. Four SRPs have rolled out: Cancer and Stem Cell Biology; Neuroscience and Behavioral Disorders; Cardiovascular and Metabolic Disorders; and Emerging Infectious Diseases. A fifth, Health Services Research, was added in 2008. We are very privileged to have secured excellent leadership in two of the five SRPs with Dr. David Virshup, Program Director of Cancer and Stem Cell Biology, and Dr. Duane Gubler, Program Director of Emerging Infectious Diseases. The international recruitment process for the remaining SRP leadership is ongoing.

The construction of our new permanent facility is ahead of schedule and is set to complete by the first quarter of 2009.

This facility has the capacity to house our extensive research programs.

Another milestone achieved ahead of schedule is the licensure of Duke-NUS graduates in Singapore. They will be eligible for registration with the Singapore Medical Council in 2012, four years ahead of target.

A key milestone to offer a joint degree between Duke University and the National University of Singapore was also achieved in January 2007. Duke-NUS graduates will be conferred a joint degree upon graduation. We have also met our student electives milestone by putting in place the Duke Singapore student scholar fellowship program with Duke University.

Creating New Milestones

We will seek to achieve additional milestones beyond the 2005 Duke-NUS agreement. These include fund-raising, and building relationships with community partners. We see this as a means of nurturing the strengths and distinctiveness on which the School's reputation can be enhanced. It also supports Duke-NUS' pursuit of excellence and nurturing of innovation

“Duke-NUS stands poised to attain many more achievements and breakthroughs. We are proud to nurture a new breed of physician-scientists who will push new boundaries in the future of biomedical science.”

and diversification, and will give greater equity of access to students. We will achieve these milestones by focusing on implementing initiatives with a broad base of diverse, long-term relationships with the community, and financial support from the Government, foundations, friends, corporations, students, and, in the future, alumni.

Philanthropic Support

The Duke-NUS Development Committee has spearheaded the drive to raise support for Duke-NUS through community engagements. We rely on donations to enhance research and secure places for deserving students. We are tremendously grateful for the S\$101 million in donations raised since Duke-NUS' inception. To help our fledgling institution, the Singapore Government matches each donation dollar for dollar.

In recognition of the generous contribution of S\$80 million from the estate of the late Tan Sri Khoo Teck Puat, we have named the new Duke-NUS building at College Road, the Khoo Teck Puat Building. This generous donation will be instrumental in growing Duke-NUS' biomedical research initiatives, accelerating our planned research programs and increasing the potential for these programs to produce quantum improvements in patient care.

The Lien Foundation contributed S\$7.5 million to set up Asia's first research and training center for palliative care while the Goh Foundation endowment gift of S\$6 million will go towards the Goh

Foundation Scholars Program, which supports talented local and international students pursuing their M.D. degrees.

Similarly, the Shaw Foundation Scholars Program awards S\$5 million to outstanding students in financial need. The Lee Kong Chian Professorship in Cardiovascular Research, established through a gift from the Lee Foundation, will leverage on Duke University's long history in cardiac research.

Importance for Singapore and the Region

It is an exciting time for health care in Singapore. Duke-NUS is a key player in Singapore's master plan to become a biomedical sciences hub. Duke-NUS' contributions within the Singapore framework will raise the standard and quality in health care, help to develop better solutions for the treatment of disease, and improve the quality of life for patients and the community in Singapore and the region.

Only the Beginning

Looking ahead, as public awareness of Duke-NUS' mission and reputation grows, we will see many more opportunities to develop valuable partnerships to advance clinical research and health care. It is our firm belief that an overall tripartite collaboration of public institutions (including not-for-profit), and the private sector is essential to attaining Duke-NUS' objectives in medical education and research. The private sector, in particular, has a key role to play, supplementing public funding, and

supporting programs that may not be possible through conventional funding. It has been a tremendously hectic but exhilarating year.

We have achieved good traction in most areas of the School's development, working closely with the stakeholders, our partners and the community to build Duke-NUS into a thriving and vibrant medical school. Duke-NUS stands poised to attain many more achievements and breakthroughs. We are proud to nurture a new breed of physician-scientists who will push new boundaries in the future of biomedical science.

In conclusion, I would like to express my heartfelt gratitude to our benefactors. I would also like to thank our stakeholders: the Ministry of Education, National University of Singapore, the Ministry of Health, Singapore Health Services, the Ministry of Trade and Industry, the Agency for Science, Technology and Research and Duke University, without whom this venture would not have been possible.

Tony Chew
Chairman, Governing Board
Duke-NUS Graduate Medical School
Singapore

30 June 2008

DEAN'S MESSAGE



Duke-NUS is, without question, a pioneering initiative in several respects. It has opened a new window of opportunity for top students from Singapore and other countries to choose medicine as a career.

A Successful First Year

It is the most intensive partnership in the world between an American medical school and an Asian nation, marking Duke University as the leader among U.S. institutions for global relationships in biomedicine. It has validated the vision and the investment of the Singapore Government to innovate boldly in advancing health and economic development for its citizens. Together, Duke and the NUS have over 175 years of heritage and experience in medical education. This partnership is leading to accomplishments that neither could have generated acting independently.

Students in the inaugural M.D. class who enrolled in 2007 are completing their first year, having proven their ability to keep pace with the demanding and fast-moving Duke medical curriculum. Through their native abilities, hard work and creativity, they have indeed become the "pioneers" that our faculty so earnestly hoped they would be. The School will welcome its second class in the Fall of 2008, with a doubling of places from 25 to almost 50. This second class maintains the high standards of the first in terms of outstanding performance in baccalaureate studies and evidence of a pioneering spirit – a combination which will make the medicine of the future more successful than that which we can offer to patients today. Our first class will graduate in Year 2011 with a Doctor

of Medicine degree conferred jointly by Duke University and NUS. This is the first time a Duke University medical degree will be awarded outside of the United States, reflecting the confidence that the Chancellor, the President, the Academic Council and the Duke Board of Trustees have in the quality of doctors – leaders and scholars of medicine – that this School will produce.

As Founding Dean of Duke-NUS, I am grateful to many who have brought this unique project to the pleasing state in which we find it today. First, I wish to thank the pioneer faculty who uprooted their careers and their families from North Carolina and other North American locales to take residence in Singapore, and the many other Duke faculty and staff who make the long journey frequently to contribute to our mission here. Second, I am deeply grateful to the many Singapore physicians, scientists and administrators who have so energetically and skillfully joined the School in its formative years. I would also like to personally thank these three dedicated individuals who contributed greatly to helping the institution take off. They are Professor Tan Ser Kiat (Group Chief Executive Officer, Singapore Health Services), Professor Soo Khee Chee (Director, National Cancer Center Singapore) and Professor Tan Chorh Chuan (Senior Deputy President, National University of Singapore). Finally, I must express the

“ We have earned the confidence of the Singapore community, as reflected by the remarkable and generous gifts of over S\$100m from notable philanthropic organizations in Singapore. ”

utmost appreciation to our stakeholders and partners from government, academia and industry in Singapore, including the selfless members of our Governing Board who have guided us in how best to prosper within this vibrant and enlightened community.



*Our pioneer team
(From left to right) Cheah Li Fook,
Matthew Seow, Mei Wang-Casey,
Gisella Giam, Patrick Casey, Dollis Ang.*

Moving Forward

This is a time of transition – on July 1, 2008 Dr. Ranga Krishnan will become the next Dean of Duke-NUS, having served superbly as Executive Vice Dean over the preceding year. For myself, I will continue to work faithfully and diligently as a member of the Governing Board and in other capacities to ensure that this noble project continues to advance to meet the vision of its founders – a medical school dedicated to innovation and leadership by its students and faculty, and recognized as among the best in the world. If we remain true to this vision and never for a moment

become complacent or self-satisfied, this school will indeed be appreciated by the citizens of Singapore, and by the biomedical community worldwide, as a singular training ground for skilled physicians who will also become the thought-leaders, change agents, innovators and creative mavericks destined to meet the compelling human needs that current medicine cannot alleviate.

The graduates of Duke-NUS will, I am sure, excel within the most sophisticated and technologically advanced areas of medical practice and research. But beyond this, I am confident that they will also bring to the care of every patient that fine balance of knowledge, judgment, technical proficiency, compassion, respect, confidence, honor, service and humility that I have admired in the best of my own teachers of medicine and medical science. And in time, I hope that many of our graduates will take their place among the faculty of this or other great institutions of learning to impart these skills and values to the next generation.

Exponential Growth

The journey of Duke-NUS began as a recommendation from a distinguished international panel to the Singapore Government. It moved forward in fulsome discussions between leaders of Duke University and of the stakeholder entities in Singapore, and then with the

appointment of an esteemed Governing Board, the inaugural faculty and staff in 2005. We have grown exponentially since the early days; and continue to attract faculty who wish to share this adventure in medical research and education. We have earned the confidence of the Singapore community, as reflected by the remarkable and generous gifts of over S\$100m from notable philanthropic organizations in Singapore.

Our splendid new permanent facility can now be seen rising to its full height on the Outram Campus adjacent to the historic old College of Medicine Building. By this time next year, it will buzz with the multifarious activities of our students, faculty and staff. I look forward with great anticipation to the next round of achievements during the year ahead.

R Sanders Williams, M.D.

*Founding Dean,
Duke-NUS Graduate Medical School
Singapore*

30 June 2008

OUR GOVERNING BOARD



01 MR TONY CHEW LEONG CHEE

Chairman, Governing Board

Executive Chairman
*Asia Resource Corporation***02 PROF TAN CHORH CHUAN**

Deputy Chairman, Governing Board

Senior Deputy President
*National University of Singapore***03 MS CHANG HWEE NEE**Deputy Secretary (Policy)
*Ministry of Education, Singapore***04 MR BERNARD CHEN TIEN LAP**Chairman
*Singapore Health Services Pte Ltd***05 DR VICTOR DZAU**Chancellor for Health Affairs
James B. Duke Professor of Medicine
*Duke University*President & Chief Executive Officer
*Duke University Health System***06 MRS FANG AI LIAN**Chairman
*Great Eastern Holdings Limited***07 MRS DANIELLE HENG**Director of Research & Enterprise Division
*Ministry of Trade and Industry***08 PROF SATKU KANDIAH**Director of Medical Services
*Ministry of Health, Singapore***09 DR JENNIFER LEE**Corporate Advisor
*Temasek Holdings***10 PROF EDISON T. LIU**Executive Director
Genome Institute of Singapore
(Biomedical Sciences Institutes)
Agency for Science, Technology and
*Research (A*STAR)***11 MR CHANDRA MOHAN K. NAIR**Partner
*Tan Rajah & Cheah***12 MR PHILIP NG CHEE TAT**Chief Executive Officer
*Far East Organization***13 PROF TAN SER KIAT**Group Chief Executive Officer
*Singapore Health Services Pte Ltd***14 DR TEOH HOON CHEOW**Consultant Paediatrician
*Teoh Clinic for Children***15 DR ANDRE WAN**Deputy Executive Director
Biomedical Research Council (BMRC),
Agency for Science, Technology and
*Research (A*STAR)***16 PROF SANDERS WILLIAMS**

Ex-officio, Governing Board

Founding Dean
*Duke-NUS*Senior Vice Chancellor for Academic Affairs
Duke University School of Medicine

WELCOMING A NEW ERA

IN MEDICAL RESEARCH AND EDUCATION

THE FIRST OF ITS KIND

Duke-NUS Graduate Medical School (Duke-NUS) combines the expertise and resources of two of the world's finest universities – Duke University in the U.S. and the National University of Singapore. It is Singapore's first international medical school to employ a hybrid model of clinical medical training and research that is set to greatly advance medical progress.

The School was borne from Singapore's launch in the year 2000 of an ambitious Biomedical Sciences Initiative designed to make the country the biomedical hub of Asia and to attract both research and health sector manufacturing capabilities to Singapore.

Under this Initiative, government funding of over S\$3 billion over five years provides incentives to attract companies to Singapore and funds research institutes devoted to genomics, bioinformatics, bioengineering, nanotechnology, molecular and cell biology, and cancer therapies.

A graduate medical school was just what was needed to produce the highly trained physician-scientists needed



Our interim campus along Jalan Bukit Merah.

to support the Biomedical Sciences Initiative. And so, after months of discussion with faculty and leadership, Duke University and the National

University of Singapore signed a formal agreement in April 2005 under which the two institutions would partner to establish Duke-NUS in Singapore.

“ Duke-NUS offers a graduate-entry, four-year medical program based on the unique Duke model of education, with one year dedicated to independent study and research projects of a basic science or clinical nature. ”



Duke University in Durham, North Carolina.



National University of Singapore at Kent Ridge, Singapore.

Duke University

The Duke University School of Medicine is widely recognized as one of the best in the world. Consistently ranked among the top ten U.S. medical schools by *U.S. News & World Report*, the school is noted for its unique curriculum that includes a full year devoted to independent research as well as for its leadership in training physician-scientists. The combined efforts of more than 1,600 faculty physicians and researchers make Duke one of the largest biomedical research enterprises in the U.S., with more than US\$500 million in sponsored research annually. In the fiscal year 2006, it was ranked number two among American medical schools in research support from the National Institutes of Health. Dedicated

to both advancing and disseminating medical and scientific knowledge, Duke operates one of America’s top-ranked medical centers as well as the world’s largest academic clinical research organizations, and also leads major initiatives in the genome sciences, translational research, and global health.

National University of Singapore

The National University of Singapore (NUS) is widely acknowledged as one of the finest universities in the Asia-Pacific region, and consistently ranks among the world’s top universities.

NUS offers a broad-based curriculum underscored by multidisciplinary courses and cross-faculty enrichment. It has a diverse and cosmopolitan

community of over 30,000 students from 90 countries contributing to a dynamic learning and living environment. The University offers 50 bachelor and 138 graduate degrees, ranging from graduate diplomas to Master’s and Doctoral degrees conducted by 14 faculties and schools. It enjoys a close teaching-research nexus with 14 national-level, 20 university-level and more than 80 faculty-based research institutes and centers.

The University is strongly committed to advancing knowledge and fostering innovation, educating students and nurturing talent in the service of country and society.

OUR STAKEHOLDERS



Ministry of Education
SINGAPORE

MOE

The Ministry of Education directs the formulation and implementation of education policies in Singapore, controlling the development and administration of Government and Government-aided primary and secondary schools, junior colleges and a centralized institute. It also oversees the registration of private schools.

The mission of the MOE is to mold the people who determine the future of the nation, providing children with a balanced and well-rounded education and nurturing them to be good citizens, conscious of their responsibilities to family, society and country. Its vision is to prepare committed citizens and an education system capable of meeting the challenges of the future.



MINISTRY OF HEALTH
SINGAPORE

MOH

The Ministry of Health (MOH) is an innovative and people-centered organization, committed to medical excellence, the promotion of good health and the reduction of illness.

Through MOH, the Government manages the public health care system to ensure that good and affordable basic medical services are available to all Singaporeans. This is achieved through the provision of subsidized medical services while promoting individual responsibility for the costs of health care services. Safety nets are provided, however, to ensure that no Singaporean is denied access to the health care system because of the lack of money.

MTI MINISTRY OF TRADE
AND INDUSTRY
SINGAPORE

MTI

The Ministry of Trade and Industry aims to promote economic growth and create jobs so as to achieve higher standards of living for all. In this capacity, the Ministry facilitates the development of industry sectors with strong growth potential, and protects Singapore's international trade interests with a view to enhancing access to global markets. The Ministry also provides a good understanding of the current state of and outlook for the Singapore economy for policy formulation and refinement.



A*STAR

The Agency for Science, Technology, and Research (A*STAR) is a government agency dedicated to fostering world-class scientific research and talent for a vibrant knowledge-based Singapore. The agency includes the Biomedical Research Council (BMRC), the Science and Engineering Research Council (SERC), Exploit Technologies Pte Ltd (ETPL), the A*STAR Graduate Academy (A*GA), and the Corporate Planning and Administration Division (CPAD).

Duke-NUS offers an MD/PhD program in conjunction with A*STAR.



SingHealth

The largest health care group in Singapore, SingHealth offers a complete range of integrated services to over 3 million patients. The group consists of three hospitals, five national specialty centers, and a network of primary health care clinics offering a wide spectrum of 42 specialties to place the organization as a trusted leader in health care. SingHealth is dedicated to providing Medical Excellence and Genuine Care, inspired by its core shared values of Clinical Excellence, Commitment, and Collaboration.

SingHealth also upholds the three pillars of service, training, and research, which propel the group to the forefront of medicine as it constantly seeks new ways of improving patient care and treatment. Constantly evolving to remain at the leading edge of medicine, SingHealth benchmarks itself against internationally recognized standards to ensure it continues to pioneer medical excellence.

Members of the SingHealth group:

Hospitals

Changi General Hospital, KK Women's and Children's Hospital, and Singapore General Hospital

National Specialty Centers

National Cancer Center, National Dental Center, National Heart Center, National Neuroscience Institute, and Singapore National Eye Center

SingHealth Polyclinics

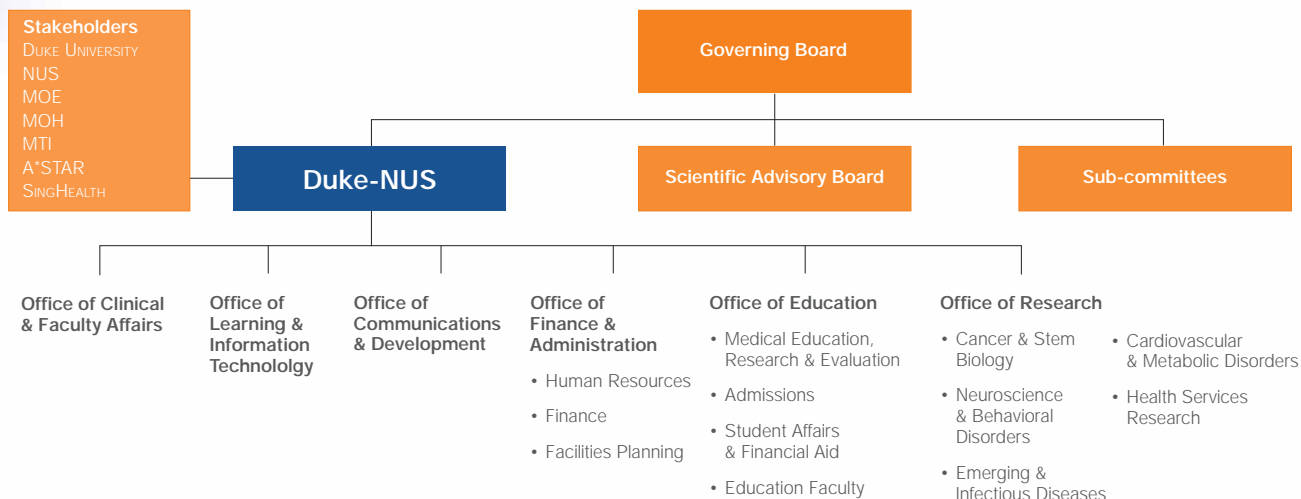
Bedok, Bukit Merah, Geylang, Marine Parade, Outram, Pasir Ris, Queenstown, Sengkang, and Tampines

A WORLD CLASS ESTABLISHMENT

OUR SCHOOL

ORGANIZATIONAL CHART

Correct as of 30 June 2008



MILESTONES

- 2001**
A Ministry of Education-appointed Medical Education Review Panel recommends that Singapore establish a graduate medical school to produce the highly trained physician-scientists needed to support the Biomedical Sciences Initiative.
- 2000**
Singapore launches a S\$3-billion Biomedical Sciences Initiative designed to make the country the biomedical hub of Asia.
- June 2003**
Duke University and the National University of Singapore sign a Memorandum of Understanding indicating their willingness to partner in establishing Singapore's first M.D. model medical school.
- 2002**
Singapore's then Deputy Prime Minister Tony Tan, PhD, Minister for Manpower Ng Eng Hen, MBBS, and NUS President Shih Choon Fong, PhD, visit Duke to discuss a partnership to establish the school.
- July 20, 2005**
The Duke-NUS Interim Campus is established on the same campus as Singapore General Hospital. The first staff are recruited in the summer.
- April 14, 2005**
At a ceremony in Singapore, Duke University and the National University of Singapore formalize their partnership to establish the new graduate medical school.
- September 1, 2005**
First meeting of the Duke-NUS Governing Board.
- August 2005**
R. Sanders Williams, MD, dean of the Duke University School of Medicine, is officially named founding dean of the Duke-NUS.
- November 2005**
Faculty recruitment officially begins.

THE LIFE-BLOOD OF OUR PROGRAMS OUR GENEROUS DONORS

Duke-NUS relies on the continual generosity of donors and has received a number of generous grants from several foundations for supporting world-class teaching and research initiatives. Donations received to date include:

S\$80 million from the Estate of the late Tan Sri Khoo Teck Puat for growing Duke-NUS' biomedical research programs, accelerating planned

research programs and increasing potential for these programs to produce quantum improvements in patient care.

S\$7.5 million from the Lien Foundation for establishing the Lien Center for Palliative Care.

S\$6 million from the Goh Foundation for the Goh Foundation Scholars Program.

S\$5 million from the Shaw Foundation for the Shaw Foundation Scholars Program.

This is in addition to the Lee Foundation's gift to establish the Lee Kong Chian Professorship in Cardiovascular Research.



The new Khoo Teck Puat Building on College Road, located within the Outram Campus.

BUILDING OUR NEW CAMPUS

By early 2009, Duke-NUS will operate in the new 24,000 square-meter Khoo Teck Puat Building. It will stand as a strong testament to the school's commitment to deliver pioneering clinicians and medical researchers, with a vision to advance the cause of medicine globally.

Organized around a soaring eight-story atrium, this state-of-the-art facility will comprise four main functional zones:

- Administration • Laboratory • Principal Investigation • Atrium

<p>April 2006 Construction of permanent Duke-NUS facilities begins.</p>	<p>January 2007 The Duke University Board of Trustees approves the award of a joint M.D degree. Graduates of the Duke-NUS will receive a joint M.D. degree from both Duke University and the National University of Singapore.</p>	<p>June 2007 Duke-NUS is presented with a S\$5 million Gift from the Shaw Foundation to establish the Shaw Foundation Scholars Program at the Duke-NUS.</p>	<p>August 2007 The first 26 Duke-NUS students begin class.</p>	<p>March 2008 Duke-NUS and the Lien Foundation set up the Lien Center for Palliative Care - Asia's pioneering institution for research and education in palliative care.</p>
<p>August 2006 Online applications for the first Duke-NUS entering class of 25 students opens.</p>	<p>September 1, 2006 The Duke-NUS dedicates the ground on which the new campus will be built at an event graced by Mr Khaw Boon Wan, Minister for Health, Singapore.</p>	<p>January 2007 Duke-NUS receives a S\$80 million Gift from the Estate of the late Tan Sri Khoo Teck Puat, which will grow Duke-NUS' biomedical research initiatives. The event was graced by Education Minister Mr Tharman Shanmugaratnam.</p>	<p>July 2007 Online applications for the entering class of Fall 2008 begin.</p>	<p>December 2007 The Goh Foundation establishes the Goh Foundation Scholars Program through a S\$6 million Gift to the Duke-NUS.</p>



GROOMING LEADING CLINICIANS OF TOMORROW

THE DUKE CURRICULUM MODEL

Duke-NUS offers an innovative and rigorous medical education program with a distinct focus on research, aimed at building leaders and scholars in medical research, medical education, and patient care. Following the American model of post-baccalaureate medical education in which students begin their medical studies after earning a bachelor's degree, Duke-NUS offers a unique opportunity for students with potential to excel in the field of medicine and biomedical sciences.

The Duke-NUS curriculum reflects the School's philosophy (LEAD) that medical school is just the beginning of the journey as a student of medicine. In the future, physicians will need to grow as medicine grows, to be able to grapple with new ethical issues, evaluate increasingly complex treatments, and drive the science that will continue to improve medical care in the years to come.

“The Duke-NUS LEAD curriculum has been specifically designed to develop the leaders and creative thinkers needed to push medicine into new territories...”

The Duke-NUS LEAD curriculum has been specifically designed to develop the leaders and creative thinkers needed to push medicine into new territories, and is based on the world-renowned Duke University School of Medicine model, which differs from other M.D. training programs in four key aspects:

- basic science courses covered in one year instead of two
- students care for patients a full year earlier
- one full year is devoted to independent scholarship and research
- students benefit from a team-based learning environment

HOW WE DELIVER OUR CURRICULUM

Pioneering a New Educational Methodology

To create the leaders needed to drive new developments in medicine, Duke-NUS introduced a radical, fresh

approach to teaching, and pioneered TeamGMS, a revolutionary educational strategy centered on a team-based approach to learning.

TeamGMS provides a framework for students and faculty to develop:

- excellent life-long learning skills
- effective team building strategies
- critical and creative thinking about a broad range of medical fundamentals in an active and engaging environment.

This revolutionary teaching method gives our students access to the valuable inputs of specialist clinicians very early on in their training so that they gain an in-depth understanding of the clinical relevance and application of the core basic science principles.

INTEGRATION AND IMMERSION

Our graduates will spend three informative years in Duke-NUS honing their clinical and research skills.

Year 1

Consists of six integrated courses and two full year courses. The goals of this year are to help the students learn how to:

- be self-directed learners
- recognize what they know and do not know
- seek out information
- work effectively in teams
- expand their curiosity
- be uncomfortable with ambiguity
- be ready to perform effectively on the clinical wards

Year 2

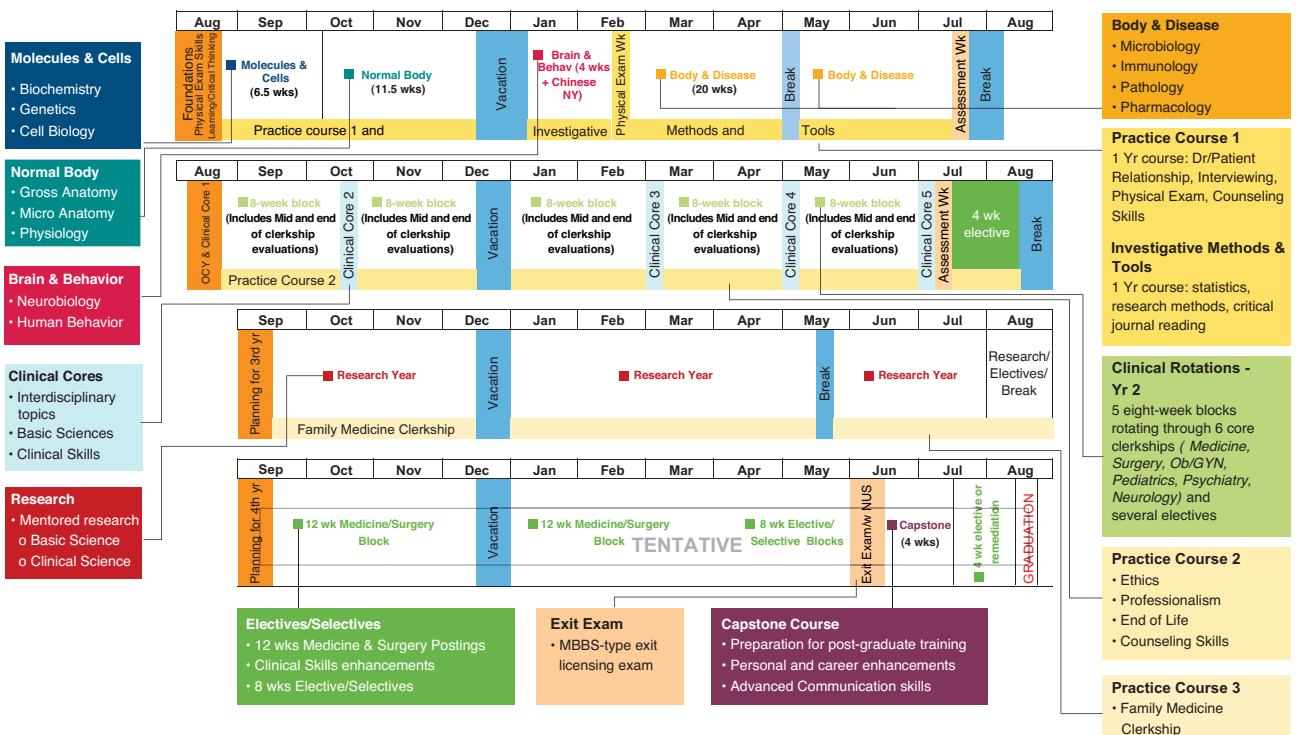
Focuses on our students becoming effective clinicians. Six core clinical disciplines will be explored:

- Medicine
- Neurology
- Obstetrics/Gynecology
- Pediatrics
- Psychiatry
- Surgery

During this year, higher level professionalism issues and clinical skills will also be covered and students will begin thinking about their research projects for the following year.

THE LEAD CURRICULUM

Learners who are: **E**ngaged with their Individual and Team work (TeamGMS) **A**dvocates, for their society, their patients, their own education (Servant Leadership) **D**eveloping Critical and Creative Thinking skills (Pioneers)





The Class of 2011 taking the Normal Body Course, taught in Year 1.

Year 3

Students expand their curiosity in scientific endeavors through their attachments to research labs, and face the challenges of continuity of care over time through the Family Medicine Clerkship.

Year 4

Students prepare to go into the world of clinical medicine, bringing finesse to their clinical skills upon graduation.

The performance of our pioneer group of students has been as inspiring as the dedication and the willingness of countless faculty in their feat of getting the first year running and planning for the subsequent years. In addition, the devotion of the faculty to reaching out and helping the students, being flexible and adaptable to a different method of lecturing and teaching, is clear evidence that this project will succeed.

The Class of 2011

History was made on August 1, 2007 when the very first intake of pioneering students took their seats at the interim Duke-NUS campus. A truly global mix, the cohort consisted of 26 students, holding a diverse set of undergraduate degrees including Biology/Life

Sciences, Engineering, Pharmacy/ Pharmacology, Computer Science and Chemistry in addition to four Masters Degrees and one PhD. The majority of students hail from Singapore, but we were also pleased to welcome students from the USA, Hong Kong, Indonesia, Malaysia, the Philippines and India.

The teaching faculty, staff and students participated in the inaugural White Coat Ceremony on August 17, 2008.

Witnessed by Guest-of-Honor Minister for Community Development, Youth & Sports, Dr. Vivian Balakrishnan, this event signified the start of our inaugural batch's medical journey of training and service.

Since then, it has been a successful first year for the Class of 2011, who have consistently performed at a level on par with their counterparts at Duke University School of Medicine.

STUDENT SCHOLAR FELLOWSHIP PROGRAM

The partnership between Duke University and NUS extends beyond the Singapore campus through an ambitious exchange program that will prove highly beneficial for students of both institutions.

In September 2007, we welcomed third-year Duke-Singapore Student Scholar Fellowship students Misha Mutizwa and Brett Coolman as they began their research year with us. The two visiting students from Duke University worked in the Duke-NUS laboratories under the guidance of



Our very first White Coat Ceremony, for the Class of 2011



The students doing their bit at the SGH Community Day.

research mentors, Dr. David Virshup and Dr. Patrick Casey respectively, and also provided mentorship to our pioneer group of first-year students. We look forward to welcoming more students from Duke University next year, and when the inaugural cohort enters its research year the following year, we will support a select number as they embark on their research year as guests of Duke University.

STUDENT RECRUITMENT

We have utilized a wide variety of media (such as electronic communications and social networking sites) and personal

visits by our faculty to many different academic centers in the world in our efforts to recruit the very best students to Duke-NUS. Our Class of 2011 has contributed considerably to our recruitment efforts by creating their own social networking site and blog for incoming students.

For the incoming Class of 2012, we have doubled our applicants and have already opened our on-line applications for the Class of 2013, successfully embarking on recruitment drives in Singapore, Malaysia, China, Philippines and the U.S.

STUDENT AFFAIRS & FINANCIAL AID

Students' Community

The Class of 2011 students demonstrated their community spirit when they volunteered to run a Photo Art Workshop at the Singapore General Hospital (SGH) Community Day on November 24, 2007 in aid of some of the neediest families that the hospital serves.

To support Class 2011 in their inaugural philanthropic deed, the Education Deans rallied the support of Duke-NUS staff and faculty to organize a pancake breakfast which raised over S\$1,500 towards purchasing book vouchers and other useful items for the beneficiaries.

Students' Community visit to Rempang, Indonesia

On May 2 & 3, 2008, nine Duke-NUS students from the Class of 2011 participated in a community service trip to Rempang, Indonesia to visit underprivileged children at the Asrama Santa Theresia School. The two days were spent teaching the children about good dental hygiene as well as reviewing basic health care tips with the school children's parents.



Students' Community visit to Rempang, Indonesia.



DELIVERING ON RESEARCH

To fulfill our mission of transforming the future of medicine and health care to benefit the community, our faculty and students have access to some of the world's most sophisticated biomedical research facilities. The Duke-NUS interim laboratory spaces are located at Block C of the former School of Nursing on the Outram Campus – a short walk away from the Duke-NUS administration and education interim facilities. By mid-2009, Duke-NUS will move to its permanent 24,000 square-meter facility, which will comprise state-of-the-art research spaces as well as classrooms, teaching labs, and administrative offices.

Students and faculty will also have access to numerous specialized research support facilities, not only in the new Duke-NUS building but elsewhere on the Outram campus and across Singapore. These facilities include those in the various SingHealth research centers as well as at the NUS Campus and the Agency for Science, Technology, and Research (A*STAR)'s Biopolis – a S\$300-million, 185,000-sq. m. city-within-a-city facility devoted to biomedical research.

We have already successfully established and staffed five Signature Research Programs (SRPs). The goal of the SRPs is to span the spectrum of academic medical activity. Key considerations for the development of the SRPs include the potential of the Programs to:

- (i) capitalize on the research strengths at Duke University
- (ii) make a substantive impact on the medical needs of Singapore
- (iii) provide a competitive advantage for performing the research in Singapore.

CANCER & STEM CELL BIOLOGY

The Cancer and Stem Cell Biology (CSCB) Program has started on a strong footing with the appointment of inaugural Director, Dr. David Virshup, an internationally recognized cancer researcher. Dr. Virshup arrived from the Huntsman Cancer Institute at the University of Utah in the U.S., where he was the Willard Snow Hansen Presidential Professor of Cancer Research. The CSCB Program has sought to actively build bridges and collaborative networks with the existing cancer research community in Singapore, including the National Cancer Center Singapore (NCCS), NUS, and the A*STAR Research Institutes. Of the current 16 faculty members, including six with adjunct appointments in the CSCB Program, 14 hold joint appointments with these local institutions.

One such faculty member of the CSBC Program is Dr. Ong Sin Tiong, who returned to his homeland after working for many years in the U.S. to help Singapore develop its thrust as Asia's biomedical hub. His research interests lie in understanding the basic pathophysiology of leukemias with the aim of improving clinical

responses to targeted therapies in these malignancies. His work is supported by two separate National Institutes of Health (U.S.) grants in the area of Chronic Myelogenous Leukemia.

EMERGING INFECTIOUS DISEASES

The signature Emerging Infectious Diseases (EID) research program was delighted to welcome its inaugural Director, Dr. Duane Gubler, Sc.D., a leading global expert on dengue and former Director of the Asia-Pacific Institute of Tropical Medicine and Infectious Diseases, of the John A Burns School of Medicine, Hawaii. A core team of senior investigators under Dr. Gubler is now coming into place.

A key feature of the program is the setting up of a world-class infectious disease program that will act as a regional center for reference and research in the Asia-Pacific region. The Asia-Pacific Institute of Tropical Medicine and Infectious Diseases at the University of Hawaii will be an active partner. Dr. Gubler's goal is to expand and create self-sustaining laboratory and epidemiology capacity in selected Asian countries within five years.

The EID program hopes to pioneer the development and discovery of new and more effective methods for the treatment, prevention and control of new and emerging pathogens. Early identification of new pathogens associated with disease with epidemic potential will be a key outcome of the research as well as the development of new diagnostic tests, treatment and control strategies by harnessing talents at Duke-NUS and those of partners such as at NUS, Tan Tock Seng Hospital, Singapore General Hospital, the A*STAR institutes, DSO National Laboratories and the Novartis Institute for Tropical Diseases.

The EID Program will also develop partnerships throughout the region by developing laboratory and epidemiologic capacity in, and training scientists and physicians from, those partnering countries, with Singapore being a viable surveillance hub for emerging infectious diseases.

NEUROSCIENCE AND BEHAVIORAL DISORDERS

Our young institution is already developing strengths in cognitive neurosciences, psychiatric disorders and developmental neurobiology. The Neuroscience and Behavioral Disorders (NBD) Program has recruited outstanding faculty members with research interests ranging from development of brain neurons and tumors, molecular basis for neuropsychiatric disorders to neuropharmacology, neural networks, brain imaging and eye diseases. As of March 31, 2008, a total of 13 faculty members have been recruited into the Program.

Duke-NUS has established a strong collaboration in schizophrenia research with the Singapore Institute of Mental Health (IMH) that resulted in the funding of a Translational and Clinical Research Flagship Program grant. The Duke-NUS team is collaborating with investigators from IMH and Duke University on this research. A pilot project with participation from the Singapore Institute for Infocomm Research, IMH

and Duke-NUS, on the Brain-Computer Interface-based Treatment of Attention Deficit Hyperactivity Disorder in children, is also currently underway.

Another key collaboration is with A*STAR. Together, an integrated Neuroscience Research Partnership has been created that is spearheaded by noted British neuroscientist, Dr. Colin Blakemore, the former President of the British Neuroscience Association and former Chief Executive of the UK Medical Research Council. Dr. Ranga Krishnan is working closely with Dr. Blakemore on this initiative.

CARDIOVASCULAR & METABOLIC DISORDERS

Duke University has a long history in cardiology research, and has recently developed major expertise and capabilities in research on metabolic disease and diabetes. Both cardiovascular disease and diabetes are on the rise in Singapore, and there are unique opportunities presented by the study of the affected populations. With the National Heart Center located on the same campus as Duke-NUS, and the Diabetes Center at the Singapore General Hospital seeing over 1,000 patients a month, the Outram campus provides a wealth of opportunities for translational and clinical research in these areas.

The first faculty recruit into the Cardiovascular and Metabolic Disorders (CVMD) Program is Dr. Zhen Yan from Duke University, who has relocated to Singapore, whose program focuses on skeletal muscle adaptation in response to exercise and skeletal muscle signaling pathways that function in insulin resistance. The faculty recruited into the CVMD Program will have access to the world-renowned Duke Databank for Cardiovascular Diseases and the Duke Clinical Research Institutes databases and clinical trials portfolio. In addition, close collaboration with investigators in the A*STAR Research Institutes, and most notably the Singapore Institute for Clinical Sciences headed by Dr. Judith Swain, with whom the program will be jointly developing an initiative in metabolic disease investigation, will provide an array of complementary resources.

HEALTH SERVICES RESEARCH

The Health Services Research (HSR) Program is the most recent of the Signature Research Programs incepted at Duke-NUS. The HSR Program will establish strong links with researchers in Singapore and in the region. Within Singapore, such linkages are already being forged with the Ministry of Health, the SingHealth and the National Health Group clusters, the National University Health System, and the Lee Kuan Yew



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School of Public Policy at NUS. Two experts in this arena, Duke faculty members, Dr. Truls Ostbye, and Dr. Ricardo Pietrobon, have already taken fractional appointments with Duke-NUS and established collaborative programs with the Singapore investigators. Research to be undertaken by HSR faculty members will include:

- the study of the distribution and determinants of health and disease from a population perspective
- the influence of social factors, financing systems, organizational structures and processes
- health technologies and personal behavior on the use of health care services and the quality, cost and effectiveness of these services

Epidemiologic approaches will be used to study predisposing conditions for disease among populations, with the goal of understanding etiology, prevalence, and differences among groups. It is envisaged that the Program will focus on applied health services research with a strong public health focus. Such research will hopefully act as a possible conduit for implementation of interventions and health care products, diagnostics and therapeutics for example, developed in Singapore.

In line with the Singapore Ministry of Health's focus on providing quality palliative care, Duke-NUS has collaborated with the Lien Foundation to establish the Lien Center for Palliative Care, Asia's first research center for palliative care in Singapore, with active involvement and support from the NCCS and SingHealth. The Center is led by Dr. Cynthia Goh, and its mission is to train a strong pool of palliative health care professionals through research and education, with the ultimate aim of formulating better-informed health care policies and medical practices. The Center will also benefit from collaborations spanning four continents – Duke University in



From left: Kevin Campbell, PhD, Suzanne Cory, M.D., Risa Lavizzo-Mourey, M.D., and Peter Agre, M.D. Absent from photo: Sir Keith Peters

the U.S., St. Christopher's Hospice in London, the Institute of Palliative Medicine in Calicut, India and Flinders University in Australia.

SCIENTIFIC ADVISORY BOARD

The Duke-NUS Scientific Advisory Board (SAB) comprises five internationally renowned scientists who advise to the Duke-NUS Governing Board on the initiation and direction of research projects and programs undertaken by the School. The members of the Duke-NUS SAB are:

Peter Agre, M.D. (Chairman)

Agre is Distinguished Senior Scientific Advisor at the Duke University School of Medicine and Distinguished Professor at the Johns Hopkins Bloomberg School of Public Health. He received the 2003 Nobel Prize in Chemistry for deciphering the molecular basis for the movement of water into and out of cells. His discovery of the class of molecules that performs this function, the aquaporins, ushered in a new era in the study of the molecular and cellular aspects of membrane channels and in kidney function.

Kevin Campbell, PhD.

Dr. Campbell is the Roy J. Carver Distinguished Research Chair and Professor of Molecular Physiology and Biophysics, Internal Medicine, and Neurology at the University of Iowa, and investigator at the Howard Hughes Medical Institute. He is an expert in the area of degenerative disorders of the

muscle, and has been elected to both the Institute of Medicine and the National Academy of Sciences in the U.S.

Suzanne Cory, M.D.

Dr. Cory is Professor of Medical Biology at the University of Melbourne and Director of the Walter and Eliza Hall Institute of Medical Research. An expert in the molecular genetics of cancer, Dr. Cory is a Fellow of the Australian Academy of Science and a Fellow of The Royal Society as well as a Foreign Member of the U.S. National Academy of Sciences.

Risa Lavizzo-Mourey, M.D., M.B.A.

Dr. Lavizzo-Mourey is President and CEO of the Robert Wood Johnson Foundation, the United States' largest philanthropy devoted exclusively to health and healthcare. Prior to joining the Robert Wood Johnson Foundation in April 2001, Dr. Lavizzo-Mourey was the Director of the Institute on Aging at the University of Pennsylvania, and was a member of the White House Task Force on Health Care Reform. She is a member of the Institute of Medicine of the National Academy of Sciences.

Sir Keith Peters, FmedSci, FRS

Dr. Sir Peters is the Meritus Professor of Physics at the University of Cambridge, where he was the Head of the School of Clinical Medicine. He is currently the Interim Director of the MRC's National Institute for Medical Research at Mill Hill, London. His research interests center on the immunology of renal and vascular disease, and in particular on how delineation of immunological mechanisms can lead to new therapies for these disorders.

AWARDS & ACCOLADES

Although Duke-NUS has only been operational for two years, the following physician-scientists from our faculty have already secured the school several prestigious research awards and done us proud.

Singapore Translational Research Investigator Award

The newly introduced Singapore Translational Research Investigator Award (STaR) is a prestigious award that aims to recruit and nurture world-class clinician-scientists to undertake cutting-edge translational and clinical research in Singapore. Some will also lead or contribute to the development of national flagship research programs which are oriented around strategic disease areas of concern to Singapore.

Two recipients of the inaugural STaR Awards are from Duke-NUS. They are:

Dr. David Virshup – Professor and Director, Cancer and Stem Cell Biology Program

Dr. Michael Chee – Professor and Principal Investigator, Neuroscience & Behavioral Disorders Program.

Clinician Scientist Award

The Clinician Scientist Award (CSA) provides enhanced protected time for clinician-scientists to carry out internationally competitive and impactful translational and clinical research. Receiving the CSA (Senior Investigator) is:

Dr. Ong Sin Tiong, who is with the Cancer and Stem Cell Biology Program

2008 Young Investigator Award, NARSAD, USA

In April, **Dr. Zhang Xiaodong**, from the Neuroscience and Behavioral program, received the 2008 Young Investigator Award from the National Alliance for Research on Schizophrenia and Depression (NARSAD), USA.

(From left to right) Dr David Virshup, Dr Patrick Casey, Dr Michael Chee, Dr Ong Sin Tiong, Dr Zhang Xiaodong





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