Duke University and NUS embark on Second Phase of their Collaboration

Duke University and NUS have signed an agreement to mark the second phase of their strategic collaboration in medical education and research, which runs for the next 5 years. The symbolic signing ceremony, held on November 30, 2010, was witnessed by Singapore's Health Minister Mr. Khaw Boon Wan and Education Minister Dr. Ng Eng Hen.

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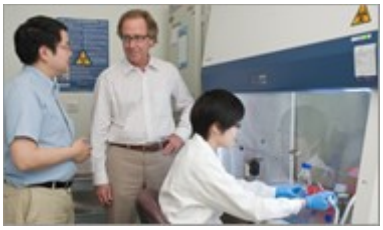

Helping to Halt Heart Disease and Diabetes

The Cardiovascular and Metabolic Disorders (CVMD) Signature Research Program at Duke-NUS is playing its part in the fight against cardiovascular disease and its complications, which claim an estimated 17.1 million lives a year.

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Introducing the Office of Clinical Sciences

The Office of Clinical Sciences (OCS) at Duke-NUS is a unique set-up in Singapore. It helps to train and develop those who are interested in doing clinical or patient-oriented research.

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Balancing School and Parenthood

Nothing beats understanding the physiologic changes of pregnancy, as well as labor pains and delivery, than going through it yourself.

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- Singapore's DPM Visits Duke-NUS
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- Duke-NUS Scores Double Win for Fire and Safety

Medical Students Volunteer in Indonesia

Andrew Green, Class of 2012, reports on a recent trip by 17 Duke-NUS medical students who provided health screening to children on the Indonesian island of Batam.

VIEW SLIDESHOW

VITAL SCIENCE

Editor: **Greg Lee**
Production and copy-editing: **Adeline Sim**
Vital Science is an official publication of Duke-NUS Graduate Medical School Singapore.

This issue's banner shows a core lab in the Cardiovascular and Metabolic Diseases Program at Duke-NUS. Headed by Principal Investigator Associate Professor Scott Summers, it studies the role of ceramide, a toxic by-product of saturated fat, in the development of diabetes and cardiovascular disease.

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DUKE NUS GRADUATE MEDICAL SCHOOL SINGAPORE

VITAL SCIENCE

Mar 2011

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The second phase will continue to build on the success of the initial phase of the partnership, a landmark collaboration between the two universities established in April 2005. Since that time, Duke-NUS has made remarkable progress. It has established a strong reputation and attracted talented students and distinguished faculty from around the world.

Signing the 2nd phase of collaboration between Duke University and NUS (front row from left: Dr. Michael Merson, Vice Chancellor for Duke-NUS Affairs; Director, Duke Global Health Institute; Dr. Victor Dzau, Chancellor for Health Affairs, Duke University; President & CEO Duke University Health System and Professor Tan Eng Chye, Provost, National University of Singapore).

"The success of Duke-NUS is integral to the success of Duke Medicine's mission of transforming medicine and health to improve peoples' lives around the world through service, research and education," said Dr. Victor J. Dzau, MD, Chancellor for Health Affairs, Duke University and CEO of the Duke University Health System. "Duke will continue to build relationships with strategic partners around the world, but we will always see Duke-NUS as the crown jewel of our international activities."

Professor Ranga Krishnan, Dean of Duke-NUS added that: "The faculty and students at Duke-NUS are excited at the prospect of contributing further to the growth of Singapore's Biomedical Sciences (BMS) Initiative. The school is heartened by the resounding mandate from Singapore and Duke University School of Medicine in our ability to leverage on the unique Duke curriculum to produce doctors, clinician-scientists and researchers of distinction, to strengthen Singapore's basic, translational and clinical research capabilities, and to enhance Singapore's medical excellence. We thank the stakeholders for their confidence in us."

Duke-NUS Phase II Agreement Signing Ceremony: (Front row, from left) Ms Yong Ying-I, Permanent Secretary, Ministry of Health; Dr Victor Dzau, Chancellor for Health Affairs, Duke University; Mr. Khaw Boon Wan, Minister for Health; Dr. Ng Eng Hen, Minister for Education; Professor Tan Chorh Chuan, NUS President; Mr. Tony Chew, Chairman, Duke-NUS Governing Board. (Back row, from left) Mr. Roy Quek, Deputy Secretary, Ministry of Health; Professor Tan Ser Kiat, Group CEO, SingHealth; Dr. Michael Merson, Vice Chancellor for Duke-NUS Affairs; Professor Ranga Krishnan, Dean, Duke-NUS; Professor Tan Eng Chye, Provost, NUS and Mr. Ng Cher Pong, Deputy Secretary, Ministry of Education.

Moving forward, Duke-NUS will utilize the excellent infrastructure already in place to further expand and integrate education, research and clinical care in Singapore, particularly at the Outram campus.

“Duke-NUS’ close proximity to SingHealth’s national specialty centers and the Singapore General Hospital fosters close collaborative efforts between researchers at the School and SingHealth’s clinicians and clinician-scientists, who form the core of the School’s clinical faculty,” said Professor Krishnan. “The long-term goal is the integration and expansion of the research and education functions of Duke-NUS with the healthcare delivery, research and education activities of SingHealth. The Duke-NUS and SingHealth partnership at Outram will complement the National University Health System at Kent Ridge. The synergies from these two distinctive twin peaks of excellence will boost Singapore’s BMS Initiative and help establish Singapore as the premier center for academic medicine in the region and beyond.”

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Helping to Halt Heart Disease and Diabetes

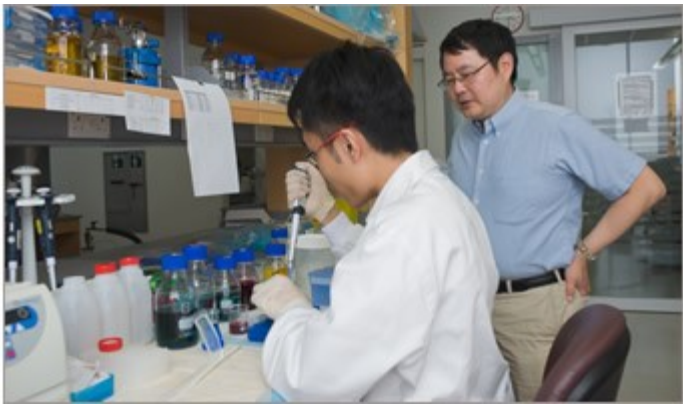
The Cardiovascular and Metabolic Disorders (CVMD) Signature Research Program at Duke-NUS is playing its part in the fight against cardiovascular disease and its complications, which claim an estimated 17.1 million lives a year.[1]

The prevalence of heart disease around the world continues to rise, and what is most concerning is that some of the largest increases are being seen in developing countries where lifestyles are undergoing change. In Asia in particular, rates of chronic diseases which lead to heart disease such as diabetes and obesity are increasing in pace with rapid social and economic development. While many people in the Asian region continue to smoke tobacco, there are also those who are increasingly embracing Western diets and technologies which allow for more sedentary lifestyles.

In Singapore, the prevalence of obesity topped 10% for the first time ever in 2010 (National Health Survey 2010). While lower than figures of 20% to 25% often reported in some Western countries, Singapore's Health Promotion Board (HPB) is attempting to stem the tide through various public health initiatives.

In state-of-the art facilities at Duke-NUS in Singapore, CVMD scientists are using cutting-edge technologies to profile metabolic processes and adaptations in cellular, animal models and in patients.

They hope the information they gather will unravel some of the key mysteries as to why metabolic syndrome, diabetes, hypertension and hyperlipidemia often cluster together in a single person. One can view these mysteries as codes which, if broken, may help defeat some of the world's most deadly diseases.



Associate Professor Paul Yen from the CVMD program giving guidance to research assistant Mr. Sherwin Xie on his analysis.

Professor Thomas Coffman (center), with Professor Patrick Casey, Senior Vice Dean of Research (right) and Professor Shirish Shenolikar, Associate Dean of Research (left).

Recently, Professor Thomas M. Coffman from Duke University in Durham, North Carolina, was appointed to the position of Director of the CVMD program. Talking to Vital Science for the first time since his appointment, Professor Coffman outlined some of the key objectives and strategies of the program over the coming years.

"While there is superb research being carried out within the CVMD Program currently, it is relatively understaffed compared to the other Signature Research Programs at Duke-NUS. My major initial objective as Director will be to recruit additional outstanding scientists so that our portfolio will be robust and comparable in quality and quantity to the other excellent research programs at Duke-NUS.

As the number of faculty is expanded, there will be substantive opportunities for medical students, PhD students and post-doctoral fellows to obtain research training relevant to cardiovascular and metabolic disorders."

Professor Coffman added that collaborations and relationships with researchers in Singapore and elsewhere working on common problems would be consolidated. Since its inception, the CVMD Research Program has actively sought to establish such strategic external partnerships.

Of key importance are ongoing collaborations with the SingHealth National Heart Centre (NHC) and the Diabetes Centre at Singapore General Hospital, both located on the Outram campus. "Nurturing and expanding collaborations with clinicians and researchers at the National Heart Centre is an important goal of mine," said Professor Coffman. "Several scientists from the NHC currently have joint appointments in our program. These

Members of the CVMD team engage in a discussion.

interactions provide an opportunity to link basic discovery science from the CVMD with translational and clinical work being carried out at NHC. Going forward, I believe there are significant mutual benefits to be obtained by both of our groups working together."

(From left to right): Associate Professor Paul Yen, Professor Thomas Coffman and Dr. Yap Chui Sun in the CVMD laboratory.

"Since diabetes is a major research theme within the CVMD program, collaboration with the Diabetes Centre at Singapore General Hospital will [also] be important for achieving our mission," Professor Coffman added.

"The Diabetes Centre is a terrific clinical operation and, thus, these interactions will become especially important as we grow our translational research programs."

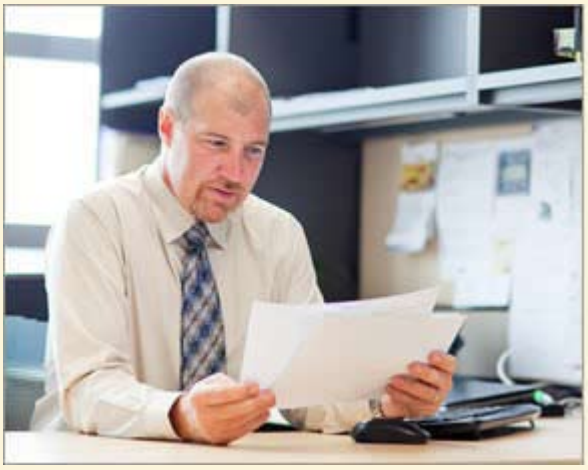
In parallel with his position as the director of the CVMD Program at Duke-NUS, Professor Coffman also serves as the Director of the Cardiovascular Research Center at Duke in Durham. The US-based research program is also at an early stage of maturity, said Professor Coffman. "I believe that my simultaneous roles in these two developing programs represent a unique opportunity to leverage resources and to enhance linkage between the two Duke sites… Over the next few years, I will work to strengthen the links between the cardiovascular and metabolic research at Duke and Duke-NUS."

An excellent example of how this is already happening is the coming together of scientists from both campuses for sharing of scientific knowledge at a Symposium on Cardiovascular and Metabolic Disorders Research at Duke-NUS on March 2-3, 2011. This event will feature presentations by researchers from Duke-NUS, Duke University, the NHC, and other institutions around Singapore. "I am very excited about this opportunity to enhance scientific exchange, develop new collaborations and promote research in thematic areas that are relevant to the CVMD mission," said Professor Coffman.

Highlighted Research, CVMD Program

Ceramides and their role in metabolic diseases

A team of Duke-NUS researchers led by Associate Professor Scott Summers from the CVMD Program are elucidating pathogenic events at the molecular level which lead to the development of insulin resistance, a precursor of diabetes and related metabolic disorders.



Associate Professor Scott Summers, Principal Investigator, CVMD Program.

Insulin, a peptide hormone, stimulates the uptake and storage of glucose and other nutrients into adipose (fat) tissue and skeletal muscle in the body. At the same time, it blocks the release of glucose from the liver. If the process of insulin secretion or action is damaged, as is the case in insulin resistance, there is a high risk that chronic metabolic disorders such as diabetes mellitus will develop.

Many studies suggest that lipid accumulation in tissues not suited for fat storage causes a cascade of pathogenic events which lead ultimately to insulin resistance.

Associate Professor Summers' team is investigating the molecular basis of one of these pathogenic events, termed lipotoxicity. Specifically, they are using in vitro and in vivo models to determine how the biosynthesis of metabolites of saturated fats known to accumulate in obese individuals called ceramides is regulated, and to find out how these ceramides act at a molecular level to alter insulin sensitivity, pancreatic ß-cell homeostasis, as well as general vascular function.

[1] WHO. Cardiovascular disease.

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Educators Collaborate on Curriculum

The educational curriculum for medical students at Duke University in the US and at Duke-NUS in Singapore is constantly being reviewed and updated as educators on both sides look for new ways to improve the overall learning experiences of their respective students.

Duke University, as the parent institution, initially took a leading role in the provision of content and form of a delivery of teaching at both its own campus as well as that of Duke-NUS. However, these days there is a lot more exchange of information between educators which is contributing to curriculum development at both sites.

An excellent example of this sharing of ideas is TeamLEAD (Learn, Engage, Apply, Develop), a team-based learning approach to graduate medical education developed at Duke-NUS which has proved a very successful part of the school's curriculum. At the behest of the Vice-Dean and Associate Vice-Dean for Education at Duke University School of Medicine, Dr. Edward Buckley and Dr. Colleen Grochowski, respectively, team-based learning based on the TeamLEAD model has been implemented in two undergraduate medical school courses at Duke University this year – 'Molecules and Cells' and 'Brain and Behavior'.

TeamLEAD session in progress at Duke-NUS.

"The bottom line is that we have seen the wisdom of the team-based learning [approach] and we are adapting it to the education here," said Professor Mariano A. Garcia-Blanco, Director of 'Molecules and Cells', Department of Molecular Genetics and Microbiology, Duke University. Such team-based learning techniques could revolutionize the face of medicine in coming years, with the prospect that patients may increasingly benefit from the combined knowledge of a "team" of health professionals, rather than just one individual doctor. "To me, that would be a breakthrough in terms of thinking about medicine."

Professor Garcia-Blanco has taught at both Duke University and Duke-NUS (where he is also a Principal Investigator within the Emerging Infectious Diseases Program). His exposure to the teaching methods used at the latter has placed him in good stead for bringing the TeamLEAD model to US classrooms. Last year, he became one of the first lecturers at the Durham campus to deliver a team-based learning exercise, based on the TeamLEAD model, to first-year Duke medical students. They received three sessions overall, within the first few weeks of the start of the first semester, he explained. "The overall consensus was positive," he said. "[The students] did very well. I don't believe that the only way you judge an education is whether the students are happy and write you nice reports. It's actually whether they get something out of it ... and I think they did. They wrote very interesting questions and were able to be creative about what they were thinking."


Professor Mariano Garcia-Blanco (standing right) with members of his Emerging Infectious Diseases Program team at Duke-NUS.


Duke-NUS' TeamLEAD room provides a conducive environment for team based learning.

There was an issue with holding these sessions in standard lecture theatres, said Professor Garcia-Blanco. However, Duke is planning to build a room that is suitable for team-based learning activities, he said, similar to the TeamLEAD room at Duke-NUS. "This whole concept of building a room that is accessible and optimized for team-based learning type activities is taking place. And that is an inspiration coming from Duke-NUS."

Professor Garcia-Blanco praised the process of communication between educators at Duke and Duke-NUS, making special mention of his dialogue with Professor Bob Kamei, Vice-Dean of Education at Duke-NUS. "It truly is affecting both institutions... and the effects are going in both directions. I think that is really very positive."

Elsewhere in Duke University, the TeamLEAD approach has also been implemented in the first-year 'Brain and Behavior' course led by the school's Associate Professor Leonard E. White, who is also the Director of Education for the Duke Institute for Brain Sciences.

"I can say with confidence that we made the right decision to accelerate our adoption of team-based learning," said Associate Professor White. 'Brain and Behavior' employed the TeamLEAD model throughout the course, advancing the implementation of team-based learning beyond what the students experienced in the fall. The effectiveness and success of the TeamLEAD approach within the 'Brain and Behavior' course at Durham "will be the object of intense analysis in the months ahead," he added. "Many students provided feedback along the way and all students will complete a course evaluation at [its] conclusion."

Associate Professor Leonard White (right) with his students at Duke Durham.

Communication and collaboration between Associate Professor White and the 'Brain and Behavior' team at Duke-NUS have been ongoing ever since he visited Duke-NUS in the middle of last year. It was during this visit that he learned the TeamLEAD approach.

Associate Professor Leonard White (center front) sits in for the TeamLEAD session at Duke-NUS.

"My visit to Duke-NUS was transformative", he said. "It brought real-life experience to the principles and methods of team-based learning that I had studied in advance of my visit... With additional consultation with the 'Brain and Behavior' team at Duke-NUS... it became clear to me how I could approach adoption of the TeamLEAD concept at Duke in Durham. I returned to the US energized for the challenges ahead and I have worked steadily toward the goal of implementing a team-based curriculum in January 2011, which we have now done."

He continues to consult with the 'Brain and Behavior' team. "In the future, we hope to share resources via other electronic means and seek ways to bring our respective learner groups together in real-time dialogue and collaboration."

Ultimately he agrees with Professor Garcia-Blanco's assessment that team-based learning has enormous potential to change the future of healthcare delivery for the best. And that Duke and Duke-NUS can be at the forefront of this change. "We have every opportunity to be the world's leader in the education of medical students and medical scientists (at least in the western hemisphere). Full adoption of the TeamLEAD approach across the basic science curriculum for medical students will be one major advance toward achieving that goal. As we move in that direction, we fully anticipate serving other institutions in the US and beyond who will want to learn from the success that you at Duke-NUS and now we at Duke (Durham) are experiencing in biomedical education."

"We are all growing together and maturing in our capacity to challenge one another to aspire to greater depths of knowledge and understanding, and greater heights of application and professionalism," concluded Associate Professor White. "It is an exciting journey, and it is especially satisfying to journey together. The future of healthcare is patient-centered (not physician centered) and collaborative (not hierarchical). The time is right to embrace an educational model that prepares future physicians and other members of the healthcare team for the world in which they must serve."

Geography is no barrier as our educators continue to collaborate to optimize that model.

Professor Mariano Garcia-Blanco

Professor Mariano Garcia-Blanco was recently elected to the Association of American Physicians (AAP), the honorific society of internal medicine and academic physician scientists in the US. Vital Science extends its congratulations to him for being bestowed with this great honor. It is certainly well deserved given the substantial contributions he has made to both basic science and biomedical research over the years.

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DUKE NUS GRADUATE MEDICAL SCHOOL SINGAPORE

VITAL SCIENCE

Mar 2011

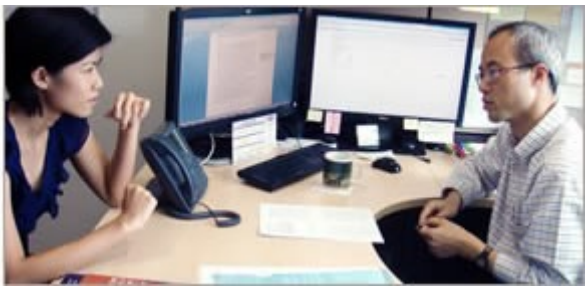
Introducing the Office of Clinical Sciences

The Office of Clinical Sciences (OCS) at Duke-NUS is a unique set-up in Singapore. It helps to train and develop those who are interested in doing clinical or patient-oriented research. The office's programs are targeted at third-year medical students (MS3) at Duke-NUS and clinicians from SingHealth institutions who are looking to become clinician-scientists or investigators (the Khoo Clinical Scholars or KCS Program).

MS3 students at Duke-NUS must undertake a research project, which can be patient-oriented or laboratory-based. Ultimately, students are expected to write up their results. They often submit their work for publication.

The OCS provides support to students doing patient-oriented research by providing each student with quantitative mentoring along with the approved disease expert mentor.

OCS holds weekly or biweekly interactive seminars during which the students present, discuss, and critique each others' project ideas, methodologies and analytical approaches. These seminars are attended by Dr. John Allen, Dr. Ben Haaland, Dr. John Rush, Prof. Sam Lim, Dr. Deidre De Silva and Ms. Gita Krishnaswamy.



Third-year Duke-NUS M.D. student Wong Keryi is doing clinical research under the mentorship of Dr. Young Kyung Do at the Health Services & Systems Research Program.

Recently, team-based learning experience has been added for all MS3 students to further develop quantitative competency and better understand the methodological and analytical elements of research studies.

A Khoo Clinical Scholars (KCS) Program in session.

The KCS Program is a separate initiative also run by OCS. This program is designed for clinicians (typically associate consultants or consultants) who wish to get involved in patient-oriented research.

A primary aim of this program is to produce and submit an articulate, high-impact research proposal to The National Medical Research Council (NMRC) or other bodies. Catering for between 6 to 12 trainees, the program involves a seminar approach. Participants learn to plan a research career and to define specific steps (and research projects) to achieve their longer term career goals. Participants share and critique each others' ideas. Quantitative and disease experts participate as mentors and collaborators.

Dr. John Rush, Vice-Dean of the Office of Clinical Sciences, Duke-NUS and CEO of Singapore Clinical Research Institute (SCRI) notes that from a career perspective, research-clinicians (medical doctors who provide clinical care to research participants), clinician-investigators (clinicians who spend less than 50 percent of their time conducting research) and clinician-scientists (clinicians who spend more than half of their time conducting research) collaborate to conduct patient-oriented research.

"The KCS program is aimed at clinician-investigators and clinician-scientists," said Dr. Rush. "We try to help them – develop the skills to obtain competitive independent research funding."

Singapore has plenty of opportunities for clinically-oriented and patient-oriented research, according to Dr. Rush. "The country has a very high quality medical care system. We're not dealing with massive amounts of malaria, malnutrition or HIV," he said. "You can access populations that are in a stable medical environment."

"In addition to the KCS, we are hoping to develop schemes to provide additional infrastructure and support for patient-oriented investigators," said Dr. Rush, not just for people at Duke-NUS, but for investigators at any of the "SingHealth" system institutions such as the NCC [National Cancer Centre], NHC [National Heart Centre], KK [Women's and Children's Hospital] The aim is to help develop the core support and processes [to] make their lives a little bit easier. That's our job. Our product is successful patient-oriented investigators."

Dr. John Rush, Vice-Dean, Office of Clinical Sciences, Duke-NUS.

The small size of the country and its population means that it is also not difficult to follow up people who have been involved in clinical studies. And electronic medical records which go back 15 years are also highly useful. However, challenges remain, said Dr. Rush, as the whole exercise of doing clinical research here in Singapore is relatively new when you compare it with other places around the world. “There are not a lot of people who have 25 plus years of experience in clinical research and in getting competitive funding... We need the career path. We need some senior mentors. We need linkages. We need greater investment of resources. We need to make it as easy for these doctors to do this kind of work as possible. That is what my office is trying to facilitate – the development of these people and their skills – to help them get things done.”

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Balancing School and Parenthood

Happy family- Naomi at three months old.

Tina's little angel Naomi turns one!

My daughter, my little angel

By: Tina Tan, Class of 2011

Nothing beats understanding the physiologic changes of pregnancy, as well as labor pains and delivery, than going through it yourself. I found out I was pregnant with Naomi during my fifth and final clinical clerkship which, coincidentally, happened to be Obstetrics & Gynecology, during my second year at school. And if you ever stumble with Developmental Assessment for a child, I guarantee that if you have one, you will ace that part of the Pediatrics exam.

Although her conception came as no surprise at the time, it is something that I would not have expected had I been asked in my first year of medical school. That being said, I would not exchange Naomi's existence for any of the sacrifices I may have made so far. I have been blessed with good home support, which has enabled me to juggle research with breastfeeding (whilst still in my third year) and, subsequently, my fourth year clerkships with parenting. I sometimes refer to my mother-in-law as an angel, for the amount of help and guidance she has given to me since the birth of my daughter.

Nevertheless, having to attain the magical balance between work and life hasn't always been easy. Once Naomi was born, I spent my days at home breastfeeding her while studying for my USMLE Step 1 exam. When I returned to my research work, I had to interrupt my experiments twice a day in order to express milk. This involved very careful planning to say the least. My fragile cells (and even more fragile immunocompromised mice) were not going to wait for me while I provided sustenance for my daughter!

During my return to the wards in the fourth year, Naomi was already eight-months old, and I had to deal with long days (sometimes nights) at the hospital. My iPhone's cache of photos provided the only link between me and my daughter while I was away from her, learning to be a doctor. Thank goodness for iPhones!

People around me have generally been supportive. When I first told my research mentor that I was expecting, he said, "Congratulations! You can share a bench with my post-doc, our other expectant mother!" My classmates were delighted at my "bravery", trying to juggle motherhood and medical school. And my physicians' teachers would often stare at me in wonder whenever I mentioned my little kid at home.

I don't think that I am being brave. I am just doing what many women of my age ought to be doing. And I am not worried that it will hinder my career. I know of many women physicians who have struggled and ultimately come out triumphant in this battle to attain "work-life balance". All it takes is a bit of faith, optimism and an "angel" at home!

My son, my sunshine

By: Galih Kunarso, Class of 2013

Family time, bonding moments.

It was a Friday afternoon, at the end of just my second week at medical school when my wife Fitria called to tell me she was in labor. Coincidentally, I was just mentioning to my College Masters and classmates that I might need to take off at any moment to be by my wife's side. So I did exactly that and on Saturday, August 8, 2009, my baby son Hanif was born. That was when my medical school life really started.

To be honest, I think that being in medical school in the capacity of a parent compared to a typical student is tough. Your time at home is not just for yourself or for studying, but largely devoted to family. I am currently doing my clerkship year in the hospital so the hours can be very long and sometimes even stretching into the weekends. Just like in my first year, I have to wake up early in the morning to do some studying before setting off, often when my wife and son are still fast asleep. In the evenings I usually reach home between 7 to 8 pm, and this is my playtime with Hanif before my wife and I have our dinner. When Hanif is finally off to bed, I continue studying till my eyes can no longer stay open, which is not long after that!

The smile that greets me everyday.

On weekends, I make it a point to have at least half a day on Saturday or Sunday, and sometimes more, for family time - either at the beach, shopping or meeting up with friends. The rest of my time will be mostly for studying, but a big proportion is also just playing in the house with my wife and son. You can't just say no too often to your family, and books can sometimes get boring.

There are of course some low moments when you realize that you still have "tons" of material to cover, and it is already Sunday night, and you are tired after spending the whole day out with the family. However, when I reach home and see the face of my smiling son greeting me, it brightens my day instantly. Coupled with the fun times and cherished moments gained when the whole family spends together on weekends, I would say that I definitely get a lot more highs than lows by being a parent in medical school.

Having a child really changes your perspective and you want to do your best for your family. It is really a major motivation for anyone to excel as you realize that you are doing all of this not just for yourself, but mainly for them. No matter how hard things can be at times, I cannot imagine doing it any other way. I would not want to change my current situation for the world.

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Duke-NUS Research in the News

- Health Services helping to assess public health initiatives
- Cancer scientists develop genetic roadmap for gastric cancer
- Neuroscientists featured on Channel News Asia TV series
- Neuroscientists study fish brains to unravel secrets of anxiety
- Duke-NUS and Inviragen partner up for vaccines research
- Many countries cannot afford to stockpile anti-viral agents

Health Services helping to assess public health initiatives

Associate Professor Eric Finklestein.

Fast food menu labeling fails to change consumer behavior

Health Services researchers at Duke-NUS together with public health officials in the US have found that mandatory labeling of nutrition facts on menus had no effect on consumer behavior at Taco Time fast food restaurant locations in Washington State during the first year the legislation went into effect.

The study, published in a recent issue of the *American Journal of Preventive Medicine*, found that consumer food purchasing behavior at Taco Time locations where the menus were labeled did not differ from Taco Time locations where menu boards remained unchanged. Total numbers of sales and average calories per transaction were similar between the two types of location.

"Given the results of prior studies, we had expected the results to be small, but we were surprised that we could not detect even the slightest hint of changes in purchasing behavior as a result of the legislation," said lead study author
Associate Professor Eric Finkelstein, Deputy Director of Health Services at Duke-NUS. "The results suggest that mandatory menu labeling, unless combined with other interventions, may be unlikely to significantly influence the obesity epidemic."

US federal authorities are currently considering legislation for nation-wide mandatory menu labeling, which would require restaurants with 20 or more locations to disclose calories information to consumers at point of purchase.

Soft drink tax has limited effect on weight loss

Higher taxes on soft drinks and other sweetened beverages (SSBs), while generating money for the government coffers, would lead to minimal weight loss among most people, with no effect on weight among those in the highest and lowest income groups, according to Health Services research from Duke-NUS.

The study, which recently appeared in the *Archives of Internal Medicine*, showed that the effects of higher taxes on total calories and weight reduction of consumers would be relatively small. The researchers estimated that a tax that raises SSB prices by 20 percent would achieve a daily average reduction of 6.9 calories. Over one year, this would translate to about 0.7 pounds per household member. A 40 percent tax would reduce daily calories by 12.5 calories, producing a mean annual weight loss of up to 1.3 pounds per person. Of note, the researchers found that those who lost weight were almost always from middle income groups.

"Although small, given the rising trend in obesity rates, especially among youth, any strategy that shows even modest weight loss should be considered," said lead researcher Associate Professor Finkelstein.

US health policy makers are considering additional taxes on SSBs to improve health and raise revenue to offset budget deficits. Evidence suggests that over-consumption of sugary drinks leads to weight gain.

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Cancer scientists develop genetic roadmap for gastric cancer

Associate Professor Patrick Tan.

A team of Singapore scientists from different institutions, including Duke-NUS, has created a genetic roadmap of gastric cancer, which they hope will help scientists develop customized medicines for individual patients.

The results of this 2-year study, which was jointly led by Duke-NUS faculty, Associate Professor Patrick Tan, Associate Professor Steve Rozen and Professor Teh Bin Tean, were recently published in the journal *Cancer Research*. Associate Professor Tan also holds appointments with the Cancer Science Institute (CSI) Singapore and the Genome Institute of Singapore. Professor Teh is with the National Cancer Centre Singapore (NCCS).

The study provides proof that a deep sequencing technology is suitable for analyzing patients with gastric cancer, but may also be applicable to a variety of cancers. Ultimately, it is anticipated that the technology will enable oncologists to prescribe individualized medications to each cancer patient.

"We envisage an age where every single cancer patient will have their individual genomes analysed using these types of deep sequencing approaches," said Associate Professor Patrick Tan. "And based on the unique repertoire of mutations uncovered in that patient, we can then begin to devise customised treatments and diagnostics, from one-size-fits-all to custom tailoring."

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Neuroscientists featured on Channel News Asia TV series

Professor Michael Chee.

Assistant Professor Joshua Gooley.

Two scientists from the Program in Neuroscience and Behavioral Disorders at Duke-NUS recently appeared on three episodes of *Chasing Sleep*, a series of public service and education programs filmed in reality documentary style which ran on Channel News Asia from December 1, 2010 to January 5, 2011.

Principal Investigators Professor Michael Chee and Assistant Professor Joshua Gooley joined popular local TV actor and host Adrian Pang in this sleep 'expose'.

During the third episode of the program, Adrian Pang volunteered to stay awake for more than 30 consecutive hours in the Duke-NUS Chronobiology and Sleep Laboratory. This was to demonstrate to viewers the impact of sleep deprivation on cognitive abilities, said Assistant Professor Gooley. "After Adrian had been awake for 24 hours, his performance was markedly impaired, his reaction time was slower, his addition skills declined, his mood worsened, and, of course, he became very sleepy. These responses are very typical of volunteers who take part in our sleep deprivation studies."

Assistant Professor Gooley revealed that his lab is also currently attempting to identify physiologic markers which can predict when a person is at risk of falling asleep, adding that: "Such biomarkers could be incorporated into safety devices to warn drowsy motorists when they are unfit to drive."

Professor Chee's lab is probing two areas in the sleep deprivation arena: (1) Information processing capacity limits in short-term total sleep deprivation – Danyang Kong recently discovered that when a sleep-deprived person has to focus on a difficult central task, there is less processing resource to deal with peripheral information; and (2) Changes in decision making – Vinod Venkatraman, a lab alum collaborating from Duke found that in multiple outcome gambles, sleep-deprived persons tended to focus on a limited strategy related to gain maximization. In another study Camilo Libedinsky found that the valuation of social but not monetary rewards seemed to be altered by sleep deprivation.

"Many persons exchange sleep for sustained wakefulness desiring to improve their lives," said Professor Chee. "Our collective research shows this comes with trade-offs that must be considered."

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Neuroscientists study fish brains to unravel secrets of anxiety

A multi-institutional team of scientists in Singapore led by Assistant Professor Suresh Jesuthasan from the Duke-NUS/A*STAR Neuroscience Research Partnership (NRP) has made a breakthrough with respect to how anxiety is regulated in the vertebrate brain.

Their research, which was recently published in the journal Current Biology, has shown that disrupting a specific set of neurons in a part of the brain called the habenula prevents normal response to stressful situations.

“Our work deals with fundamental aspects of human experience – stress and anxiety,” said Assistant Professor Jesuthasan. “We think that the habenula is associated with the assessment of whether a stress has been overcome. Our study provides one possible explanation as to why the need to control the environment is such a critical component of human behavior – the feeling of control enables organisms to deal with stress.”

“It may seem strange to be exploring anxiety in a tiny fish, but the advantages of animal models like this for understanding complex human disorders may well be our best bet,” said Professor Dale Purves, Program Director of the Neurosciences and Behavioral Disorders Program at Duke-NUS and Executive Director of the Duke-NUS/A*STAR NRP. “This important work by Assistant Professor Jesuthasan and his colleagues is a first rate example of this.”

Assistant Professor Suresh Jesuthasan.

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Duke-NUS and Inviragen partner up for vaccines research

Professor Duane Gubler.

Duke-NUS and Inviragen, a US-based biotech company that specializes in developing vaccines against infectious diseases, have signed a memorandum of understanding (MOU) to establish a partnership between the two organizations.

The aim of this collaborative program is to better understand how emerging infectious disease are transmitted and to progress the development of vaccines against infectious diseases such as dengue fever, Chikungunya, and hand, foot and mouth disease.

“Scientists in the Duke-NUS Emerging Infectious Diseases Program are conducting world-class research into viral pathogenesis and host immunology, and are pioneering methods to improve detection of emerging viral infections,” said Dr. Joseph Santangelo, Inviragen's Chief Operating Officer. “By working with the researchers at Duke-NUS, we hope to improve public health in Singapore and worldwide by preventing the spread of viral diseases with safe and effective vaccines.”

Professor Patrick Casey, Senior Vice Dean for Research at Duke-NUS and Dr. Dan Stinchcomb, Chief Executive Officer of Inviragen will co-chair the collaboration’s management committee, which will oversee activities such as clinical trials in Singapore.

“Inviragen's proven track record of translating vaccine research from the bench into the clinic was a key factor when considering a collaboration, and one that we believe complements our strengths at Duke-NUS,” said Professor Patrick Casey.

“We look forward to combining our expertise to assist in the testing of Inviragen’s vaccine products and to develop future products arising from infectious disease research at Duke-NUS,” added Professor Duane Gubler, Director of the school’s Program in Emerging Infectious Diseases.

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Many countries cannot afford to stockpile anti-viral agents

Stockpiling of antiviral agents in preparation for pandemics would not be cost-effective for many countries worldwide comprising around two-thirds of the world's population.

This was a key finding by researchers at the National University of Singapore, Duke-NUS Graduate Medical School (Professor David Matchar and Dr. James Thompson, Health Services & Systems Research Program), Duke University Medical Center in the US, and other institutions in Singapore.

Using a computer model, the researchers showed that a stockpile would help to reduce both mortality and economic impacts in a large number of countries tested. However, current prices for buying and maintaining antivirals mean that the 'ideal stockpile size' would be too expensive for many countries (defined as not meeting a cost effectiveness target set by the World Health Organization of three times the per capita gross national income).

Professor David Matchar.

The researchers argue that from a global perspective it makes good clinical, ethical and economic sense for all countries, including resource-limited countries, to be able to stockpile antiviral medications. The introduction of lower cost generic antivirals could play an important role in changing the 'playing field' they suggest, helping to make stockpiling an option for countries with large populations such as China, India and Indonesia.

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DUKE NUS GRADUATE MEDICAL SCHOOL SINGAPORE

VITAL SCIENCE

Mar 2011

Singapore's DPM Visits Duke-NUS

Deputy Prime Minister (DPM) Mr. Teo Chee Hean paid a special visit to Duke-NUS Graduate Medical School on January 7, 2011. Following a warm welcome by key representatives from Duke-NUS, including the school's governing board chairman, Mr. Tony Chew, DPM Teo was given an overview of the school's key research programs, its achievements, its various local and international collaborations, and its unique teaching education methodology – TeamLEAD. He was then given a tour of the campus, research laboratories and the educational facilities.

DPM Teo with Professor Duane Gubler in the Emerging Infectious Diseases (EID) laboratory. Professor Gubler is the Director for the EID Program.

DPM Teo with third-year M.D. student Lim Jing Wei and Dr. Sandy Cook (Curriculum Development) in the TeamLEAD room.

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DUKE NUS GRADUATE MEDICAL SCHOOL SINGAPORE

VITAL SCIENCE

Mar 2011

Flipping Pancakes for a Worthy Cause

December 3, 2010 - Playing pancake chefs once again for the annual Dean's pancake breakfast, Professor Bob Kamei, Dr. Sandy Cook and Dr. Craig Stenberg from the Office of Education whipped up a 'mean' pancake spread. Meanwhile, their colleagues got other breakfast items on the menu such as fried eggs and grilled sausages ready for the hungry crowd.

"The objective of the Annual Dean's Pancake Breakfast was to support the students' community service projects. It certainly was a success judging from the big turnout from staff and students alike, and funds raised even surpassed the previous year. Our heartfelt appreciation to all for supporting the students' meaningful contributions to the community," said Dr. Craig Stenberg, Associate Dean, Student Affairs & Admissions.

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DUKE NUS GRADUATE MEDICAL SCHOOL SINGAPORE

VITAL SCIENCE

Mar 2011

Young Neuroscientist from A*STAR-Duke-NUS Research Partnership Wins Prestigious Prize

December 3, 2010 - Dr. Melissa Fullwood, a Lee Kuan Yew Post-Doctoral Fellow in Duke-NUS under the A*STAR-Duke-NUS Neuroscience Research Partnership, has become the first Singaporean to win one of four Regional General Electric (GE) & Science Prizes for Young Life Scientists for her original essay, “Genome-Wide Chromatin Loops Regulate Transcription”.[1]

Dr. Melissa Fullwood

This is a huge honor for Dr. Fullwood, who is now one of only 80 promising young scientists in the field of molecular biology worldwide who have received the Prize since it was first awarded in 1995.

Her winning essay, which addresses the unanswered question of why there are so few genes in the genome (which has abundant “non-gene” regions not coding for any specific proteins), is based on her PhD project at the NUS Graduate School for Integrative Sciences and Engineering and A*STAR’s Genome Institute of Singapore (GIS).

Dr. Fullwood was instrumental in developing a new genomics technology to study how DNA interactions influence the development of cancer. Her findings demonstrated the existence of a complex network of chromatin interactions between genes and non-coding regions of the genome, and that chromatin interactions could be the cause of genetic deregulations and diseases such as cancer. This major breakthrough in cancer research received funding from the National Institutes of Health in the US and was published in the premier scientific journal *Nature*.[2]

“I'm delighted to have made a key discovery about the genome that will help many others in genomics research,” said Dr. Fullwood. “I hope to continue unraveling the complexities of gene regulation, and to bring about further breakthroughs in our understanding of diseases and how they may be treated.”

Duke-NUS congratulates Dr. Fullwood for winning this prestigious award.

[1] Read Dr. Fullwood’s article through December 2010 at http://www.sciencemag.org/

[2] Fullwood, M.J., et al. The Oestrogen Receptor α-mediated Human Chromatin Interactome,Nature. 2009 (first author publication; journal impact factor: 31.43

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The Tan Ean Kiam Foundation Bursary

The Tan Ean Kiam Foundation, a philanthropic organization in Singapore dedicated to helping the poor, needy and under-privileged, has generously gifted Duke-NUS a total of S$150,000 towards a Doctor of Medicine (M.D.) bursary.

The Tan Ean Kiam Foundation Bursary is a non-endowed needs-based bursary which will benefit deserving Duke-NUS students who are Singaporean citizens and permanent residents from low-income families with demonstrated financial needs. The Foundation's bursary will be matched by an additional S$150,000 grant from the Singapore Government. The value of each bursary is dependent on each individual student's circumstances and will cover tuition fees, other educational costs or the student's living expenses.

"Duke-NUS is grateful for the generosity of the Tan Ean Kiam Foundation," said a school spokesperson. "Medical education can be financially challenging. It is thus heart-warming to have the support of donors such as the Tan Ean Kiam Foundation that can make a difference for deserving medical students."

The former Chairman of the Tan Ean Kiam Foundation, the late Mr Tan Tock San, son of its founder, Mr Tan Ean Kiam, had continued his father's philanthropic model of contributing to the society through donations to charities, especially those involved in education, health and heritage preservation. The Foundation's support in the form of donations has continued to benefit schools as well as many needy charities and deserving groups.

The late founder Mr Tan Ean Kiam (1881-1943)

Mr Tan Keng Soon, current Chairman of the Tan Ean Kiam Foundation, and grandson of its founder, says: "The Tan Ean Kiam Foundation Bursary gift is a tribute to my grandfather. He has always been deeply passionate about helping the needy and society in general and this bursary for Duke-NUS is a way of honouring our Founder as we continue his work. We have full confidence in the capability of the Duke-NUS medical students as they pursue their medical training and look forward to their contributions and service to the community."

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DUKE NUS GRADUATE MEDICAL SCHOOL SINGAPORE

VITAL SCIENCE

Mar 2011

Duke-NUS Scores Double Win for Fire and Safety

Duke-NUS has won silver and gold for the 2011 Annual Safety and Health Performance Award (ASHPA) and Fire Safety award, respectively. The awards were presented at the NUS Excellence Day on February 24, 2011 **(ASHPA)** and at the Fire Safety Fusion on March 1, 2011 **(Fire Safety)**. These awards would not have been achieved without the strong effort of the committee members as well as the support and commitment of the senior management. The school will continue to strive for new heights of safety excellence at the workplace as it works even closer with the NUS Office of Safety, Health and Environment (OSHE).

Table top exercise for emergency evacuation

"We have won the ASHPA award this year, but it's not about winning – it's about being safe. Together we can do it and we strive to do it even better for the next ASHPA review"

Dr. Viji Vijayan, (Chair, Duke-NUS Safety Committee)

Exercise Red Dawn with the Singapore Civil Defence Force

"We take the fire safety issue very seriously and practised to minimize hazards. Subsequently we won the gold Fire Safety award this year. Let's keep at it! We look forward to having the continued support and participation of our Duke-NUS colleagues in the upcoming Fire Safety exercises and drills!"

Ms. Sandrine Goh (Duke-NUS Fire Safety Coordinator)

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DUKE NUS GRADUATE MEDICAL SCHOOL SINGAPORE

VITAL SCIENCE

Mar 2011

Medical Students Volunteer in Indonesia
By: Andrew Green, Class of 2012

Andrew Green, Class of 2012, reports on a recent trip by 17 Duke-NUS medical students who provided health screening to children on the Indonesian island of Batam.

The memories I have of that brief but enriching experience from December 4-5, 2010 hold a special place in my heart. Let's just say it was the 'chicken soup' that my soul needed.

Together with doctors from Singapore's KK Women's and Children's Hospital and local medical staff from Batam, we screened no less than 1,800 children under the age of 5. For the most part, we were dealing with healthy children who just required food supplements. However, we also encountered many uncommon and debilitating conditions rarely seen outside our textbooks. As educational as these cases were, they were equally humbling as we realize our limitations now and even later on as we become healers in the art of medicine.

If there was a skill that dramatically improved during this Batam trip, it would be our communication. It was amazing to see how people from different countries and who speak different languages were able to communicate well and work together during this screening. We made many friends amongst the hospital staff and members of the Red Cross organization.

In the words of Mahatma Gandhi: "The best way to find yourself is to lose yourself in the service of others."

We came to Batam as 17 medical students. We sailed back as 17 better medical students.

We would like to thank Mr. Kris Wiluan from the Citramas Foundation for inviting us, for allowing us to be involved in the health screening program and for taking good care of us while we were there. Our thanks also to Ms. Darsono and the Red Cross Foundation of Batam and the hospital staff without whose help we would not have been able to do such a good job.

Special thanks from trip sponsor - the Citramas Foundation

In just 2 days, we screened the health of a total of 1,800 children, from the three villages in Kabil and Nongsa on Batam island. On behalf of Yayasan Citramas and Ibu Soedarsono, I would like to extend our deepest appreciation for all your relentless hard work and time rendered. The children and their families will always remember you for your kindness and compassion. Thank you for making this event a successful one - we couldn't have done it without you.

Our gratitude also goes to the 17 Duke-NUS medical students for their time and commitment. Special thanks to the leaders (Kheng Choon, Andrew, Eunizar and Adrianus) for your meticulous attention and initiative. I am most certainly impressed and assured that the future of Singapore medicine is in good hands. I hope these young doctors will always continue to reach out to the less fortunate in the course of their career path.

With warmest regards, Angelic Cheah
On behalf of Yayasan Citramas

Assigning duties.

Traditional weighing scale for babies.

Morning briefing by Dr. Darryl Lim.

Entertaining the children – animal mascots by the Citramas Foundation.

Giving out food packages.

Planning the layout of the health screening venue.

"And your height is…"

Professor Bob Kamei, Vice Dean of Education, Duke-NUS and the second year Duke-NUS M.D. students running the clinic.

Dangdut dancing - cultural exchange in progress.

Duke-NUS + Red Cross: after two long days!

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