


## First Graduation Celebration

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## Researchers Collaborate

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## And The Award Goes to ...

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## Soo Khee Chee Awarded Prestigious Benjamin Sheares Professorship

Duke-NUS has awarded the newly endowed Benjamin Sheares Professorship in Academic Medicine to Prof. Soo Khee Chee, Vice Dean for Clinical and Faculty Affairs at Duke-NUS, founding Director of the National Cancer Centre Singapore, and Deputy CEO of SingHealth, for his outstanding contributions to research, scholarship and clinical service in Singapore.

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## Medical Memories and Journeying Forth

Our first day of classes doesn't seem that long ago. All of us vividly remember the welcome ceremony held in the lecture room at the interim Bukit Merah campus in 2007.

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- DPM of Kazakhstan visits Duke-NUS
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- Research News

### *Facing the epidemic: scientists collaborate*

Leading researchers in cardiovascular and metabolic disorders from Duke University, Duke-NUS and major research institutions in Singapore recently gathered for a symposium aimed at developing partnerships and collaborations to propel scientific progress in this field.

VIEW SLIDESHOW

### *HSSR hosts workshop and symposium*

The Health Services and Systems Research (HSSR) Program at Duke-NUS recently held two very well organized events which attracted a large number of attendees and participants.

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.

*Looking forward to the future! This issue's banner shows four of our fabulous students from the Duke-NUS' pioneer class (L-R: Bianca Chan, Dixon Grant, Rena Dharmawan and Daniel Yong). Vital Science congratulates the Class of 2011. We are extremely proud to have supported you on your medical journey and wish you the very best as you continue on your way to become clinicians of distinction!*

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DUKE NUS GRADUATE MEDICAL SCHOOL SINGAPORE

VITAL SCIENCE

Jun 2011

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The first students to complete Duke-NUS' Doctor of Medicine (M.D.) degree program celebrated their graduation in style recently in front of a full house of well-wishers that included family members, friends, faculty, government representatives, special guests from Singapore and abroad and the media.

The Duke-NUS graduands, who will receive their M.D. degree scrolls during the National University of Singapore (NUS) Main Commencement Ceremony on July 4, 2011, were praised by several invited dignitaries from Singapore and Duke University in the US.

Dr. Lewis T. "Rusty" Williams, Duke Board of Trustees, delivered an inspiring and at times entertaining speech, applauding the doctors-to-be, as well as those behind the development of Duke-NUS Graduate Medical School.

"I looked up the definition of pioneer in the Webster's unabridged dictionary," said Dr. Williams. "Pioneer: a soldier employed to dig trenches, form roads and make bridges.' – Have you been doing that?"

"Maybe the second definition is more appropriate: one who goes before, as into the wilderness preparing the way for others to follow. In this sense you are indeed pioneers.… My hat is off to the visionaries in the Singapore government, the leadership of Singapore academic and medical institutions, and to the Duke administration and faculty who have helped during these formative years of the school... Your efforts have created an inspiring opportunity for students, for Singapore and for the advancement of medicine."

The medical school curriculum at Duke-NUS has indeed been described as ground-breaking – it features a range of innovative educational components and initiatives adapted from Duke for the local context. Prof. Ranga Krishnan, Dean of Duke-NUS, said he was extremely proud to have produced the first medical doctors trained on this curriculum. "This has proven to be a very successful model of education, given our students' excellent performance on major academic milestones, their clinical performance in the wards and feedback from patients."

Medical students at Duke-NUS are expected to show a rich multi-dimensional experience that goes beyond academic achievement alone. "We are not looking for just the 'straight A' student," explained Prof. Bob Kamei, Vice Dean of Education at Duke-NUS.

"Problem-solving in the clinical wards requires more than following best practices by memorizing facts. It involves creativity, good critical thinking skills and a keen perception. Our students must also have their hearts in the right place. They should have a passion for humanity and medicine and an uncommon dedication towards serving patients."

One of the students, Low Ying Hui recently had the privilege of joining Duke University School of Medicine graduates on a 'graduation walk' held at their campus in Durham, North Carolina in mid-May, prior to returning for the Singapore graduation celebration.

Duke-NUS M.D. student Low Ying Hui with Prof. Bob Kamei (left), Vice Dean of Education,Duke-NUS and Dr. Victor Dzau (right), Chancellor for Health Affairs, Duke University; President & CEO, Duke University Health System.

Ying Hui spent her third year at Duke University doing research in a sleep laboratory. Speaking to *Vital Science*, she said that it was an immense relief to be finally graduating on July 4. "The last four years have been a long journey, full of ups and downs, filled with both the excitement and uncertainty of being the first class in a new school. Our class shares a special bond, not just because of the small class size but also because we've shared some unforgettable experiences together in medical school as the first graduating class. The graduation celebration [has] brought us together as medical students for the last time and closed this chapter of our journey… I think we will all look back on this day with fondness and pride."

## Snapshots from the Duke-NUS Graduation Celebration

Duke-NUS graduands on their procession from campus (left) and upon entering the celebration venue in the Ministry of Health auditorium with the rest of the key faculty and VIPs (right).


Master of Ceremony Prof. Bob Kamei, Vice Dean of Education, Duke-NUS (left) addresses the audience and the Class of 2011 graduands


Dean of Duke-NUS, Prof. Ranga Krishnan congratulates the graduands (left) and Mr. Tony Chew, Duke-NUS Governing Board Chairman, presents a token of appreciation to Guest-of-Honour Dr. Ng Eng Hen, Singapore's Minister for Defence (right).


Graduate ceremonies: Prof. Lim Shih Hui and A/Prof. Koo Wen Hsin perform the hooding of graduand Ee Tat Xin (left) and Tan Tze Chin poses for a photo after receiving her scroll from Minister Dr. Ng Eng Hen and Prof. Ranga Krishnan (right).


Graduand Lim Kheng Choon makes a speech on behalf of the graduating class (left) and, on another occasion, the graduating class and other attendee clinicians recite the Hippocratic Oath.

Duke-NUS Class of 2011 graduating medical students with key members of the school's faculty and management and Guest-of-Honor Dr. Ng Eng Hen, Singapore's Minister for Defence.


Tina Tan celebrates with her daughter (left), as do fellow graduands married couple Daniel and Rena (right).

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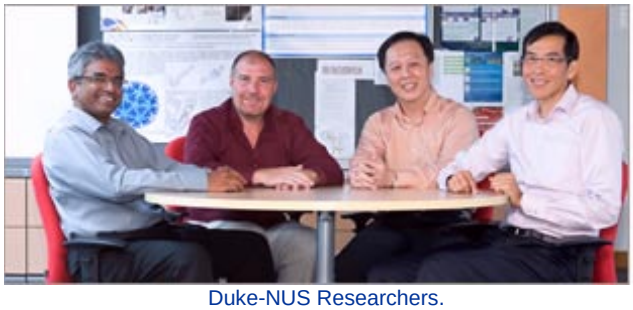
## Researchers Collaborate



Duke-NUS Researchers.

Duke's 'Collaborative Research Program' was initiated in 2010 to encourage and fund collaborations between researchers based in Duke-NUS in Singapore and Duke University in Durham, North Carolina, US. To date, the program has proven to be a huge success.

*Vital Science* spoke to the lead Duke-NUS collaborators of four such tie-ups:

### Collaboration 1. Parkinson's disease and the role of neuronal mitochondria

A/Prof. Lim Kah Leong and his team from the Neuroscience and Behavioral Disorders Research Program at Duke-NUS are collaborating with Duke-University Principal Investigator A/Prof. Tso-Pang Yao from the Department of Pharmacology and Cancer Biology on a project looking into what causes mitochondrial dysfunction in the neuronal cells of the Parkinson's disease brain.

Mitochondrial dysfunction has long been recognized as a key feature of Parkinson's disease. However, less is understood about how aberrations in neuronal mitochondria occur in this disease. Interestingly, recent studies (including one published by the team in the Journal of Cell Biology) have identified Parkin, whose mutations cause familial forms of Parkinsonism, as a key regulator of neuronal mitochondrial quality control.

"Our collaborative work has thus far shed significant insights into how disease-causing mutations in Parkin impair the clearance of damaged mitochondria," said A/Prof. Lim. "Through a better understanding of the mechanism underlying Parkin-mediated mitochondrial [quality control], we hope to develop compounds that could help maintain neuronal mitochondrial homeostasis and thereby mitigate disease pathogenesis."

Prior to their collaboration, both groups were previously involved in work that was related to this area of research. "Given the convergence of our data and our respective affiliations to Duke University and Duke-NUS, it was natural that we gravitated towards each other," said A/Prof. Lim.

A/Prof. Lim Kah Leong.

### Collaboration 2. Dengue and yellow fever: Novel targets for drug development

A/Prof. Subhash Vasudevan.

The worldwide prevalence of dengue fever has increased dramatically over the past 50 years – it is now considered to be endemic in more than a 100 countries with around 50 million annual cases of dengue fever, of which half a million show serious life-threatening manifestations of the disease.

A/Prof. Subhash Vasudevan's team from the Emerging Infectious Disease Research Program at Duke-NUS is collaborating with Duke University Co-Principal Investigators A/Prof. Timothy A.J. Haystead from the Department of Pharmacology and Cancer Biology and Prof. Mariano A. Garcia-Blanco, Department of Molecular Genetics and Microbiology on a project looking to validate potential drug development targets for dengue fever and yellow fever.

"There are at present no vaccines or antiviral drugs that can be used to prevent or treat dengue fever," said A/Prof. Vasudevan. "[The] statistics call for urgent clinical intervention and we hope that some of the compounds that we find can be developed into safe medicines that can be used to treat patients."

This collaborative project is a "purinome mining" approach to drug target discovery, said A/Prof. Vasuvedan. "[This method] opens up an entirely new discovery pathway that can be used to screen for compounds that inhibit dengue virus replication," he added.

### Collaboration 3. How sleep deprivation affects risk/reward decision making

Prof. Michael Chee and his team from the Neuroscience and Behavioral Disorders Research Program at Duke-NUS are collaborating with Duke University Co-Principal Investigators A/Prof. Scott Huettel, Center for Cognitive Neuroscience, and Prof. Michael Platt from the Center for Neuroeconomic Studies, on a project looking at how sleep deprivation alters brain mechanisms that support reward evaluation and decision making.

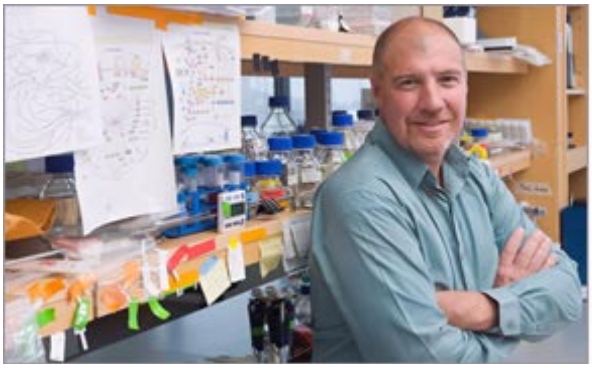
A study the team published earlier this year in the Journal of Neuroscience showed that gain-seeking behavior increased while loss-averse behavior decreased when healthy volunteers who were sleep deprived for one night performed economic decision making tasks the following morning. Importantly, these changes in decision making were independent of the more general effects of sleep deprivation on attention. Overall, the study suggested that those who are sleep deprived are more likely to make 'risky' decisions based on too much optimism.

Taken together with accumulating evidence that long working hours are associated with an increased number of accidents in certain working environments, Prof. Chee said: "It's critical that society as a whole grapples with the data generated about the detrimental effects of sleep deprivation and consider whether to continue doing things the old way."

The researchers in this collaboration continue to explore the various ways in which sleep deprivation can influence other forms of decision making.

Prof. Michael Chee.

### Collaboration 4. How weight loss improves insulin sensitivity: Biochemical mechanisms



A/Prof. Scott Summers.

Expanded fat mass induces insulin resistance, a condition that predisposes individuals to diabetes and heart disease. A/Prof. Scott Summers' team from the Cardiovascular and Metabolic Disorders Research Program at Duke-NUS is collaborating with Duke University Co-Principal Investigators Prof. Christopher B. Newgard and A/Prof. Deborah Muoio of the Sarah W. Stedman Nutrition and Metabolism Center, to investigate the biochemical mechanisms of improved insulin sensitivity when people lose weight.

"We will conduct broad scale metabolomic profiling in order to identify metabolites that decrease during weight loss and which of these correlate with the associated improvement in insulin sensitivity," said A/Prof. Summers. "This will provide new insight into how weight reduction has such beneficial consequences."As part of the investigations, the team is comparing the effectiveness of various dietary interventions (e.g. low calorie, low carbohydrate) in obese rats in order to determine which protocols can differentially reduce specific metabolites. Subsequent interventional studies will then be conducted in order to identify new dietary or pharmacological strategies for inducing weight loss and improving insulin sensitivity.

"The work will identify biomarkers that predict insulin resistance, and will provide new mechanistic insight into the pathogenesis of diabetes and heart disease," said A/Prof. Summers. "This information could generate new therapeutic approaches for warding off obesity and its complications."

### Symposium to foster collaborations

A joint Duke University and Duke-NUS symposium on translational medicine covering a broad range of therapeutic areas is being planned for October 10-12, 2011, to be held at Duke-NUS. Co-organizer Dr. Krishna Udayakumar, Director of Duke Medicine Global and Assistant Professor of Global Health and Medicine, Duke University, Durham, US, as well as Assistant Professor at Duke-NUS, explained that this symposium will "highlight some of the excellent work that is already ongoing, establish new collaborations, and move toward developing a broader portfolio of translational and clinical research that can have both clinical and economic impact." One of the key objectives is to build relationships in ways that lead to specific collaborations, he added. "We are hopeful that the discussions around collaborations that will come out of this symposium, as they did with the other two symposia, will be a platform to advance the collaborative research projects to the next stage."

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## And The Award Goes to ...

Graduating students from Duke-NUS' pioneer Class of 2011 and members of the school's faculty were honored for their tremendous achievements over the past four years at a special awards dinner on May 29. It was an evening to remember. Cheered on by junior medical-students, teaching staff and management, it was a proud occasion and a delightful way for the school to reflect upon and celebrate its successes. See here for a full listing of the awards and winners.

*Vital Science* spoke to some of the winners to find out more about their awards and how it feels to be recognized in this way.

### Splendid Students

Ee Tat Xin (2nd from right) with fellow classmates.

Graduating student **Ee Tat Xin** won the Humanism Award as well as the SingHealth Graduation Award (Book Prize in Obstetrics and Gynecology).

The Humanism Award, which includes a cash prize of S$1,000, is awarded to a graduating student who best demonstrates a variety of core humanistic values – integrity, excellence, compassion, altruism, respect, empathy, and service – in the practice of medicine.

Speaking afterwards, Tat Xin said he thought that any other one of his classmates could deservedly have won this award. "[For me personally, it] is further encouragement that I am heading in the right direction towards developing effective relationships with my patients." Tat Xin also acknowledged his mentors who helped to shape and define his perspective towards patient care during the past four years.

Karrie Ko (extreme left) with fellow classmates.

Fellow graduate **Karrie Ko**, a Shaw Scholarship holder, was one of the night's big winners, scooping several awards. Most significantly, Karrie was the top overall graduating student for which she was awarded the SingHealth Gold Medal Top Student Award and a cash prize of S$3,000. In addition, she took home a SingHealth Graduation Award, the Book Prize in Neurology and the SMA-Lee Foundation Award for Outstanding Teamsmanship.

Karrie was one of five from her class who won a Teammanship award for demonstrating exemplary team values. She commented after the awards dinner, "it is humbling to receive the Teamsmanship award. I appreciate the positive reinforcement that this award has given me." The past year had been an arduous one, she added. "I have certainly emerged stronger [and] feel more ready than ever to take up challenges to come… I want to thank every one of my fellow colleagues and mentors for their guidance and inspiration in the past four years [and] my husband Larry for being so supportive and understanding."

Also worthy of a mention is graduating student **Dixon Grant** who won the Duke-NUS Achievement Prize for Basic Sciences. This newly endowed award, which includes a S1,000 cash prize donated by the Duke-NUS Office of Education, is granted to the student who completed the most outstanding third-year research thesis in Basic Sciences.

## Fabulous Faculty

Prof. Frank Starmer receives his award from Mr. Tony Chew, Chairman of the Duke-NUS Governing Board.

Faculty members were also in the limelight during the special awards dinner. **Prof. Charles Frank Starmer Jr.**, Associate Dean for the Office of Innovative Solutions (Duke-NUS), received the Spark Award and the Pioneer Award. Both of these awards are one-time awards to honor dedicated faculty members who have strived towards establishing the school since its inception. The Pioneer Award is for those who helped set up the first two years of the Duke-NUS basic science and clinical educational experiences for the 2007 matriculating class, while the Spark award is for those individuals who were instrumental in igniting the pioneering spirit within the school.

Prof. Starmer received the Pioneer Award for his contributions to basic science education, for his teaching in the area of investigative methods and tools for research in particular. He was also one of just six faculty members awarded the Spark Award.

There were various challenges in getting the Duke-NUS curriculum up and running, recalled Prof. Starmer. It took a year and a half to develop an enabling IT infrastructure that adequately supported the dream held by Dr. Sandy Cook and Prof. Bob Kamei of a team-based learning approach (now called TeamLEAD), he said. “The twentieth century focus for medical schools was on teaching. Our twenty-first century focus is on learning, problem solving and servant leadership within an internet-centric context. No one had ever done this before.”

“Investigative methods and tools was [also] a challenge,” added Prof. Starmer. “Typically, biostatistics is taught and is the low point of every medical student's program. We put biostatistics ‘on the back-burner’ and brought to the front how one approaches investigation – from observation/pattern recognition to p-values.”

Prof. Starmer said it was nice to receive the Pioneer Award and to be recognized. He quipped: “What does this award mean to me? Another day, another problem solved and someone noticed.”

Prof. Fong Kok Yong (right) and Prof. Doyle Graham (left) with Dean Prof. Ranga Krishnan (center) after receiving their Dean’s Award

Prof. Fong Kok Yong, Group Director of Clinical Research at SingHealth also received a Pioneer Award (for clinical science / medicine clerkship). In addition, he received the Dean’s Award, an annual award presented to a faculty member, recognizing his outstanding teaching, educational leadership, mentorship and service to the school.

The Duke-NUS environment is unique in Singapore and in many ways challenges how we traditionally teach medical students, Prof. Fong commented. “The mature students (some with Masters and PhDs), their early embedment into the clinical team, their research year in the midst of clinical training, the ‘mobilization’ of suitable teachers and molding of mindsets to fit the new teaching environment are challenges which bring with them great lessons for any educator. The objective of training medical students from diverse backgrounds into competent doctors is fixed, but how we go about achieving that objective really stretches the mind and throws up innovative ways of doing things.”

“This award is recognition of the tremendous work put in by many of my colleagues, working in unison with me towards the same goal,” Prof. Fong added. “No one [person] can achieve what has been done in the last four years by him or herself.”

Congratulations to this year’s award winners whose achievements have certainly set lofty benchmarks. All of us here at Duke-NUS are proud of your success and we wholeheartedly celebrate with you.

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There could not have been a more fitting time and place for Prof. Soo to have received this wonderful honour than in front of high achieving medical students, Duke-NUS' pioneer class, during the pre-graduation celebration and hooding ceremony on May 28.

A visionary leader and dedicated educator, Prof. Soo has enjoyed a prolific career, having received numerous accolades on both the international and national stage. In Singapore in particular, he has played a fundamental role in helping to shape the practice of medicine – he was instrumental in the development of the National Cancer Centre Singapore and was one of the first doctors to lobby for the setting up of a second medical school in Singapore. Prof. Soo is "one of the most prominent and influential leaders in Singapore academic medicine, said Dr. Edward Holmes, Chairman of the National Research Committee, Ministry of Health, in a letter to the selection committee for the professorship.

Dr. Joseph Sheares, son of the late Dr. Benjamin Sheares, presents the professorship plaque to Prof. Soo.

Prof. Soo has also been an outstanding academic mentor for young clinicians and has played a vital part in developing Singapore's clinical and research capabilities. In 2008, Prof. Soo was awarded the illustrious National Outstanding Clinician Mentor Award. His contributions to Singapore's medical sector have been highly significant, said Prof. Sandy Williams, the founding Dean of Duke-NUS and President of The J. David Gladstone Institutes. "As a medical educator, [Prof. Soo] exemplifies the master clinician."

Current Dean of Duke-NUS, Prof. Ranga Krishnan, echoed these sentiments. "Prof. Soo is a tremendous asset to the institution. His foresight and expertise as Vice Dean for Clinical and Faculty Affairs at Duke-NUS has led to its rapid development and success. He is an excellent clinician-scientist and [a] revered educator. His continued role at Duke-NUS and SingHealth will further enhance the building and establishing of Duke-NUS as a key component of the academic medical centre at Outram."

The family of the late Dr. Benjamin Sheares has also contributed a significant amount towards the professorship, while Singapore's Tote Board and SingHealth Foundation have jointly gifted S$2.5 million. "This professorship will build on the strengths and expertise of SingHealth and Duke-NUS," said Prof. Krishnan. "[It will] develop capabilities on the Outram campus as well as set up initiatives within Singapore and overseas that will build on Duke-NUS' and Singapore's repute as a leading biomedical institution and hub."

Prof. Soo Khee Chee.

On being awarded the professorship, Prof. Soo said he felt extremely proud. "I am personally inspired by the legacy of the late Dr. Benjamin Sheares and am honored and humbled to be conferred the professorship. Teaching and mentoring medical students constantly energizes me and enable me to witness their growth. Their vigor, thirst for learning, and enquiring minds are constant reminders for me to stay curious, innovate and improve on the practice of medicine. I will endeavor to fulfill the expectations that come with this professorship and serve the community like Dr. Benjamin Sheares did."

The Benjamin Sheares Professorship in Academic Medicine honors a Singapore medical giant. Dr. Benjamin Sheares, whose medical career spanned more than 30 years, following his graduation in 1929, was very well respected for his deep passion for medicine and clinical research in obstetrics and gynecology. Some years after retiring from medicine, in 1971, he became Singapore's second President. He served this role with distinction for three terms spanning more than a decade. Described as a man of the people, President Sheares and was well-loved by Singaporeans for his kind manner and for showing humility and respect for others.

This professorship, the first to be established in the name of Benjamin Sheares, commemorates his rich legacy by recognizing leadership in medical teaching, international collaborative endeavor, and advancing the frontiers of medicine.

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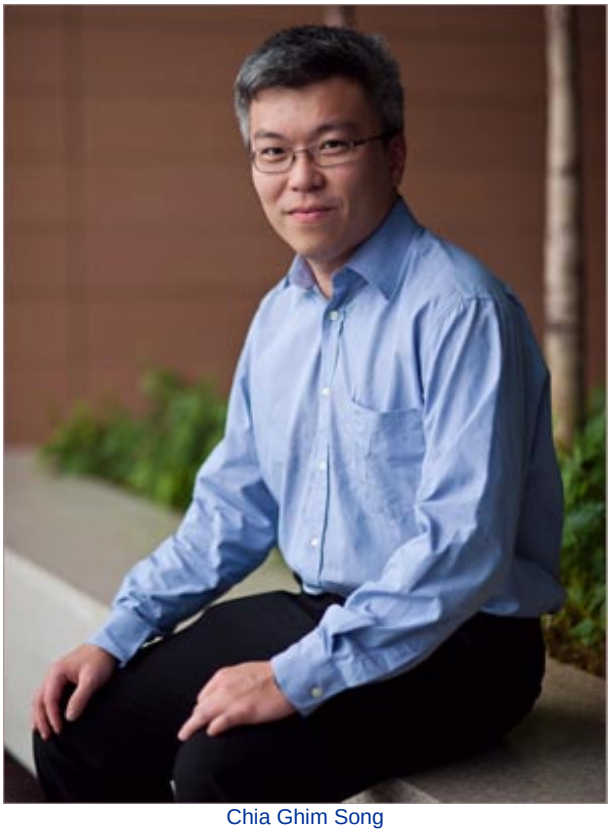
# Medical Memories and Journeying Forth

***BY: Chia Ghim Song (Duke-NUS Pioneer Class)***



Chia Ghim Song

Our first day of classes doesn't seem that long ago. All of us vividly remember the welcome ceremony held in the lecture room at the interim Bukit Merah campus in 2007. On that momentous occasion we received a warm welcome from senior medical students streamed from Duke University in Durham. Several seniors from Duke had also flown half-way across the world to witness the event in person and to help prepare us for our four year journey. Being the pioneering class of Duke-NUS, we had no senior class and I was surprised to receive such a warm greeting. That day made me remember that we are part of a wider family.

At that time there was an air of excitement and anticipation amongst our class about where the next four years would lead us. I cannot deny the consternation I felt as to how the electrical engineer in me would cope with what seemed like an insurmountable curriculum.

Looking back, the first year we spent a great deal of our time acquiring knowledge. The science and theory of medicine was taught in a novel and interesting team-based environment. The curriculum forced me to quickly acquire, assimilate and apply vast amounts of knowledge in simulated clinical scenarios. The first year practice course was the highlight of my week – learning the art of medicine and developing clinical skills such as communication, physical examination techniques and rudimentary clinical acumen were things that I really looked forward to. Despite the hectic curriculum, the greatest highlight of my first year was the birth of my first child.

In the second year, I learnt that medicine is an imperfect science. Working in the wards enlightened me with respect to the fact that every patient is unique – how differently patients present and respond to illness, and how an illness impacts each patient and their family. My rotations in the ward also exposed me to the extremes of life and death – I helped deliver a baby in my Obstetrics and Gynecology rotation and witnessed the end of life's journey in my other rotations. I learnt to accept that mortality is a part of life's journey, and to appreciate the limits of medicine.

Our third year focused on research. I learnt how paradoxically difficult it is to frame a simple research question. The hard work is in gathering, analyzing and interpreting the data to answer the research question. Liver cancer has a special place in my heart as my grandfather struggled with this illness. This was one of the reasons why I chose to work under the great mentorship of Prof. Pierce Chow, who was actively spearheading large multicenter clinical trials for the treatment of liver cancer.

The final fourth year entailed the acquisition of core clinical competencies and making career decisions. Electives and rotations took me to as far away as the Massachusetts General Hospital in Boston where I braved one month of the frigid January winter so that I could spend it in the department of radiation oncology. I was surprised at how quickly I had to decide on the choice of residency – with the semester starting in August 2010 and submissions of residency choices due the next month. I elected to do a generic transition year so that I could spend more time deciding between radiology and radiation oncology.

At the end of this journey, I would like to acknowledge a few people. I could not have come this far without the support of the Shaw Foundation and also the support and understanding of my wife and family.

As challenging as our curriculum was, our medical journey was marked by enduring friendships forged among students, inspiring mentorships by dedicated clinicians, as well as important life lessons learned from patients. I am now looking forward to being able to serve patients and give back to society. In the midst of hectic internships, I am sure my classmates will continue to keep in touch with each other as well as with Duke-NUS. As the pioneering class we will continue to push the boundaries to improve patient care.

*Vital Science* congratulates Ghim Song on winning the following prizes during his course of study: The Singapore Medical Association-Lee Foundation Award for Outstanding Teammanship; the Seah Cheng Siang Gold Medal in Medicine, awarded to the top student in Internal Medicine; and the Duke-NUS Achievement Prize for attaining the best results in the USMLE Step 1 examination.

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# St Baldrick's Foundation supports research at Duke-NUS


Simon Green, NetApp's Vice President & General Manager, APAC with his two sons, after getting his head shaved. The NetApp Singapore team worked tirelessly in the lead-up to the St. Baldrick's event. Whether organizing the event, rallying participation, sacrificing their locks or pledging donations, everyone did their part to give as much as they could.

St Baldrick's Foundation, a leading international charity which supports promising research into cures for childhood cancer, has announced that it will be a major sponsor of the Duke-NUS Pediatric Cancer Research Fund, a project which is working to uncover underlying causes of osteosarcoma (bone cancer) with the hope that this will lead to improved treatments.

Osteosarcoma, one of the most common cancers among adolescents, usually occurs in rapidly growing bones, and initially presents itself as persistent swelling. When caught early, osteosarcoma can be cured with surgery and intensive chemotherapy. However, once it spreads, it is difficult to cure. The mutations that cause osteosarcoma are not well understood. Unlike many other childhood cancers, there is no single genetic mutation specific to osteosarcoma.

As part of the Duke-NUS Pediatric Cancer Research Fund project, Prof. David Virshup, a pediatric hematologist and Director of the Cancer and Stem Cell Biology Research Program at Duke-NUS, has teamed up with scientists at the Genomics Institute of Singapore to apply cutting edge techniques developed in Singapore to better understand the mutations and chromosomal abnormalities that cause osteosarcoma.

## Executives shave heads to support fund

**Executives from multinational storage and data management solutions company NetApp and financial data & services company Markit Asia in Singapore, shaved their heads bald at two separate events in March. These fund-raisers proved highly successful in raising money for childhood cancer.**


Prof. David Virshup updates participants at the Markit shaving event on the incredible progress being made by researchers around the world working to develop better treatments to help children recover from cancer.

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# Singapore temple sets up new scholarship program for Duke-NUS students

Kwan Im Thong Hood Cho Temple, a highly respected institution in Singapore, has donated S$2 million to the Duke-NUS Graduate Medical School, as part of a new scholarship program.

This new scholarships will aid needy Singaporean students, regardless of race or religion, pursuing the four-year Doctor of Medicine (M.D.) program at Duke-NUS.

“Duke-NUS is very grateful to be a recipient of the Temple’s generosity as the scholarships will go a long way towards helping our students fulfill their medical aspirations and to making notable contributions to society,” said Dean Prof. Ranga Krishnan.

“The Temple shares the values behind Duke-NUS’ mission to transform medicine and to improve lives. The scholarships affirm the principles and values behind our beliefs, said Dr. Tan Choon Kim, Chairman of the Kwan Im Thong Hood Cho Temple. “In helping to develop promising medical students, we will be able to bring comfort to the sick and suffering, as there will be more medical doctors to serve Singapore’s growing population.”

The Singapore government has also pledged to match the grant for this scholarship dollar-for-dollar.

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# Community Projects

In the past 2 months, Duke-NUS students were involved in three community outreach projects, benefiting autistic children, children whose parents were affected by cancer, and a small Thai hill tribe village community. Read on to find out about the contributions our students have made!



## World Autism Day

Duke-NUS' Sheares College and the Rainbow Centre Yishun Park School (students pictured) co-organized a special event in Singapore to mark World Autism Day on April 2, 2011. The aim of this event was to raise awareness for autism and highlight the lack of resources for children transitioning into adulthood.


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## Students help screen health of Thai villagers

*By: Eric Cher, MS1*
Team Leader, Project Karen 2011

A group of Duke-NUS medical students recently embarked on Project Karen, an overseas volunteer project which supports the Huay Khao Lip, a Karen hill tribe village near Chiang Mai in northern Thailand. Conceived by a group of devoted Duke-NUS seniors in 2010, the objectives of Project Karen are to give much needed help to this village and to improve students' clinical skills by training as volunteer doctors.

This year's project was carried out on April 29, 2011. Our student group, together with Dr. Paul Yen (A/Prof, Duke-NUS) and Dr. Adoree Lim (a SGH Endocrinology Department Registrar), conducted a comprehensive medical screening of more than 119 villagers, including 54 children aged 3 to 12.

We conducted hair lice eradication and dental care projects, and provided a half-day workshop on basic first-aid, covering infection control and jungle medical care. Eight pre-hypertensive, two type-1 and one type-2 hypertensive patients were identified. We also referred 29 of the villagers to Mae Wang Hospital with various conditions such as musculoskeletal, dental, urinary, endocrine and visual defects.

Healthcare team comprising of Duke-NUS volunteers, local nurses and Mr Sam Fang.

Project Karen 2011 was well-received by the people of Huay Khao Lip. On behalf of the team, I would like to thank the Duke-NUS staff, students and the Student Affairs department for their tremendous support, Café Narambi for their contribution in kind, as well as the nurses from Chiang Mai (Pi Laa, Pi Pom, Pi Tim) and Mr Sam Fang for their invaluable assistance.

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## Camp Simba

Camp participants together with volunteers and medical students at one of the many fun activities on the beach.

The 2010 team receiving their Student Achievement Award from NUS Provost Prof Tan Eng Chye (left).

Camp Simba returns for the third consecutive year! For the uninitiated, this highly successful and well-received community outreach program is aimed at children with a family member afflicted by cancer. These children often struggle emotionally to cope with their family members' illness, and may miss out on the joys of childhood that most other children take for granted.

This year's camp was held from June 3-5, 2011 with 50 children participating – they enjoyed themselves tremendously over 3 days of fun-filled activities such as art and craft, a scavenger hunt and beach games. It was definitely a great opportunity for these children to relax, have fun, and make more friends.

Kudos to the organizers and the 110 volunteers who contributed to the success of Camp Simba 2011. Their predecessors certainly set a high benchmark – the team behind the 2010 camp were presented with a commendation award for the category of Community Projects at the 2011 NUS Student Achievement Award Ceremony, a testament to the impact and the success of the camp in making a real difference to the lives of these children.

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## DPM of Kazakhstan visits Duke-NUS

The Deputy Prime Minister of Kazakhstan Mr. Yerbol Orynbayev (center right) visited the Duke-NUS Graduate Medical School on March 21, 2011. He was welcomed by the Dean Prof. Ranga Krishnan (center left) and Vice Dean of Education Prof. Bob Kamei. After an introduction and education briefing, Mr. Orynbayev and his entourage were taken on a quick tour of the school.

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# Duke-NUS quartet win prizes at 19th SGH Annual Scientific Meeting

Duke-NUS is proud to announce that four members of the school have been recognized at the 19th SGH Annual Scientific Meeting (ASM) awards. They are A/Prof. Patrick Tan, and third-year students Ken Goh, Esther Chang and Foo Li Lian.

The theme for this year's ASM was "Frontiers of Medicine" and participants were encouraged to delve into new opportunities and challenges of the future, and to come up with new solutions to improve the state of healthcare and medical research.

**A/Prof. Patrick Tan** won the SGH Scientist Award for his role in a project on *Fanconi's Anemia in Adulthood: Chemoradiation-Induced Bone Marrow Failure and a Novel FANCA Mutation Identified by Targeted Deep Sequencing*. This research looked into genetic trends and variations that may affect a person's predisposition to Fanconi's Anemia and their response to different types of treatment.

**Ken Goh** clinched the Young Investigator's Award (YIA) in the Basic Science category for his role in the Prospective Validation of a Cardiac Arrest Prediction Score Based On Heart Rate Variability Measurements In Patients Presenting To The Emergency Department With Chest Pain. This study served to validate the accuracy of a score, which incorporates heart rate variability measurements, in predicting in-hospital cardiac arrest. Said Ken, "*I would like to thank everyone involved in this project, particularly my mentor A/Prof. Marcus Ong and colleagues in the research team for their constant support and encouragement*."

Winners of the 19th SGH Annual Scientific Meeting awards - from left to right (A/Prof. Patrick Tan, Foo Lilian, Esther Chang and Ken Goh)

The YIA Clinical category prize went to **Foo Li Lian** for her role in *Determinants of Angle Width in Chinese Singaporeans*. This work looked into the determinants of angle width in the said population, and derived a mathematical model that could be useful in predicting angle width and hence diagnosing vision problems. "My research is on primary angle closure glaucoma (PACG), a major form of glaucoma in Asia," said Li Lian. "… My work is to incorporate both new and established anatomical parameters in predicting angle width, thereby allowing us to gain a deeper understanding of the pathophysiology behind PACG."

**Esther Chang** clinched the Best Oral Paper Award in the Scientist category. She was involved in the research *Increased Numbers of Myeloid-Derived Suppressor Cells Found in Gastric Cancer Patients*. Her team investigated the role of myeloid-derived suppressor cells (MDSC) in gastric cancer. "I was very happy and honoured to have received the award because it was my first oral presentation to an audience at a scientific meeting," said Esther. "I am really glad I delivered the presentation well [and] am very grateful to my mentor, Dr. Ling and my post-doc, Dr. Wang [for] their encouragement and help."

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# Research News



## Prof. Mariano Garcia-Blanco elected into the Association of American Physicians (AAP)

Prof. Mariano Garcia-Blanco (right), a Principal Investigator in the Emerging Infectious Diseases Research Program at Duke-NUS, is seen here with Dr. Victor Dzau (left), Chancellor for Health Affairs at Duke University and President and CEO of Duke University Health System, and Prof. David Virshup (center), Director of Duke-NUS' Cancer and Stem Cell Biology Research Program.

Prof. Garcia-Blanco was recently elected into the Association of American Physicians (AAP), in recognition of his substantial contributions to both basic science and biomedical research. The goals of the AAP, an honorific society of internal medicine and academic physician scientists in the US, include the pursuit of medical knowledge and the advancement, through experimentation and discovery, of basic and clinical science, and their application to clinical medicine.

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## Hybrid gene plays a role in stomach cancer, local study shows

A/Prof. Patrick Tan.

An international team of scientists led by A/Prof. Patrick Tan from the Program in Cancer and Stem Cell Biology at Duke-NUS has shown that a hybrid gene, a fusion of two separate genes, appears to play a direct role in some stomach (gastric) cancers. Gastric cancer is the second most lethal malignancy worldwide after lung cancer, killing an estimated 740,000 people a year.

The discovery, details of which have been published in the April 6th issue of *Science Translational Medicine*, may eventually help researchers to develop more effective therapies and diagnostic tools to treat this deadly disease.

The research team, which also included scientists from the NUS, NCCS, the Genome Institute of Singapore, Yonsei University College of Medicine in Seoul, South Korea, and Howard University in Washington D.C., USA, used a novel genomic approach called genomic breakpoint analysis to isolate the fusion gene. By using the technology to home in on abnormal genes in 133 stomach cancer tumors and cell lines, the Singapore-based research group found evidence of a single genetic error that was common to four of the cancer samples. Finding the error led the scientists to the CD44-SLC1A2 fusion gene, which resulted when two nearby genes blended into one.

The SLC1A2 gene is associated with the metabolism of the amino acid glutamate, which can work like a fertilizer encouraging tumor growth and survival, while the CD44 gene serves as a kind of "on" switch. Melded into one, the CD44-SLC1A2 hybrid appears to fuel stomach tumors. The team estimates the fusion gene may be at work in up to 2% of stomach cancers.

“Our findings suggest that drugs traditionally used to suppress the SLC1A2 gene can, when used in conjunction with chemotherapy, potentially improve the efficacy of cancer treatment,” said team leader A/Prof. Patrick Tan.

Prof. David Virshup, Director of the Program in Cancer & Stem Cell Biology at Duke-NUS, added: “The discovery of this previously-unknown hybrid gene opens the door to discovering new and more effective methods of combating stomach cancer.“

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## Emerging Infection Researchers reap awards

Three colleagues within the Emerging Infectious Diseases Signature Research Programme at Duke-NUS have been recognized for their notable scientific achievements:

• A/Prof. Ooi Eng Eong has received the 2010 Clinician-Scientist Award (Senior Investigator) from the Singapore National Medical Research Council (NMRC) for his work on dengue fever. Announced in February 2011, this award is one of a selection of Singapore research awards that aims to support, grow and maintain the country's pipeline of clinician-scientists.

• A/Prof. Veronika von Messling has been awarded the Loeffler-Frosch Prize from the German Society of Virology in recognition of her scientific achievements in the field of virology. A/Prof. von Messling delivered a lecture during the award ceremony which took place during the annual meeting of the Germany Society of Virology in March 2011.

(Left to right): A/Prof. Veronika von Messling, A/Prof. Ooi Eng Eong and A/Prof. Gavin Smith

• A/Prof. Gavin Smith has been named the 2011 Beijerinck Guest Professor by the Royal Dutch Academy of Sciences and will spend a month in the Netherlands training researchers at various institutes in the fundamentals of molecular evolution science, something he hopes will lead to long-term collaborative projects with Duke-NUS.

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## Scientists enterprise to supply Asia's biologics needs

(From left): A/Prof. Subhash Vasudevan and Prof. Mariano Garcia-Blanco

In the near future, researchers in Singapore and from across the region will no longer need to wait a long time for supplies of biologics for their research and testing purposes. Recently-launched biotech company Singapore Advanced Biologics (SABio), founded by Prof. Mariano Garcia-Blanco and A/Prof. Subhash Vasudevan from the Duke-NUS Emerging Infectious Diseases Program, will cater to their needs.

In the past, researchers in Southeast Asia have had to wait for shipments to come in from overseas and have had to pay high prices for good quality products. This has put them a step behind their competition in the US, Europe and Japan. With the opening of SABio, researchers in the region can now look forward to supplies of high quality and affordable specialised biologics and medicinal products delivered to them in a much faster time.

SABio's initial foray into the biotech market will see it focus on the fields of siRNA, DNA and antibodies.

Managing Director Rene Jaeggi believes that: "SABio's high quality products will enjoy the valued status of the 'Made in Singapore' brand and thus support the vision of Singapore as a research and biomedicine hub".

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## Duke-NUS scientists make exciting dengue discovery

Scientists at Duke-NUS have discovered that mast cells, known for the part they play in causing allergies and asthma, may help fight dengue fever, a mosquito-borne viral infection.

A study they conducted in mice showed that mast cells are able to sense dengue viruses, which in turn leads them to create an immune response.

"It appears the mast cells are activated and call the natural killer and natural killer T-cells to the skin where they clear infection, which limits the spread of infection in the host," said lead researcher Ashley St. John, a Research Fellow with Duke-NUS' Program in Emerging Infectious Diseases (EID) and the Duke Department of Pathology in Durham, North Carolina, US. "It was an important discovery for the field to learn that mast cells could be activated by pathogens like bacteria or parasites. We were excited to learn that mast cells also respond to and promote the clearance of a viral infection." This finding might also help scientists study viral infection in the lungs airways and sinuses because mast cells are involved in airway reactions, as during an asthma attack, said St. John.

The study's senior co-author Dr. Soman Abraham, Professor of Pathology and mast-cell expert, also in the EID Program at Duke-NUS, added: "Now that we know mast cells can recognize viruses, we can better understand how that infection process begins… Knowing the important role of mast cells in viral infections could help find ways to prevent these infections, perhaps in the form of vaccines."

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## Facing the epidemic: scientists collaborate

*BY: Prof. Thomas Coffman (Director, Cardiovascular & Metabolic Disorders Program)*

Leading researchers in cardiovascular and metabolic disorders from Duke University, Duke-NUS and major research institutions in Singapore recently gathered for a symposium aimed at developing partnerships and collaborations to propel scientific progress in this field. The symposium, entitled “Facing the Epidemic: Partnerships in Cardiovascular and Metabolic Disorders Research,” was held at Duke-NUS from March 2-3, 2011.

The clustering of metabolic syndromes and cardiovascular disease is a global epidemic that is emerging as a major cause of mortality in Asia and around the world. Despite the high prevalence, there are significant gaps in our current understanding of how these individual disorders compound cardiovascular risks. Defining these critical links is a key mission of the Duke-NUS Cardiovascular and Metabolic Disorders (CVMD) Program. By hosting the symposium, the CVMD Program hoped to generate opportunities to enhance clinical care, develop novel diagnostic strategies, identify biomarkers to stratify disease risk, and to highlight targets for more effective therapies to combat these deadly diseases.

The scientific program, co-chaired by Prof. Shirish Shenolikar and Thomas Coffman of the CVMD Program, featured 15 speakers. These included five visiting faculty from Duke University, as well as scientists from Duke-NUS, the National Heart Centre, NUS, the Singapore Bioimaging Consortium, and NUH. The sessions were well attended with 135 highly engaged registrants.

On the first day of the symposium, Prof. Christopher Newgard from Duke delivered the opening keynote lecture, delving into the exciting promise of metabolomics technologies for advancing translational research in metabolic diseases. In the second session, A/Prof. Scott Summers from Duke-NUS discussed his innovative study on the role of ceramides in the development of insulin resistance.

At the conclusion of day one, a reception provided participants a relaxed atmosphere for getting acquainted and to continue their discussions in an informal setting.

The second day of the symposium focused on various cardiovascular disorder issues. These included interesting lectures by Dr. Geoff Pitt from Duke on the genetics of sudden cardiac death and by Dr. Reginald Liew from the National Heart Centre on electrophysiological events in individual patients with inherited cardiac arrhythmias.

The visiting Duke faculty also had a series of one-on-one meetings with local scientists to identify areas of common interest. The continued interactions between the participants hold promise for future collaborations between the US and Singapore to make real advances in combating cardiovascular and metabolic disorders.

Prof. Thomas Coffman (center left) in discussion with (from extreme left) Dr. Tai E Shyong, A/Prof, NUS dept of medicine, A/Prof. Scott Summers, Principal Investigator, Duke-NUS’ CVMD program and Prof. Christopher Newgard, Duke Medicine.

Prof. Christopher Newgard with Duke-NUS Dean Prof. Ranga Krishnan.

(left) Prof. Shirish Shenolikar, Associate Dean of Research, Duke-NUS with Dr. Carolyn Lam, Associate Consultant, NUHS and Prof. Neil Freedman, Duke Medicine.

A welcome dinner for the speakers.

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## HSSR hosts workshop and symposium

*By: Ms. Amina Mahmood Islam (Health Services & Systems Research Program)*

The Health Services and Systems Research (HSSR) Program at Duke-NUS recently held two very well organized events which attracted a large number of attendees and participants.

The first event, a 4-day workshop on system dynamics (SD) held at Duke-NUS from March 29 to April 1, was designed to help expand the use of SD as an integrative theory-building research methodology in the field of healthcare systems in Singapore.

On the first morning, the atrium was abuzz with activity as 10 tables seating a total of 80 participants played the “Beer Game”, a hands-on experience in the SD principle that “structure causes behavior”. Despite the absence of real beer, the game was played with great enthusiasm. Workshop participants included staff from various Singapore-based and regional institutions, as well as students from the NUS High School.

On the second day of the workshop, a group of about 50 learned how to recognize complex situations which might lend themselves to the application of the SD framework. Then, on the final two days, 36 participants underwent training in the fundamentals of SD computer model building.

The course was funded in part by HSSR Program Director Prof. David Matchar’s STaR Award and the instructors included three leaders in the field – Dr. Bob Eberlein, Dr. Jim Hines and Dr. Jim Thompson (Head of the Health Systems Design Laboratory at Duke-NUS).

A few weeks later, the HSSR Program held a 3-day symposium from April 27-29, entitled “Design, Implementation and Evaluation of Health Services for Older Populations.”

Co-chaired by Dr. Angelique Chan, A/Prof. Duke-NUS and NUS, this symposium promoted research collaborations between Duke-NUS, Duke University in the US, and the Singapore research community.

After a series of presentations covering challenges and issues relevant to the provision of healthcare to an ageing population, researchers broke into three groups to develop project proposals in the areas of care-giving, community-based implementation research and development of data in support of health policy modeling. The working groups then re-convened to present and discuss their respective proposals.

This symposium was attended by researchers from various organizations in Singapore. In addition, seven participants from Duke University flew in especially for the event. The overall feedback from those involved was that the event was promising start to future collaborations.

HSSR Systems Dynamics Workshop - Teams gear up to play ‘The Beer Game’.

Players debate and contemplate the best strategies.

Chairpersons in action – Prof. David Matchar, HSSR Program Director (left), and Dr Jim Thompson, Senior Associate, HSSR Research (right).

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