President Xi Jinping at NUS
President Xi Jinping speaks at NUS

During his two-day official visit to Singapore to mark 25 years of diplomatic relations between Singapore and China, the President of the People’s Republic of China (PRC) His Excellency Xi Jinping delivered the 36th Singapore Lecture at NUS on 7 November.

Titled “Forging A Strong Partnership to Enhance Prosperity of Asia”, President Xi began his talk by acknowledging that NUS, with its long history of 110 years, is both renowned in Asia and worldwide. He highlighted that the University has produced many Singaporean leaders such as the late Mr Lee Kuan Yew, Singapore President Dr Tony Tan Keng Yam, former Singapore President Mr S R Nathan and Emeritus Senior Minister Mr Goh Chok Tong.

“NUS champions the vision that there should be no walls around minds, no walls to ideas, no walls to talents and no walls between discovery. Such a no-walls culture embodies the creative, enterprising, open and inclusive spirit of Singapore, an important factor contributing to the success of NUS and Singapore,” he noted. He also highlighted the international recognition of Singapore’s achievements and congratulated Singaporeans on its success.

President Xi paid tribute to “two great statesmen” — Mr Deng Xiaoping and Mr Lee Kuan Yew — who had contributed immeasurably towards the growth of bilateral ties between China and Singapore. “Their great achievements will always be remembered,” he said, adding that he hoped the younger generation would carry forward this friendship.

President Xi further spoke of China’s engagement with Singapore and other ASEAN countries. He reaffirmed that China is committed to building peace, stability and neighbourhood diplomacy within the region and looked forward to more regional and economic cooperation.

Guests at the lecture included Singapore Prime Minister Mr Lee Hsien Loong, Deputy Prime Minister and Coordinating Minister for National Security Mr Teo Chee Hean, Senior Minister for Transport Mrs Josephine Teo, and Singapore’s Ambassador to the PRC and NUS alumnus Mr Stanley Loh.

President Xi was in Singapore on 6 to 7 November for his first official state visit since becoming President in 2013. He was accompanied by his wife, Madam Peng Liyuan, members of the Communist Party of China Central Committee as well as ministers and other senior officials.

The Singapore Lecture, organised by ISEAS-Yusof Ishak Institute and held at NUS under the Chairmanship of Mr Teo Chee Hean provides a platform for distinguished statesmen and thought leaders to speak on topics of international and regional interest.

Strengthening ties with Tsinghua

On 7 December, the long and deep partnership between NUS and Tsinghua University (Tsinghua) was boosted through a Memorandum of Understanding (MOU) which would be funded through an $11 million donation from the family of Mr Ng Teng Fong. The MOU was signed by NUS Deputy President (Academic Affairs) and Provost Professor Tan Eng Chye and Tsinghua’s Vice President and Provost Professor Yang Bin, and witnessed by Acting Minister for Education (Higher Education and Skills) Mr Ong Ye Kung, at The Fullerton Bay Hotel.

Mr Ong underscored the relationship between NUS and Tsinghua, which began in 1991, saying, “Under the new MOU, NUS and Tsinghua will conduct joint research and development in areas of mutual interest and complementary expertise. One such area is data science and data analytics.” The universities would also identify opportunities to commercialise technology, he said.

Both universities hope to increase the volume of student exchanges. Prof Tan said that currently, about 15 to 20 students between the two universities participate in student exchange programmes annually. “We’re looking at hopefully increasing this number,” he said.

There are also plans to enhance existing student exchange programmes to include technology entrepreneurship, for both undergraduate and postgraduate students. Prof Tan highlighted the NUS Overseas College in Beijing, which was established in collaboration with Tsinghua in 2009. “That’s a programme that we think there’s a lot of potential, especially now to include graduate students... we need more entrepreneurs to have a very deep knowledge in science and technology,” he said. In addition, both universities will collaborate on joint academic, research and scientific activities, particularly initiatives which focus on innovation and enterprise.

Two other MOUs were also signed at the event — between Nanyang Technological University and Peking University, and Singapore University of Technology and Design with Zhejiang University. Similar to the NUS-Tsinghua MOU, each university will receive $11 million from the family of Mr Ng Teng Fong. These three MOUs mark the 25th anniversary of diplomatic relations between Singapore and the People’s Republic of China.

Acting Education Minister visits the University

Mr Ong was given an overview of the University and a presentation on NUS Engineering’s Design Centric Programme. He later toured the Centre for Healthcare Simulation and Entrepreneurship with University Scholars Programme students at Cinnamon College, University Town.

The Acting Minister ended his tour at NUS Tech, Ayer Rajah Crescent, where he engaged with students and alumni entrepreneurs in start-ups within the thriving entrepreneurial space, learning about the technology and innovations developed.
Clinical Imaging Research Centre opens

The Clinical Imaging Research Centre (CIRC), a collaboration between NUS and Singapore's Agency for Science, Technology and Research, officially opened on 11 November.

The first national platform for advanced biomedical imaging, CIRC brings together scientists and clinicians to carry out world-class translational and clinical research as well as to support clinical trials in Singapore. It also aims to train graduate students in clinical imaging.

Mr Heng Swee Kiat, Minister for Finance and Deputy Chairman of the National Research Foundation, graced the occasion at NUS’ Centre for Translational Medicine. He said the Centre will strengthen the connection between bench and bedside, and support efforts for scientific breakthroughs in cost-effective ways.

CIRC is the first in Southeast Asia and one of the world’s few clinical research sites to use Magnetic Resonance-Positron Emission Tomography (MR-PET) technology. By combining two cutting-edge imaging techniques, this advanced functional imaging solution allows researchers to better study disease pathways. With cyclotron and radiochemistry facilities, it is also Singapore’s only clinical imaging research centre that can produce and administer PET radiopharmaceuticals to human subjects.

The Centre will focus on diseases pertinent to Singapore and Asia such as tuberculosis, dementia and diabetes to better monitor disease progression, enhance the process of drug discovery, as well as increase diagnosis and patient management capabilities. More than 50 clinical research projects with investigators from 13 different institutions are currently underway.

CIRC has also established strong ties with international partners such as Johns Hopkins University, University College London, and industry players including Siemens Healthcare and Kao Corporation.

From left: CIRC Director Prof David Townsend; National University Health System Board Member Mr Lim Hock San; Mr Heng; and CIRC Head of Imaging Operations Dr John Tolman touring the imaging facilities.

$25m RNA Biology Centre set up

Research at the newly established RNA Biology Centre, hosted within the Cancer Science Institute of Singapore (CSI) Singapore at NUS, has the potential to uncover novel methods of treating cancer. The Centre aims to advance scientific understanding of non-coding RNA’s (RNA) part in biological processes, which in the past has focused on its “messenger” function of passing on genetic information.

The six-month-old Centre, funded by a $25 million grant from Singapore’s Ministry of Education, brings together 14 Principal Investigators from different fields to look at fundamental aspects of RNA regulation. The scientists intend to develop novel RNA-based biomarkers and therapies that will make a difference to translational and clinical research.

RNA is one of three major biological macromolecules — in addition to deoxyribonucleic acid (DNA) and proteins — that are essential for all forms of life. Recently, the field of RNA biology has been recognised for its importance in basic biological processes. RNA, in one form or another, touches nearly everything in a cell including the regulation of gene activity during development and cellular differentiation.

Although non-coding RNAs were known to exist for more than a few decades, in recent years the focus of researching non-RNA has changed. Instead of researching the classical types of RNA, there is huge interest in studying the more unique types of non-RNA (these include IncRNA, cDNA, cRNA and others). “Part of the excitement is that this area of research is new, and it also has a lot of power,” said CSI Singapore Director Professor Daniel Tenen, who heads the new centre. He explained that it has great potential to lead to the development of new therapeutics and diagnosis methods, since RNA has been shown to induce or inhibit cancer in different biological models.

The Centre’s team of internationally recognised researchers with cross-disciplinary expertise will conduct interrelated studies of non-classical RNAs, RNA editing/modification, RNA splicing, RNA in disease, and crosstalk between RNA classes and processes.

In furthering their understanding of RNA, the investigators will focus on blood development and leukaemia. This is because obtaining samples of blood to study leukaemia or RNA regulation is less intrusive as it does not require a biopsy. Leukaemia is also a well-researched cancer, so scientists have established sophisticated methods of studying the disease. Moreover, CSI is hosting a leukemia bank, managed by Professor Chng Woe Joo from NUS Yong Loo Lin School of Medicine, that stores samples not only from Singapore, but also from the rest of Southeast Asia. This gives CSI access to a vast number of samples, contributing to its uniqueness.

Guest-of-Honour Singapore Minister for Communications and Information Dr Yaacob Ibrahim blowing out birthday candles to mark NUS Engineering’s 60th anniversary at a gala dinner on 16 October. With him were (from left) former Engineering Deans Prof Andrew Nee, Prof Koh Thong Ngee, Adjunct Prof Poo Aun Neow, NUS Chair Mr Wong Ng Ngi Liong, Guest-of-Honour Singapore Deputy Prime Minister Mr Tharman Shanmugaratnam, Chairman of the School’s Advisory Board Mr S Dhanabalan, Business School Dean and Stephen Ridly Distinguished Professor Bernard Yeung, and NUS Deputy President (Academic Affairs) and Provost Prof Tan Eng Chye (see related story on p10).

Toasting NUS Business School’s 50th anniversary at the Gala Dinner held on 28 October were (from left) NUS President Prof Tan Chorh Chuan, NUS Chairman Mr Wong Ngit Liong, Guest-of-Honour Singapore Deputy Prime Minister Mr Tharman Shanmugaratnam, Chairman of the School’s Advisory Board Mr S Dhanabalan, Business School Dean and Stephen Ridly Distinguished Professor Bernard Yeung, and NUS Deputy President (Academic Affairs) and Provost Prof Tan Eng Chye (see related story on p10).

Anniversary celebrations

NUS Business

NUS Business

NUS Engineering

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NUS Business

NUS Engineering
Lim Pin acknowledged for outstanding volunteerism

Former NUS Vice-Chancellor and University Professor Lim Pin has been honoured for his exceptional contributions and dedication in serving the community.

He received an Outstanding Volunteer Award at the Ministry of Social and Family Development’s Volunteer Awards ceremony on 16 October hosted by Minister for Social and Family Development Mr Tan Chuan-Jin.

Prof Lim is an internal medicine specialist and the Chairman of the Board of directors at the Special Needs Trust Company. As Chairman, he has been instrumental in steering the organisation into the role of a trust and care manager.

Prof Lim’s early experience in life has shaped and motivated his lifelong belief that everyone, regardless of personal circumstances, should be able to live with dignity. He participates regularly in non-profit committees such as the National Wages Council, the Singapore Millennium Foundation, which funds medical research, as well as the Board of Trustees for the Ang Mo Kio Community Hospital.

The challenge required the autonomous flying machine to carry a water bottle and drop it at a specified location on a firefighting mission. Team Leader Dr Cui Jinqiang, a research scientist with Temasek Laboratories at NUS, explained that the team opted for a tougher approach by programming the drone to collect water from a pool rather than carry as few as 12 cups of water attached to it before take-off.

The members built a special mechanism capable of both autonomous water collection and release. They also added a “secret weapon”, namely, a small water sensor attached to the bottle that allows the craft to hover above the water without descending too low. Being lightweight, the drone could maximize the amount of water gathered within the payload limit.

The team also spent weeks restructuring the software and simplifying the system. Extensive testing and trial runs were conducted to simulate the firefighting challenge just prior to the competition.

NUS Electrical and Computer Engineering Professor Ben Chen who leads UAV research at the University said, “Our team’s performance in the firefighting mission was a big surprise to everyone!”

VLion drone captures second spot

VLion, an unmanned aerial vehicle (UAV) team from NUS Engineering, braved strong winds and rain to emerge first runner-up in the International Micro Air Vehicle Competition held in Germany.

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‘Natural’ Museum snare green prize

The verdant and unique design of Lee Kong Chian Natural History Museum at NUS has earned the boulder-shaped building the Excellence Award for the “Community Facility” category of the Skyline Greenery Awards 2015.

Presented by the National Parks Board of Singapore, the Awards recognise developments with greenery provision and ecologically friendly landscapes. Mr Lawrence Wong, Minister for National Development, presented the honours on 5 November during the GreenUrbanScape Asia 2015 opening ceremony.

The only Singapore museum that showcases the biodiversity in Southeast Asia, the Lee Kong Chian Natural History Museum features a façade resembling a “moss-covered rock.” A statue of a planter box, cleverly integrated with the building and the surrounding environment, grow more than 60 types of cultivated indigenous plants which include mangrove species.

By simulating natural terrain, the boxes encourage local fauna such as birds and butterflies.

SAVE President receives EcoFriend accolade

NUS undergraduate Elaine Sam Hui Xian has been deeply involved in many environmental programmes, including driving recycling campaigns and outreach activities since her polytechnic days.

For her tireless efforts, the Year 3 Environmental Studies student, who is the President of NUS Students Against Violation of the Earth — was rewarded the EcoFriend Award for the Youth and Students category.

The National Environment Agency’s (NEA) EcoFriend Awards recognise the efforts and achievements of environmentally proactive individuals in the country. Dr Amy Khor, Senior Minister of State, Ministry of the Environment and Water Resources, and Ministry of Health, presented the awards at a ceremony on 23 November.

Elaine was one of the Co-Chairmen of the NEA-initiated Youth for the Environment Day which features “Talk Going” Night, an outreach event organised by youths from various institutes of higher learning and junior colleges. Co-created with NEA, the event aimed to minimise plastic waste by introducing the benefits of reusable containers through various games and activities.

Wong Poh Kam wins world entrepreneur award

Professor Wong Poh Kam, Dean of EMLyon Business School in France, has been awarded the World Entrepreneur of the Year award in recognition of his exceptional impact on society and his ability to change the world.

Prof Wong is a Professor at NUS Business School. Besides being a well-known entrepreneurship scholar, he has pioneered several widely regarded entrepreneurship education programmes and played a pivotal role in building a vibrant entrepreneurial support ecosystem in NUS and Singapore.

Prof Wong has also consulted widely with organisations such as the World Bank and Asian Development Bank, various government agencies in Singapore and many high-tech firms in Asia.

The co-founder of three companies has been an active angel investor in more than a dozen tech start-ups in Silicon Valley and Asia.

Founded in 2008 by EMLyon Business School in France, the World Entrepreneurship Forum has brought together more than 1,000 members comprising business and social entrepreneurs, experts and investors from 80 countries. It is designed to stimulate creative thinking that leads to action and innovation.

NUS NEWS

Volunteer award included Duke-NUS research, as well as the Board of Trustees Million Foundation, which funds medical research, as well as the Board of Trustees for the Ang Mo Kio Community Hospital.

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Investing another 110 (%) in NUS

People, Culture and Purpose lie at the heart of what we do. We need to build an ever deeper culture of excellence and a strong sense of common purpose centred on creating distinctive value.

— Prof Tan Chorh Chuan, NUS President

New Initiatives

Continuing Professional Education

1. The $8 million Institute for the Application of Learning Science will be set up to apply learning sciences to the development of courses and to evaluate the effectiveness of academic programmes. The Institute will also develop two new modules in a Blended Learning Online Course format: “How to learn” and “How to choose”.

2. The $12 million School of Continuing and Lifelong Education will be in “Smart Nation research”, with principal components comprising data science, analytics, optimisation and cybersecurity. NUS is building the National Cybersecurity R&D Laboratory and establishing a Cybersecurity Consortium, as well as a new Data Science Institute.

The Centre for Future-ready Graduates (CFG) will launch a programme called “Roots and Wings”. Roots stands for personal skills, and is about developing self-understanding and mastery. Wings stands for interpersonal skills, which when coupled with personal mastery, will allow the individual to effectively navigate the wider world.

The second key thrust is to build two signature initiatives that maximise NUS researchers’ impact in areas of great importance to Singapore. The “NUS Solutioning Networks” will draw on all relevant expertise across campus to work with public and private sector partners.

The first initiative, the NUS Solutioning Network for Health, will see NUS and National University Health System collaborate under a joint funding of $6 million. By working closely with the Ministry of Health, new models revolving around the patient will be created with partners to provide holistic care. Community studies will be conducted to understand the social, health and other factors.

The second NUS Solutioning Network will be in “Smart Nation research”, with principal components comprising data science, analytics, optimisation and cybersecurity. NUS is building the National Cybersecurity R&D Laboratory and establishing a Cybersecurity Consortium, as well as a new Data Science Institute.

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Innovative society needs supportive culture

Moving into the future, Singapore has to evolve into an innovative economy where value creation is driven by more than mere technology or the genius of a few outstanding people, said Mr Tharman Shanmugaratnam, Singapore Deputy Prime Minister.

"There is a need for people like university professors to curate the courses, the modules that constitute continuous learning, learning through life, because it cannot just be left to the market," stressed Mr Tharman. "You need curators of learning, people with the knowledge, the experience and also the ability to spot new demands."

School for continuous and lifelong learning will be the way to go, he said. Innovation requires deep skills, as well as nurturing of the skill sets needed to work with technology, said Mr Tharman. He also identified empathy, responsiveness, flexibility to new situations and social skills as attributes that computers cannot easily replicate.

The second challenge revolves around the leadership and organisational culture within companies. Incumbents have to nudge social bureaucracies towards the space required for innovation, so as to allow an upstart culture that spurs fresh ideas and disruptive innovations. One good example is China’s Huawei, which set up 2,000 independent microunits to breed disruptive innovators.

The third area, which Mr Tharman viewed as less tangible, involves the social culture that supports an innovative society. This means tolerating and encouraging intellectual diversity, starting from childhood and through life.

Another aspect is social diversity, whereby exposure to diverse experiences engenders a more creative mindset. The difficulty of facing this challenge lies in juggling the tensions of intellectual and social diversity while ensuring a common Singaporean spirit.

Mr Tharman believes that NUS Business is very well placed to bring together the disciplines that address the three issues. "Business schools actually integrate disciplines a lot better than most, and they bring the real world into theory better than most, and bring theory into the real world better than most," he concluded.

The Association of Southeast Asian Nations (ASEAN) was formed in 1967 as “a confidence-building measure” and it “in essence, not a legal organisation”, pointed out former Singapore Attorney-General Professor Walter Woon. With the establishment of a charter half a century later, the grouping comprising 10 member states still faces hurdles in complying with the rule of law, the David Marshall Professor of NUS Law observed.

As a member of the High Level Task Force which drafted the ASEAN Charter, Prof Woon provided an insider’s perspective of the challenges encountered at the David Marshall Lecture on 13 November. The talk titled “Building the Rules-Based ASEAN Community: Strengthening the Centre” was organised by NUS Law and NUS Centre for International and Dispute Resolution (CIDR).

Distinguished guests attending the event included Professor S Jayaikumar, former Singapore Deputy Prime Minister, and Chairman of the NUS Law Advisory Council and CIDR; Professor Tommy Koh, Singapore’s Ambassador-at-Large and CID Chairman; and Mr George Yeo, former Singapore Foreign Affairs Minister.

Prof Woon, who is the Deputy Chairman of CIDR, highlighted that the ASEAN Charter has pledged to build a rules-based organisation committed to democracy, good governance and rule of law. However, the ASEAN way has been rather ad hoc: the approach fixes problems first, then looks at rules and institutions later.

Thus, a strong Secretariat centre is critical in monitoring and enforcing the Association’s rules, Prof Woon stressed. If a political rather than legal decision occurs in arbitration, ASEAN will lose all credibility as a rules-based organisation, he warned.

Mr Yeo, however expressed optimism in ASEAN’s progress although the journey has been slow. He lauded the organisation’s positive role in facilitating the democratic transformation of Myanmar, saying that the recent transition to the National League for Democracy led by Ms Aung San Suu Kyi was a “triumph of ASEAN”.

Prof Woon has put together his first-hand experience on the Charter in The ASEAN Charter. “A Commentary.” Launched at the event, the book published by NUS Press reveals how its provisions came to be drafted, and how they relate to diplomatic practice.

Nineteen exceptional alumni were recognised at the biennial NUS Alumni Awards held on 19 November, including Eminent Alumni Award recipients NUS Tembusu College Rector Professor Tommy Koh and NUS University Professor Wang Gungwu. They were honoured for having excelled locally and internationally, and for their significant contributions to the University and society.

The Eminent Alumni Awards, the event’s highest honours, are presented to alumni who have distinguished themselves nationally or internationally for their exceptional and substantial contributions and achievements in public and community service; in arts, sports, culture or entrepreneurship; or in a profession or scholarly field. The other two categories are the Distinguished Alumni Service Award and Outstanding Young Alumni Award.

Prof Koh, who was from the pioneer class of law students at the University of Malaya in Singapore, NUS’ predecessor institution, graduated in 1961 with First Class Honours in Law. He has since proven to be an outstanding lawyer, professor and diplomat. He joined the University of Singapore’s Faculty of Law in 1962, and served as Dean from 1971 to 1974.

Prof Koh’s diplomatic career as Singapore’s Permanent Representative to the United Nations and head of the country’s overseas missions in the US, Canada and Mexico spanned two decades. Since 1995, he has been Singapore’s Ambassador-at-Large at the Ministry of Foreign Affairs. His other appointments include Chairman of the Governing Board of the Centre for International Law at NUS, and the International Advisory Panel for the Asia Research Institute.

Prof Wang, an acclaimed authority on Chinese history, received an Honours degree in History and a Master of Arts from the University of Malaya in Singapore in 1953 and 1955, respectively. He served as a lecturer at his alma mater from 1953 to 1959, and then at the same university in Malaysia from 1959 to 1968, where he became Dean of the Faculty of Arts and Professor of History.

After a decade at the University of Hong Kong as Vice Chancellor, Prof Wang joined NUS’ East Asian Institute as Director and was Professor at the NUS Faculty of Arts and Social Sciences from 1997 to 2007. In 2007, he received the title of University Professor by NUS, the institution’s highest academic achievement. Currently, he chairs the governing boards of the NUS Lee Kuan Yew School of Public Policy and the East Asian Institute.
Versatile wearable sensor unlocks new applications

A sensor flexible enough to be used in soft robotics, wearable consumer electronics, smart medical prosthetic devices and real-time healthcare monitoring — this has now been made possible with an invention by NUS engineers.

Tactile sensors measure diverse properties arising from physical interaction, with the data transmitted to a connecting analytical system.

The NUS sensor, the first of its kind based on liquid, is small, thin, highly flexible and durable, unlike existing tactile sensors in solid-state form. The latter are generally rigid, inhibit natural body movement and prone to deformation and failure under pressure.

Being simple and cost-effective to produce, the new device developed by NUS Biomedical Engineering graduate students Kenry and Yeo Joo Chuan, under the supervision of Professor Lim Chwee Tek, is ideal for applications.

The product is fabricated on a flexible base, such as common silicone rubber, and uses an advanced two-dimensional nanomaterial in liquid form. The non-corrosive and non-toxic material makes the sensor safe and discreet, while allowing it to conform to any shape.

The researchers conducted a series of demanding tests on the device, including pressing, bending and stretching, even driving a car over it. The tough item performed admirably, giving consistent readings throughout the trials without compromising its functionality.

Prof Lim noted that the microfluidic device addresses an existing gap in the market.

Another possibility is drug delivery via a skin patch, where medication such as insulin can be administered into the body directly through microneedles.

The team has filed a patent for their invention and is exploring licensing partnerships for commercial development.

Heart valve implant without major surgery

For some patients with heart valve problems, open-heart surgery to replace or repair their diseased valve may not be an option. For instance, the elderly or those suffering from multiple chronic diseases are not suitable candidates for a major operation.

Thus, it is good news that researchers at NUS have engineered a prosthetic valve that can be implanted through a small incision to treat mitral regurgitation. This serious condition, where the heart’s left valve does not close properly and reduces the amount of circulating blood, affects about 12 million people worldwide. Left untreated, it can lead to death within six years in one-third of patients.

The NUS valve, known as VeloX, is jointly developed by Associate Professor Leo Hwa Liang from NUS Biomedical Engineering and Dr Jimmy Hon from NUS Surgery. The prosthetic valve made of pericardial tissue, contained within a self-expanding polymer-coated nitinol-titanium alloy stent frame, can be compressed to the thickness of a pencil and loaded on a catheter.

The device is then delivered straight into the left heart through a small incision made either on the leg or between the ribs.

Assoc Prof Leo pointed out the unique ability of VeloX to be self-centring due to its retrievable and repositionable structure. This enables optimal positioning, a crucial factor for successful implantation.

Dr Hon said the device also restores the unidirectional flow of blood in the heart’s left chamber alleviating symptoms associated with mitral regurgitation.

A patent has been filed for the invention and a spin-off company is in the works. The team plans to work with medical technology companies to commercialise the device soon.

Gene protects against ‘chemobrain’ in breast cancer

NUS researchers have discovered a gene that protects against cognitive impairment associated with chemotherapy, commonly known as “chemobrain”, in early-stage breast cancer patients.

Between 2011 and 2014, the team led by Associate Professor Alexandre Chan and PhD candidate Terence Ng from NUS Pharmacy studied 145 Asian patients with early-stage breast cancer from the National Cancer Centre Singapore and KK Women’s and Children’s Hospital.

The patients who were receiving chemotherapy had their cognitive functions, quality of life and behavioural symptoms assessed before, during and after chemotherapy treatment.

Genotyping of their blood samples was also performed together with Associate Professor Ho Han Kiat from NUS Pharmacy.

The scientists found that carriers of a variant of the brain-derived neurotrophic factor (BDNF) gene, which produces a protein that regulates neuronal function and development, were less susceptible to cognitive decline, predominately in terms of verbal fluency and multitasking ability.

The NUS findings, published in Neuro-Oncology in August, is the first to highlight the association between the BDNF gene and cognitive changes in cancer patients.

The discovery allows researchers to better understand the mechanisms that lead to the development of chemotherapy-induced side effects such as memory loss and poorer multitasking ability often experienced by breast cancer patients. It will also help doctors identify high-risk patients and take early intervention measures to avert or minimise cognitive impairment in these people.

The team plans to conduct further studies to validate their findings. They also hope to collaborate with partners in the development of therapeutics for preventing cognitive impairment in breast cancer patients.
Tiny camera captures big picture

A shot of the moon taken by Tiny1.

Instead of luging heavy expensive equipment to record images of objects in space, astronomers can now rely on a light, but mighty compact camera to do the job.

A start-up, comprising former and current NUS students, has developed the world’s first compact camera capable of capturing sharp pictures of celestial bodies.

Known as Tiny1, the pocket-sized camera houses powerful software and sensors that detect extremely dim light within a short exposure time of about 30 seconds, allowing users to take pictures of the Milky Way and Northern Lights. By employing innovative technology, it processes captured images in half the time needed by traditional cameras.

The device’s unique Point-To-Star feature provides updated constellation charts and a live preview to help users locate the objects they want to shoot. Regular updates on events such as super moons and meteor showers informs users of photo opportunities.

The developers of Tiny1 — Grey Tan, Chief Executive Officer; Asprit Singh Arora, Chief Operating Officer; and Chia Li Wei, Chief Technology Officer — founded TinyMOS early last year. Grey and Asprit, both recent NUS graduates, took the University’s New Product Development module and came up with the TinyMOS concept and business case. Final year Engineering student Li Wei worked on the technical aspects.

Utilising work spaces offered by the Infocomm Development Authority of Singapore, the team created the first prototype after about six months. This came in two parts — the sensor demonstrator which shows off their imaging capabilities and the software demonstrator which displays the camera’s user interface, such as its Point-To-Star functionality.

Tiny 1 is currently the company’s sole product, but other offerings are in the works. “We want to move on to cameras that do other things current cameras cannot,” said Li Wei.

TinyMOS has raised some $200,000 from angel investors and received a $250,000 proof-of-concept grant from SPRING Singapore. The company plans to launch a campaign early next year on Indiegogo, a crowdfunding site which allows project owners to attract funds.

Programme makes waves in synthetic biology

The NUS Synthetic Biology for Clinical and Technological Innovation (SynCTI) programme was officially launched on 30 September at the NUS Centre for Life Sciences. The new $25 million research initiative in the field of synthetic biology aims to translate the development of novel biological systems into benefits for the human population, as well as groom the next wave of synthetic biologists.

Synthetic biology combines disciplines such as biotechnology, evolutionary biology, molecular biology, systems biology, biophysics, computer engineering and genetic engineering to create complex, biologically based systems that display functions not found in nature. Applications may include biosensing, therapies, and the production of bioplastics, pharmaceuticals and novel biomaterials.

Estimates put the global market for synthetic biology at more than $14 billion by 2016, potentially serving as the next engine of economic growth in technologically advanced countries like Singapore.

Senior Advisor to the NUS President Professor Barry Halliwell, who launched the initiative, pointed out that synthetic biology is one of the most promising fields of modern science with far-reaching applications. He believes that NUS’ strength in translational research will help develop Singapore as one of the leading synthetic biology hubs in the world.

SynCTI, with more than 60 NUS research staff from Engineering, Science and Medicine, will be headed by Associate Professor Matthew Chang from NUS Biochemistry. The programme aims to train more than 90 synthetic biologists over the next three years.

SynCTI scientists will work closely with industry partners and leading international research groups, supported by seven state-of-the-art laboratories. The programme will also host Singapore’s only Synthetic Biology Foundry, where biological systems are designed and produced for translational research.

UOB’s $50m fund to develop future leaders

NUS students from underprivileged families will soon be able to tap on a new endowment established by United Overseas Bank: Limited (UOB).

The $50 million Wee Cho Yaw Future Leaders Award programme, set up by UOB with a $20 million gift, was matched with a 1.5-times grant by the Singapore government. The Award aims to groom potential leaders and will provide scholarships in partnership with NUS and the Nanyang Technological University (NTU) in Singapore.

Awards will be chosen based on their financial background, followed by academic performance and community efforts. Besides tuition fee funding, students will also have the opportunity to leverage UOB’s vast network. The first group of awardees will be selected next year.

Dr Wee Cho Yaw, Chairman Emeritus and Adviser of UOB, has always been a strong advocate of education and development of exceptional leaders. He served on the NUS Council from 1980 to 2000 and helped establish the Wee Cho Yaw Singapore-China Finance and Banking Forum in 2009.

The Forum seeks to promote a deeper understanding of banking, economics and finance in Singapore and China, as well as fund scholarships for postgraduate students who do research in business, economics and finance.

In 2008, NUS conferred the Honorary Doctor of Letters on Dr Wee for his outstanding contributions to banking, education and community leadership.

Mr Wee Chee Cheong, Deputy Chairman and Group CEO of UOB, said the Award was a natural extension of Dr Wee’s support of education over the past several decades.

Class giving spurs accountability fund

Now that I am here in NUS, I cannot stop thinking about how many more students we can help, how investing in education is the key to changing our future, and how important philanthropy is in making NUS a top university.

Mrs Constance Koh ’75 (Accountancy)

On the 40th anniversary of the NUS Accountancy Class of 1975, Mrs Constance Koh ’75 gathered her classmates not only to celebrate their lasting friendships, but more importantly, to honour the spirit of giving by raising funds for the Accountancy Class of 1975 Bursary. The Director of Operations at the NUS Development Office has always been involved in charity work but became an avid fundraiser when she joined the Development Office three years ago.

To find out more about making a gift to NUS, call 1-800-338-3567, email askdvo@nus.edu.sg or visit www.giving.nus.edu.sg

From left: Asprasit, Prof Chang with SynCTI Principal Investigators Prof Kim Chu-Young and Asprasit, Grey and Li Wei.
NUS110 ends on high note

Despite an overcast sky and a brief shower, more than 2,500 enthusiastic members of the NUS community and public converged at the Singapore Botanic Gardens on 28 November for an evening of fun and orchestral delights.

The NUS110 Concert in the Park, the University’s rousing finale to its year-long 110th anniversary celebrations, showcased NUS’ very own Yong Siew Toh Conservatory Orchestra, which performed for the first time at the Gardens, a UNESCO World Heritage site.

Among the guests were NUS Chairman Mr Wong Ngit Liong; NUS Board Trustees Mr Abdullah Tarmugi, Mr Goh Yew Lin and Ms Chan Chia Lin; NUS President Professor Tan Chorh Chuan; and NUS110 Steering Committee Chairman Professor Andrew Wee. Some residents from Taman Jurong, where the NUS110 kick-off event was held in February this year, also attended the event.

Prior to the concert, children were treated to balloon sculpting, while magicians kept them spellbound with card and sleight-of-hand tricks. The Lorong Boys, a local band comprising Yong Siew Toh Conservatory of Music alumni, entertained the visitors with popular tunes.

The Orchestra, led by Principal Conductor Associate Professor Jason Lai, stirred up the festivity with Brahms’ celebratory Academic Festival Overture. This was followed by a beautiful rendition of Mozart’s Violin Concerto, featuring NUS alumnus Mr Loh Jun Hong, one of Singapore’s top violinists, with Dvorak’s moving New World Symphony soon after.

As twilight descended, the Orchestra played the crowd-pleasing Waltz of the Flowers from Tchaikovsky’s The Nutcracker Suite, a fitting start to the upcoming Christmas season. The evening’s repertoire concluded with John Williams’ orchestral suite from the Harry Potter movies, which was also the musicians’ encore.