Tribute to EW Barker

MAY-JUN 2017

NUS NEWS

Centre, Bursary in Honour of EW Barker

Mr Lee (2nd from right) and Prof Chesterman (far right) mingling with NUS Law students at the event

The Centre for Law & Business (CLB) at NUS Law has been renamed the EW Barker Centre for Law & Business to pay tribute to Singapore's first and longest-serving law minister Mr Edmund William Barker.

Singapore Prime Minister Lee Hsien Loong launched the Centre on 29 May at the NUS Bukit Timah Campus.

Mr Lee said at the event, "Because our legal system is respected and admired domestically and abroad, we have distinguished ourselves from our competitors and made our way in the world. But our laws cannot be static, because the world is not static. Therefore, it is critical to keep our laws and our lawyers up to date, and maintain our competitive edge. This is where the Centre can help us."

CLB was established in 2014 to promote research and educational opportunities for faculty, students, legal practitioners and business executives who share a common interest in law, business and economics. The Centre is expanding its manpower and activities, aided by a philanthropic gift totaling $21 million.

"The EW Barker Centre for Law & Business ensures that not only will Mr Barker's story be told and his name remembered, but that his legacy will carry forward in perpetuity. The law was his first calling and this centre, which will be a thought-leader in cutting-edge legal debates, serves as both a reminder of Singapore's first law minister and an inspiration to build on his many achievements," said Professor Simon Chesterman, NUS Law Dean.

"By combining legal know-how with political instincts and a human touch, Mr Barker came up with practical solutions and contributed to creating and building a prosperous Singapore."

– Mr Lee Hsien Loong, Singapore Prime Minister

The late Mr Barker enrolled in Raffles College, a predecessor institution of NUS, in 1939 and went on to graduate with a law degree with honours from Cambridge University in 1951.

He practised law from 1952 to 1964 in Singapore, specialising in civil litigation.

Entering politics in 1963, Mr Barker served as Speaker of the Legislative Assembly until 1964. He became Singapore's first Minister for Law in 1964 and enjoyed an illustrious career spanning more than two decades, including various concurrent cabinet appointments with the ministries of National Development; Home Affairs; Environment; Science and Technology; as well as Labour. He also served as Leader of the House from 1968 to 1985.

Mr Barker played a key role in drafting the legal documents for Singapore's separation from the Federation of Malaysia in 1965, as well as in the development of the Constitution.

The EW Barker Bursary was also launched with support from an anonymous donor and members of the legal fraternity. Up to two bursaries of $6,000 each will be awarded per year to needy NUS Law undergraduates starting in the new academic year.

Cover photo: Mr Lee with Mrs Gloria Barker at the EW Barker Centre launch
Photo: Ministry of Communications and Information

Ho Teck Hua to Lead Smart Nation Initiatives

Prof Ho will lead the new Singapore Data Science Consortium and the Management Committee of AI.SG

Professor Ho Teck Hua, NUS Deputy President (Research & Technology) and Tan Chin Tuan Centennial Professor, will be leading two new national research efforts in artificial intelligence (AI) and data science, through the AI.SG and the Singapore Data Science Consortium initiatives.

Dr Yaacob Ibrahim, Minister for Communications and Information, made the announcement at the opening of innovfest unbound on 3 May.

Launched by the National Research Foundation (NRF) Singapore, AI.SG will be a national partnership that draws on Singapore's AI capabilities from across various sectors to tackle major challenges facing society and industry, encourage adoption of AI and machine learning in industry, and invest in the next wave of AI capabilities.

NRF is injecting up to $150 million over five years in AI.SG. Operations will be overseen by a Management Committee, co-chaired by Mr Tan Kok Yam, Deputy Secretary, Smart Nation and Digital Government in the Prime Minister's Office, and Prof Ho, who will serve as Executive Chairman.

The new Singapore Data Science Consortium, a collaboration between NRF, NUS, Nanyang Technological University, Singapore Management University and the Agency for Science, Technology and Research, will seek to boost partnership between industry and researchers in big data analytics.

"A key feature of AI.SG will be a series of Grand Challenges that will inspire both the researchers and the end users to tackle major societal challenges that are not only relevant for Singapore but also the global community."

– Professor Ho Teck Hua, NUS Deputy President (Research & Technology)

Prof Ho explained the significance of data science and the establishment of the Consortium, "Data science is not just about capturing a large amount of data quickly and accurately. It is equally important to compute using that data to discover predictive and causal relationships, and create solutions to address real-world challenges.

This is a tremendous endeavour that requires collaboration and contributions from a diverse community comprising scientists, engineers, domain experts, government agencies and end users."

AI.SG focus areas
- Finance
- Healthcare
- City management solutions

Singapore Data Science Consortium focus areas
- Finance
- Healthcare
- Customer and retail
- Manufacturing
- Logistics
- Transport

Exceptional Contributions Recognised

The award recipients (from left): Asst Prof Yeo, Assoc Prof Linga, Dr Lee, Prof Tan, Prof Choo, Prof Liu, Dr McMorran and Asst Prof Saxena

NUS honoured eight outstanding individuals for their noteworthy achievements and contributions to education, research and service at NUS University Awards 2017 on 28 April.

Professor Choo Chiau Beng, Provost's Chair and Professor (Practice) with Department of Civil and Environmental Engineering in NUS Engineering as well as Department of Management and Organisation in NUS Business School; and Professor Leo Tan Wee Hin, Professorial Fellow with NUS Biological Sciences and Lee Kong Chian Natural History Museum, were bestowed the Outstanding Service Award. This prestigious honour is conferred on individuals who have made considerable contributions to the development of the University, Singapore and the global community.

Prof Choo has served Singapore unstintedly, most notably during his 42-year career with Keppel Corporation as its CEO, as well as Chairman and CEO at Keppel Offshore & Marine Ltd. Under his visionary leadership, the company developed into one of the forerunners of the marine and offshore sector.

Prof Choo was instrumental in the establishment of the Keppel Professorship in Ocean, Offshore and Marine Technology, which led to the creation of the Centre for Offshore Research and Engineering in NUS. He also helmed the set-up of the Keppel-NUS Corporate Laboratory, in collaboration with the National Research Foundation.

Prof Tan, a respected educator and scientist, was pivotal in developing the National Institute of Education into a globally acclaimed centre for teachers. During his tenure as Director and CEO of the Singapore Science Centre, he transformed it into a vibrant institution for disseminating knowledge in science and technology. Prof Tan had also served as Chairman of the National Museum Development Committee that inaugurated the National Heritage Board. The revolutionary Gardens by the Bay was introduced under his watch as Chairman of the National Parks Board. At NUS, Prof Tan was instrumental in the establishment of the Lee Kong Chian Natural History Museum. He was actively involved in all aspects of the project, from fundraising to finance and research.

Prof Choo Chiau Beng

Prof Leo Tan

Nurturing educators and innovative researchers were also celebrated for their dedication.

Dr Adrian Lee from NUS Chemistry and Dr Christopher McMorran from NUS Japanese Studies were recognised with the Outstanding Educator Award. Associate Professor Praveen Linga from NUS Chemical and Biomolecular Engineering; Assistant Professor Prateek Saxena from NUS Computer Science; and Assistant Professor Thomas Yeo Boon Thye from NUS Electrical and Computer Engineering, received the Young Researcher Award for works which show potential in extending the frontiers of knowledge in their respective fields.

Professor Liu Xiaogang from NUS Chemistry, who received the President's Science Award in 2016, was presented with the Outstanding Researcher Award.

NUS University Awards 2017 Recipients

Outstanding Service Award

Honours individuals who have distinguished themselves by their sustained contributions in serving the University and society

Prof Choo Chiau Beng
Provost's Chair and Professor (Practice), Department of Civil and Environmental Engineering, NUS Engineering, and Department of Management and Organisation in NUS Business School

Prof Leo Tan
Professorial Fellow at Department of Biological Sciences, NUS Science, and Lee Kong Chian Natural History Museum at NUS

Outstanding Educator Award

Acknowledges faculty members who have excelled in engaging and inspiring students in their quest for knowledge

Dr Adrian Lee
Department of Chemistry
NUS Science

Dr Christopher McMorran
Department of Japanese Studies
NUS Arts and Social Sciences

Outstanding Researcher Award

Recognises researchers whose works have impacted and advanced the frontiers of knowledge, and positioned NUS at the forefront of their areas of expertise

Prof Liu Xiaogang
Department of Chemistry
NUS Science

Young Researcher Award

Commends researchers whose works show promise in extending the frontiers of knowledge in their respective fields

Assoc Prof Praveen Linga
Department of Chemical and Biomolecular Engineering
NUS Engineering

Asst Prof Prateek Saxena
Department of Computer Science
NUS Computing

Asst Prof Thomas Yeo Boon Thye
Electrical and Computer Engineering
NUS Engineering

Eminent Alumni Recognised

NUS Arts and Social Sciences (FASS) celebrated the achievements of six eminent alumni from the Faculty at the FASS STARS Awards 2017 on 21 April.

The Distinguished Arts and Social Sciences Alumni Award was presented to Dr Noeleen Heyzer, Social Scientist and Former United Nations Under-Secretary General; Mr Abdullah Tarmugi, Member of the Presidential Council for Minority Rights; Former Ambassador Mr Harry Chan Keng Howe; Mr S Dhanabalan, Senior International Advisor of Temasek International; NUS Emeritus Professor Lim Chong Yah; and Mr Ho Kwon Ping, Executive Chairman of the Banyan Tree Holdings Limited.

The award is conferred on alumni in recognition of their scholarship and outstanding service to the Faculty, the University and Singapore. This year's recipients have also shown excellence in various fields, contributing significantly to the promotion of the arts and social sciences.

Recipients of the Distinguished Arts and Social Sciences Alumni Award were (from top left clockwise): Mr Dhanabalan, Dr Heyzer, Mr Abdullah, Mr Ho, Prof Lim and Mr Chan

Dr Heyzer, an NUS Trustee, shared that the Department of Sociology and Anthropology at the then University of Singapore deepened her thinking and interest in society and the world.

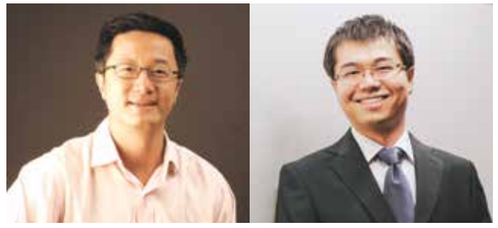
Mr Abdullah, who is also an NUS Trustee, remembered his undergraduate years as "a time of growth, of learning and of finding out more about myself and the phenomena and people around you".

NUS Profs Receive UK Awards

NUS Geography Professor Henry Yeung and NUS Chemical & Biomolecular Engineering Assistant Professor Ning Yan have been acknowledged by leading professional associations in the UK for their exceptional contributions to their respective fields.

Prof Yeung received the Royal Geographical Society (RGS) (with the Institute of British Geographers) Murchison Award 2017 for his pioneering publications on globalisation.

The Murchison Award, the most senior among the RSG Awards, is conferred upon geographers whose publications are judged to have contributed most to geographical science in recent years.



Prof Yeung (left) and Asst Prof Yan were honoured for their outstanding contributions in their respective fields of study

Prof Yeung is an economic geographer and Co-Director of the Global Production Networks Centre based in NUS Arts and Social Sciences, which looks at the global production and economic impact of goods and services.

Asst Prof Yan has been presented the Environment, Sustainability and Energy Division Early Career Award 2017 by the Royal Society of Chemistry for his work on generating materials from renewable sources such as agricultural and food waste.

Asst Prof Yan established the Lab of Green Catalysis at NUS, which focuses on the valorisation of waste materials into value-added chemicals and the development of next-generation metal catalysts for industrial energy generation and environmental protection.

innovfest Celebrates Digital Disruption

Dr Chan welcoming delegates to innovfest

The largest annual technology festival in Southeast Asia, innovfest unbound 2017, was held on 3 and 4 May. It drew record crowds of over 10,000 delegates and visitors from more than 50 countries in a celebration of digital disruption.

Organised by NUS Enterprise and unbound, in partnership with the Info-communications Media Development Authority (IMDA), innovfest also served as an anchor event in IMDA's Smart Nation Innovations Week.

Guest-of-Honour Dr Yaacob Ibrahim, Minister for Communications and Information, outlined the government's push for artificial intelligence (AI) and data science in his keynote address, by announcing the establishment of two national research initiatives — AI.SG and the Singapore Data Science Consortium.

At a panel discussion titled "Why Governments Need Start-ups", Dr Lily Chan, CEO of NUS Enterprise and co-chair of innovfest unbound, noted that governments are needed to initiate and spur innovation, especially in small countries like Singapore. However, a balance is needed as too much intervention may not always be ideal, she cautioned.

NUS alumnus Mr Tan Min-Liang, CEO of Razer, took centre stage when he unveiled "The Cult of Razer".

Razer CEO Mr Tan sharing insights on the company's cult following

Having built the highly successful company that produces cutting-edge gaming devices, Mr Tan shared the secrets behind Razer's cult following among its customers. His advice for aspiring start-ups: focus on a niche one is passionate about, then scale; find talent anywhere in the world; and speak directly to customers.

Dollars and Entrepreneurial Sense

A web plug-in that removes the pain of dealing with foreign currencies and exchange rates for online shopping is earning support among shoppers.

RateX, the start-up launched last December to offer the app, was founded by Economics undergraduate Jake Goh, with Computer Science students Davis Gay and Lim Jing Rong. As a cross-border payment solution, RateX lets online shoppers pay in their local currency, which is cheaper than paying in foreign currency.

It was the opportunity to intern overseas with an Internet start-up that attracted Jake to join NUS. He credits the NUS Overseas Colleges (NOC) programme for the invaluable lessons learnt when the trio built the app.

Jake's one-year stint with PlayDate in New York City under the NOC programme allowed him to apply his US experience to setting up RateX with his two buddies, who also went on their respective NOC stints.

From left: Jing Rong, Jake and Davis co-founded RateX, which is incubated at NUS Enterprise

In the beginning, RateX's solution was available only on one website, Amazon, and one currency, the US dollar. RateX now works on shopping sites like Lazada and Forever 21, with plans for another 23 websites.

Another currency, either the Chinese Renminbi or the Japanese Yen, is in the works.

CASE Leadership Symposium

Prof Tan (left) and Ms Sue Cunningham, CASE President and CEO

In the face of a challenging global landscape, 11 higher education leaders gathered at NUS on 27 April in search of 10 big ideas for the future of their institutions. The exercise was part of the Council for Advancement and Support of Education (CASE) Higher Education Leadership Symposium, held in celebration of the Council's 10th anniversary in the Asia-Pacific region.

In his welcome address, Prof Tan underscored that universities need to become more agile and better at defining and communicating their strategies to create positive change.

The proposed ideas were presented later at the closing plenary of the CASE Asia-Pacific Advancement Conference.

CASE is an international association of educational institutions that supports more than 3,700 schools, colleges and universities worldwide in developing their fundraising, alumni relations, marketing and communications.

Asian Universities Strengthen Ties

The Asian Universities Alliance was launched by Prof Tan (second from left) and representatives from other universities

The Asian Universities Alliance (AUA) was launched on 29 April in Beijing, China, to collectively address regional and international challenges in higher education and the economy, as well as in scientific and technological advancement.

NUS, one of the 15 leading Asian universities in the grouping, was represented by Professor Tan Eng Chye, NUS Deputy President (Academic Affairs) and Provost.

The University's participation will further deepen ties with member universities such as Seoul National University, Tsinghua University and University of Tokyo, with which NUS has enjoyed multiple long-standing and productive partnerships. The alliance will also provide new opportunities for collaboration in education, research and learning.

AUA seeks to achieve several key objectives: promote the mobility of students, scholars and staff among all member universities; strengthen research collaboration and joint innovation; discuss higher education strategies and policies; and compile and publish annual reports on Asian higher education.

New Minor in Art History

Students taking the Minor in Art History can attend classes within museum galleries

NUS students keen to learn more about the arts can now opt to pursue a Minor in Art History.

The new curriculum was launched on 8 April by NUS Arts and Social Sciences, in collaboration with National Gallery Singapore. This programme, offered by the NUS Department of History and supported by NUS Museum, will be taught by NUS faculty and practising curators.

Speaking at the launch at National Gallery Singapore, Guest-of-Honour Ms Grace Fu, Minister for Culture, Community and Youth, pointed out that the new programme was relevant and practical in Singapore's bourgeoning arts ecosystem.

The new Minor seeks to cultivate the ability to interpret a wide range of artwork — from paintings to architecture — that straddles different geographies and time periods.

Students can also get a glimpse of what goes into curating an exhibition and appreciate the diversity of materials and techniques in art production around the world.

Classes are held within museum galleries, and internship opportunities with art galleries and museums are available for practical work experience. NUS students are required to complete a minimum of six modules to be awarded the Minor in Art History.

Alumni Go Back to School

NUS graduates can look forward to an interesting variety of 140 modules served up by the University, as part of a three-year lifelong learning initiative for alumni.

The eight schools offering the modules are NUS Arts and Social Sciences, Business School, Computing, Design and Environment, Engineering, Lee Kuan Yew School of Public Policy, Science and the School for Continuing and Lifelong Education.

The modules range from undergraduate to postgraduate levels, with majority of them postgraduate courses. Close to 770 places will be available for NUS alumni.

A one-year pilot from 1 August 2017 to 30 July 2018 will kick off the initiative during which NUS alumni can take up the modules at no cost. Course fees will be waived in the subsequent two years, with only a Student Services Fee of $261.85 payable per semester. NUS alumni can take up to two modules during the three-year period, limited to one module per semester to expand learning opportunities for more alumni.

The courses will be conducted during term time, and alumni will study alongside current NUS students. The latter will continue to enjoy priority for course modules, with a cap of 10 per cent per class set aside for alumni.

Syariah Law
Made Accessible

From left: Sheiffa Safi Shirbeeni, Mdm Halimah and Prabu Devarai, deputy director of the Syariah Law Forum, launching the book on Syariah Law

An eye-opening volunteer stint at the Syariah Court, which deals with Islamic law, convinced NUS Law Year 2 student Sheiffa Safi Shirbeeni of the need to raise awareness about Syariah Law, and how it governs specific matters for the Muslim community in Singapore such as marriage and inheritance.

With this in mind, Sheiffa galvanised 15 like-minded NUS Law undergraduates to organise the inaugural Syariah Law Forum at NUS on 13 May.

In her opening address, Guest-of-Honour Madam Halimah Yacob, Speaker of Parliament, praised the students' efforts in building up knowledge in this area, as well as offering a platform for candid discussion.

"Education and learning about each other's customs and traditions are an important and ongoing process. This inaugural Syariah Law Forum goes a long way in fostering a culture of open sharing. Such efforts can only lead to better understanding among different racial-religious groups in Singapore, and can help to defuse tensions and prevent misinformation as and when they arise," she emphasised.

"Such forums would also inspire us to rethink and review our positions to ensure that the laws that we have remain relevant to the contemporary needs, demands of modern societies and changing social norms."

– Madam Halimah Yacob, Speaker of Parliament

At the forum, legal practitioners and academics provided insights into topics ranging from the history of Syariah Law and its application within the framework of the Singapore legal system, as well as the procedures of the Syariah Court and its intersection with the Family and Civil Courts.

Sheiffa explained that the event was opened to the public "because we believe that everyone can benefit from an understanding of what Syariah is and how it is really applied in Singapore".

A book titled *Navigating Muslim Law in Singapore* was also launched at the forum. Compiled by the students who won the NUS Law Class of 1992 Pro Bono Award, with support from NUS Law staff and legal practitioners, the book traces the history of Syariah Law, from its origins to The Administration of Muslim Law Act. It also delves into the jurisdiction and procedures of Syariah in Singapore and the laws and principles underpinning it, as well as compares the practices of civil law and Muslim Law.

Complimentary copies of the book are available at the NUS C J Koh Law Library, mosques, public libraries and social service centres.

Mass Extinction
in the Crosshair

Panellists (from left) Prof Ng, Dr Chan, Prof Koh and Ms Tan discussed the drivers of mass extinction and what the world can do to reverse it

Addressing the rampant destruction of the environment that threatens wildlife, NUS Tembusu College held the Tembusu Forum titled "Can we stop the mass extinction of species?" on 4 April to raise awareness of this worrying issue.

Moderated by Professor Tommy Koh, Rector of NUS Tembusu College and Singapore's Ambassador-At-Large, the discussion kicked off with a global overview of mass extinction by Ms Elaine Tan, CEO of World Wildlife Fund (WWF) Singapore.

Ms Tan elaborated on what WWF considers the key drivers of mass extinction — habitat loss, species overexploitation, pollution and climate change — all a consequence of human activity. She stressed that a change in food and energy systems is necessary for conservation to be successful.

Professor Peter Ng, Head of NUS Lee Kong Chian Natural History Museum and Professor at NUS Biological Sciences, shared his personal experience as a researcher in the field of marine biology and biodiversity.

He noted that five major mass extinction events had occurred according to fossil documentation, and after each one, "life came back in full force". He added that life on the planet will continue and there will be new species succeeding the extinct ones after each catastrophe.

"For conservation to succeed in the years ahead, for us to ensure that this sixth mass extinction doesn't become worse, all of you have an awful challenge. How far are you willing to go to save those things?"

– Professor Peter Ng, Head of NUS Lee Kong Chian Natural History Museum

Prof Ng believes that although mass extinction is inevitable, it would be morally irresponsible to do nothing.

Dr Lena Chan, Group Director of the National Biodiversity Centre at the National Parks Board, gave an emphatic "yes" to the overarching question. Since many of the drivers of mass extinction arise from human activities, it is within our power to stop mass extinction, she maintained.

Dr Chan explained her optimism — more species are still being discovered, while species thought extinct have been rediscovered. She outlined Singapore's actions for the cause, including conservation of ecosystems, enhancement and restoration of habitats, as well as community outreach.

The ensuing questions from the audience included determining the efficiency of conservation efforts, the possibility that conservation has become commodified, and the actions an individual could take.

Hybrid Nanoparticles
Probe Deeper

A multidisciplinary team of researchers from Singapore, Korea, China and the US, led by NUS Chemistry Professor Liu Xiaogang, has developed a hybrid nanoparticle structure that offers potential in deep tissue bioimaging and drug delivery.

This unique structure was created by combining two types of nanoparticles — upconversion nanoparticles and gold nanoparticles.

Upconversion nanoparticles, comprising metal ions, have the ability to convert light from low-energy to high-energy by lowering the wavelength. When near-infrared (NIR) light is shone on these inorganic nanoparticles, the previously unseen light emission becomes visible to the human eye in the colours of the rainbow.

Upconversion nanoparticles offer possible anti-counterfeiting applications in currency and merchandise. The novel hybrid nanoparticle structure has the added advantage of enabling DNA strands to be attached to the upconversion nanoparticles, expanding the promise for cancer markers and bioimaging.

Explained Prof Liu, who is Outstanding Researcher Award recipient of the 2017 NUS University Awards, "We can design the particles to selectively bind to cancer cells so that we can differentiate healthy cells and cancer cells by just looking at the luminescence."

Another use is as a site-specific drug delivery system where the DNA strands encapsulate drug molecules and carry them to the cancer cells. When NIR laser is shone onto the particles, the light emitted also produces heat, causing the heat-sensitive DNA strands to open and release the drugs into the cancer cells. Such targeted drug delivery would reduce the dosage and cost of medicine for treatment.

Prof Liu screening the nanoparticle solutions to check their luminescence

Clearer Imaging
of Liver Cancer

A chemical "dye" designed by NUS scientists for more sensitive imaging in magnetic resonance imaging (MRI) promises some help in the battle against cancer.

A novel nanodiamond-based contrast agent developed by the team headed by Assistant Professor Edward Chow of NUS Pharmacology, Principal Investigator from the Cancer Science Institute of Singapore at NUS, can enhance the visibility of internal body structures and sharpen the visualisation of liver cancer tumours. The findings, published in *Nanomedicine: Nanotechnology, Biology and Medicine* in April, will help in better detection and treatment planning of liver cancer.

The novel contrast agent (grey solution in larger tube) was developed using nanodiamonds and provides clearer MRI images of liver tumours at lower dosages

Contrast agents are given to patients to improve the quality of MRI imaging. There are two modes of MRI, each requiring the use of specific contrast agents which cannot be used together. The new chemical dye developed by NUS is a dual-mode contrast agent, which is advantageous.

The team has also shown that the unique dye can provide a greater imaging contrast than existing contrast agents, even while using lower dosages. Liver tumours not visible without contrast agents before can now be easily seen with the new compound.

More Power
from the Sun

A new solar panel that promises 40 per cent more electric power than existing modules in the market, and which can last for at least 30 years, has been designed by the Solar Energy Research Institute of Singapore (SERIS) at NUS.

The full-sized panel houses a mosaic of high-efficiency bifacial interdigitated back contact (IBC) solar cells, which enables it to produce up to 400W of electric power, compared to the 270W to 290W generated by conventional solar modules.

The SERIS panel encapsulates 60 IBC solar cells from the International Solar Energy Research Center Konstanz, with all the contacts placed on the back, which maximise the sunlight catching area to achieve higher current and efficiency output.

The bifacial panel is also able to absorb light from its front and rear sides, allowing higher power generation in the field by converting ambient light reflected from the ground and panel surroundings.

The robust panel with double-glass insulation, a technique perfected by SERIS since 2009, makes it more durable than current panels that last about 20 to 25 years.

"The newly developed IBC bifacial module is a testimony of SERIS' R&D capabilities in the photo voltaic module technology sector."

– Prof Armin Aberle, SERIS CEO

The innovative fabrication process exploits low temperature interconnection technology to prevent warping of the solar cells from heat. In addition, a custom-designed electrical junction box prevents the rear surface from being shaded to ensure optimal exposure to light.

Professor Armin Aberle, SERIS CEO, highlighted that the prototype module serves as a proof of concept for mass production. He foresees that by transferring the technology to industrial partners, such a high-power product could be available in the market within two years.

Online Calculator Cuts
Hospital Readmissions

An online tool that uses hospital data to quickly predict how likely a patient is to be readmitted within 15 days may soon enable healthcare professionals to provide interventions to high-risk individuals to prevent readmission.

In Singapore, approximately 15 per cent of patients are readmitted within the month, while global rates can go up to 20 per cent.

Developed by NUS Pharmacy Associate Professor Alexandre Chan and PhD candidate Sreemanee Raaj Dorajoo, the online "calculator" was developed and validated based on the data of 1,291 patients discharged from Singapore General Hospital and Khoo Teck Puat Hospital in Singapore between August and September 2015.

The study published in *Pharmacotherapy* earlier this year looked at 15-day readmissions, shown to be the optimal cut-off for identifying potentially preventable readmissions. The web-based system instantaneously calculates the likelihood of readmission based on the presence of risk factors — age, presence of pre-existing conditions, number of discharge medications, discharge destination and evidence of premature discharge against medical advice — and the weightage attached to them.

The research revealed that for each additional medication prescribed, the risk of 15-day readmission increased by about 6 per cent. This suggested that drugs for discretionary use such as to alleviate mild pain or nausea could be counterproductive in some patients, as the increased complexity may lead to errors during self-administration.

Assoc Prof Chan (right) and Sreemanee developed the online calculator

Moreover, patients discharged to nursing homes had higher readmission risks, which calls for appropriate post-discharge care facilities to stem the cycle of readmissions, together with intervention measures such as medication counselling, caregiver training or home visits.

Social Leadership Programme Expands

A CTPCLP Fellow explaining her project to (from right) Mr Chua and Prof Tan

Mr Chua Thian Poh, Chairman and CEO of Ho Bee Land Limited, has pledged a generous $5 million to expand the Chua Thian Poh Community Leadership Programme (CTPCLP) at NUS. This gift, announced at the annual CTPCLP Symposium on 22 April, will double the programme's intake to 80 students annually and provide more resources to enable greater collaboration with social service organisations.

Professor Tan Chorh Chuan, NUS President, thanked Mr Chua for providing the opportunity for students to make a real-life impact. He said, "The skills they have developed through this life-enriching programme will ensure that they understand the challenges faced by different communities in Singapore as they take on leadership roles in the future."

Said Mr Chua, "It is my hope that CTPCLP continues to provide the catalyst for positive social change by encouraging more youths to get involved in community matters, and to empower today's youths with the knowledge and skills necessary to develop viable solutions to societal problems."

This year's symposium, which was attended by Guest-of-Honour Ms Grace Fu, Minister for Culture, Community and Youth, highlighted five project presentations by student groups who partnered social service organisations to examine important social and community issues affecting Singapore and propose alternative solutions.

New Engineering Visiting Professorship

As part of its 90th anniversary celebrations on 21 April, construction and civil engineering group Woh Hup (Private) Limited has gifted $1 million to NUS to set up the Woh Hup Visiting Professorship.

From left: Mr Kim Yong, Woh Hup Deputy Chairman; Mr Yong Mee Him, Woh Hup Executive Director; Prof Chua Kee Chaing, Dean of NUS Engineering; and Mr Eugene Yong, Woh Hup Executive Director

New NUS Board Member

Mr Lai Chung Han, Second Permanent Secretary (Education) at the Ministry of Education, has taken over from Mr Neo Kian Hong on the NUS Board of Trustees with effect from 19 June 2017.

Mr Lai

Photo: Maritime and Port Authority of Singapore

Mr Lai was formerly Chief of the Republic of Singapore Navy from 2014 to 2017. He had served as Commanding Officer of the missile corvette RSS Valiant and Fleet Commander, as well as held a number of senior staff appointments at MINDEF.

Mr Neo, the former Permanent Secretary (Education Development), had served on the Board from 2013 to 2017. He is now Permanent Secretary (Defence Development) at the Ministry of Defence (MINDEF).

The NUS Board of Trustees comprises 22 members appointed by the Minister for Education (Higher Education and Skills), and is chaired by Mr Hsieh Fu Hua. The Board is made up of eminent business leaders, academics, entrepreneurs, and professionals from the public service and private sectors.

Research Fund for Social Work

NUS Social Work launched the Mrs Lee Choon Guan Endowed Research Fund on 10 April as part of its efforts to boost social work research. A $2.37 million gift from the Mrs Lee Choon Guan Trust Fund, it receives fund matching by the Government.

The new fund will support practice research projects which are collaborations between practitioners and NUS researchers in social work to address real-world challenges in Singapore's social service sector.

The Mrs Lee Choon Guan Trust Fund has previously supported education and research initiatives in NUS. Mr Keith Chua, great-grandson of Mrs Lee Choon Guan and Co-trustee for the Trust Fund, presented a gift of $1.5 million in 2009 to help set up the Centre for Social Entrepreneurship and Philanthropy at NUS Business School, which was renamed in 2011 as Asia Centre for Social Entrepreneurship and Philanthropy.

"Every society will have social needs. It is imperative that we pool our collective resources to keep developing appropriate and effective evidence-based interventions," said Mr Chua. "By partnering with NUS, we hope that research emanating from this initiative may also be found helpful in other communities, regionally and internationally."

The first call for applications of research projects will be in 2018, and each project will receive funding of between $20,000 and $30,000. Social workers will work with researchers from NUS Social Work who will partner them as co-principal investigators.

Boost for Aspiring Doctors, Entrepreneurs

From left: Mr Chandra Prakash Khetan, Director of Lotus Life Foundation; Mr Nirmal Singh, Chairman of Lotus Life Foundation; and Prof Tan Chorh Chuan, NUS President at the cheque presentation ceremony

Lotus Life Foundation is helping to nurture future doctors and entrepreneurs at NUS by contributing more than $1.2 million to NUS Yong Loo Lin School of Medicine (NUS Medicine) and NUS Enterprise.

The Lotus-NUS Medical Bursary, comprising four bursaries per year valued at $33,600 each, will be awarded over five years starting from Academic Year 2017/18, to support financially strapped NUS Medicine students.

The Foundation has established the Lotus-NUS Fund at NUS Enterprise to provide seed funding for start-ups involving social enterprise projects founded by Singaporean entrepreneurs. From 2017 to 2021, up to five entrepreneurs or companies will each receive $25,000 yearly, until they are able to attract venture capital funding.

Corporate Fundraiser Refocuses on Education

"We feel it is important to provide financially needy students with the opportunity to level up in society. Family background, to a certain extent, does affect a person's educational journey."

Mr Ong Hwee Li, CEO of SAC Capital Pte Ltd

Coming from a simple background, Mr Ong Hwee Li understands exactly what it is like to struggle financially while studying. He established the SAC Capital Bursary at NUS Business School to help business students in financial need. SAC Capital is a successful corporate finance firm specialising in raising funds for other companies through the capital market.

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

NUSGIVING THE POWER OF POTENTIAL

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Tree-climbing Crabs Discovered

The first study to describe an Indian crab which spends its entire life in trees has been conducted by a team that included Professor Peter Ng, Head of the Lee Kong Chian Natural History Museum at NUS.

The biologists identified a new genus and species of crabs which live exclusively in trees in Kerala, India, and published the discovery in *Journal of Crustacean Biology* in April.

With the help of the Kanikkaran (also called Kani) tribe, researchers from the University of Kerala were able to obtain specimens for the scientists to examine.

The new species of arboreal crabs has been named *Kani maranjandu* after the Kani tribesmen who spotted them, with "maranjandu" being the local language for tree crab.

The crustaceans bear distinguishing features such as a broad, partially swollen upper shell that allows them to store water in gill chambers, and long slender legs ideal for moving around tree trunks. The creatures have been observed in tree hollows close to the ground as well as up to 10m high in the trees.

Prof Ng, who helped the Indian scientists classify and describe the species, noted, "These crabs are very adaptable and have evolved to use specialised habitats to enhance their survival — in this case — tree holes and climbing. This discovery is important as it highlights how much more work we still need to do to document and conserve the many wonderful animals that live in Asia's rainforests!"

The crab has long legs which allow it to climb trees with dexterity
Photos: Dr A Biju Kumar

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