



NANYANG
TECHNOLOGICAL
UNIVERSITY



ANNUAL REPORT 2014

QUANTUM LEAP

Contents

02

AT A GLANCE

04

CHAIRMAN'S
MESSAGE

06

IN CONVERSATION
WITH THE NTU
PRESIDENT

10

BOARD OF
TRUSTEES

12

UNIVERSITY
LEADERSHIP

15

HIGHLIGHTS

37

FINANCIAL
REVIEW

HIGH JUMPS

Young and research-intensive, NTU is ranked 39th in the world by Quacquarelli Symonds (QS), rising 35 places in just four years. And continuing its quick ascent right to the top of the global league of young universities, NTU is also ranked 1st by QS among elite universities under 50 years old.

Earlier this year, NTU made dramatic jumps to be ranked 1st in Asia for producing the most impactful research, based on data tracked by Thomson Reuters and Elsevier, surging ahead of other top Asian universities.

Ranked 1st globally for industry income and innovation, NTU keeps good company with esteemed partners, including leading multinationals that have set up joint labs on the campus.

Not just home to some of the world's biggest partners and most influential scientific minds, NTU also draws the brightest young talents. In 2014, NTU saw an 83 per cent spike in these top prospective students enrolling in the University compared to 2011.

NTU has been named one of the world's 15 most beautiful universities. Not resting on its laurels, it has embarked on a grand eco initiative to become one of the greenest universities in a park.

Happening alongside this is a bold campus makeover that is transforming the bricks and mortar of the University in fresh and exciting ways.

• **100**
nationalities on campus

• **400**
university partners in academia
and research

• **20**
joint labs set up with leading
multinationals on campus

• **258**
partner universities in 37 countries
offer student attachment programmes

• **7 IN 10**
undergraduates have an overseas
opportunity during their studies

• **21**
joint/dual PhD degree programmes
with overseas universities



Global

• **39TH**
in QS World University Rankings
2014, rising 35 places since 2010

• **1ST**
in 2014 QS ranking of the world's
young elite universities

• **7TH**
in QS Asia University Rankings
2014, up three positions from 2013

• **76TH**
in Times Higher Education World
University Rankings 2013,
up 10 places from 2013

• **9TH**
in Engineering and Technology in
QS World University Rankings 2014,
up 5 notches from 2013



Honours

• **23,500**
undergraduates

• **9,000**
graduate students

• **4,300**
faculty and researchers from
80 countries

• **190,200**
alumni from 139 countries

• **96.3%**
of the Class of 2013 received
a job offer within four months
of graduation



People

• **S\$522.5M**
in competitive research grants won
in FY2013/14, a record high

• **1ST**
in Asia for normalised research
impact (Thomson Reuters,
Elsevier and CWTS Leiden Ranking)

• **1ST**
globally for industry income
and innovation

• **S\$1.3B**
in funding for sustainability
research since 2005

• **51**
patents granted in FY2013/14

• **1,258**
technology disclosures received
since 2007



Research

• **TOP 15**
most beautiful university campus
(Travel + Leisure magazine)

• **5,000**
new hostel places by 2016

• **3**
Singapore campuses

• **18**
undergraduate halls spread over
200 hectares

• **12**
new developments over the next two
years, including 2 large learning hubs,
2 complexes for the medical school
and 1 academic building



Campus

SWIFT PROGRESS

"I am pleased that beyond bricks and mortar, NTU has paid just as much attention to the human factor in learning."



Education has always been close to my heart. That is why even after so many years helming the NTU Board of Trustees, I am still very energised by all the changes taking place in the higher education sector.

It is a good time to be a student as there are many exciting options not just in terms of course offerings but also in the learning environment.

Technology can make many exciting ideas a reality and shape lives in ways that we cannot yet imagine. For example, teaching and learning in a networked, connected world, NTU has embarked on the Massive Open Online Courses movement, bringing its courses to the rest of the world.

The potential is mind-blowing. These courses allow working professionals to upgrade their skills from practically anywhere across the globe. Students, too, get to participate in them and even prospective students can earn credits before they officially enroll at NTU.

This may beg the question about whether universities are still relevant. In my opinion, the answer is a resounding yes as there is no substitute for being immersed in a vibrant community of young people, sharing ideas and common interests, and driving activities and projects that inculcate different skills such as leadership.

NTU has moved ahead in blended learning with flipped classroom teaching under the *NTU Education* initiative, where students learn online at their own pace before attending classes in smart classrooms. *The Hive* was built as a new-age university building to facilitate this new pedagogical approach.

I am pleased that beyond bricks and mortar, NTU has paid just as much attention to the human factor in learning. The Teaching Excellence Academy, led by professors, was set up to share innovative ways of teaching that will help students optimise their learning. NTU has also made a head start in research on educational science to better understand learning in a borderless, digital world.

Besides NTU's foray into online education and new ways of learning, great research is coming out of the labs on campus. In research impact, NTU is now ahead of other top universities in the region and first in Singapore.

Our year of highs is possible because of the tireless work of the faculty, staff, students and alumni, and the strong support of the government, particularly the education and health ministries. We are also indebted to NTU's many benefactors and collaborators who have played a part in elevating NTU to where it is today.

On behalf of the NTU Board of Trustees, I would like to thank Ms Jennie Chua, who stepped down from the Board after eight years of dedicated service. We warmly welcome to the Board Mr Low Check Kian and Mr Tan Kim Seng, both veterans in the business community.

Last but certainly not least, I would like to express my appreciation to the senior management team, led by the equally energetic pair of Prof Bertil Andersson and Prof Freddy Boey, the President and Provost.

With the support of stakeholders and everyone in the NTU community, NTU will become a truly global top university that all Singaporeans will be proud of.

Mr Koh Boon Hwee
Chairman, Board of Trustees
Nanyang Technological University

ANOTHER STELLAR YEAR

“Our push into technology-enabled learning was one of our biggest initiatives in 2014. This included the launch of very well-received Massive Open Online Courses as well as “blended” courses. These have enlarged our ability to reach and teach students not just across the NTU colleges but also across the globe.”



Prof Bertil Andersson
President
Nanyang Technological University

Q WHAT ARE THE TOP THREE HIGHLIGHTS OF THE PAST YEAR FOR NTU?

We sharpened our international profile. Among young, elite varsities, NTU was placed first globally by Quacquarelli Symonds (QS) in the Top 50 Under 50, a ranking of the world's best universities below 50 years old. Coupled with NTU being ranked 39th globally by QS – a leap of 35 positions in four short years – and our good performance in the Times Higher Education World University Rankings 2014, in which we jumped 15 places to 61st in the world, we are taking our place alongside the more established varsities.

In research output, another important performance indicator of top international universities, we scored very well. On three established yardsticks – Thomson Reuters, Elsevier and CWTS Leiden Ranking – we were ranked number one among top Asian universities for normalised research impact. This is an excellent result as the data is based on objective and quantifiable measures and we can be proud that we have reached the top spot in such a short time. The good research we are doing is also why we have been attracting top industry players, such as Rolls-Royce, BMW and Lockheed Martin as our partners, who have all set up research centres on our campus.

Finally, we dramatically increased our intake of the top 15% of A-level students again – by 83% – compared to 2011 when we started rolling out our various new initiatives. NTU has always been the university of choice for top polytechnic graduates and despite competition from five other public universities, NTU remains their top choice.

Q TELL US MORE ABOUT HOW NTU IS PUSHING THE REVOLUTION THAT IS CHANGING THE FACE OF EDUCATION.

Our push into technology-enabled learning was one of our biggest initiatives in 2014. This included the

launch of very well-received Massive Open Online Courses as well as “blended” courses. These have enlarged our ability to reach and teach students not just across the NTU colleges but also across the globe.

We are investing heavily to facilitate flipped classroom learning, a shift that aims to help students learn better and faster, and will continue to develop and pilot the latest learning platforms and tools.

The centrepiece of this new way of learning is a large state-of-the-art learning hub known as *The Hive*. Apart from having top-notch learning facilities, we started the Centre for Research & Development in Learning, or CRADLE, led by veteran educator Prof Lee Sing Kong. CRADLE will venture into the new frontier of studying how pedagogy, psychology and neurology work together in learning.

Under NTU Education, the total undergraduate experience we provide our students, we rolled out new and updated programmes, extended opportunities for global immersion, as well as an enhanced student experience beyond the formal curriculum. All these are intended for nurturing creative and socially responsible leaders who will shape the future of Singapore, Asia and beyond.

In Conversation with the NTU President

“We are not only preparing our graduates for future careers but ensuring they remain relevant, resilient and effective in a rapidly changing world.”

Q AND HOW IS NTU'S NEW MEDICAL SCHOOL SHAPING UP?

Barely two years old, the Lee Kong Chian School of Medicine, our joint medical school with Imperial College London, is thriving as one of the pillars of NTU's life sciences cluster. The School is now a key node in Singapore's healthcare system with a research strategy that draws on the strengths of its parent universities.

The quality of the second cohort of 78 students, admitted through a very competitive selection process, remains high.

Eminent endocrinologist Prof James Best, former Head of the University of Melbourne's medical school, was appointed the School's new Dean following an international search. NTU has always been active in biomedical engineering and with these two key appointments and a growing pool of stellar faculty at the medical school, there will be a ramp-up in interdisciplinary research between the medical school and other NTU schools. With a research strategy focused on Singapore's needs, NTU will be able to do impactful research in life sciences and medicine to serve the population.

The School is also much lauded for its

suite of teaching innovations. Using the blended learning approach, students have their lessons on their iPads before attending classes where they debate and discuss in teams problems set by their professors.

Q WHAT MAKES AN NTU EDUCATION HIGHLY PRIZED BY EMPLOYERS AND GRADUATES ALIKE?

We often tell our students that they are not here just to have a degree. Along with hard knowledge, we strive to imbue in our students essential skills such as cultural sensitivity, leadership and critical thinking ability, and the skills to learn for

life. We are not only preparing them for future careers but ensuring they remain relevant, resilient and effective in a rapidly changing world.

Finally, gaining real-world working experience through internships and overseas exposure through exchanges and competitions gives our graduates an edge in their careers. With two in three NTU graduates securing jobs before graduation, and nine out of 10 finding jobs six months after their final exams, I believe we are on the right track.

Q IN SUMMARY, WHAT ARE THE THINGS THAT MAKE YOU PROUD OF THE UNIVERSITY COMMUNITY IN THE LAST YEAR?

The student-fronted *NTU Fest* saw our students “bringing NTU to the people” through a mega public event. This charity extravaganza at the Padang was a wonderful success. Our students not only pulled off their biggest public event with great success but also managed to raise funds for needy students from the Institute of Technical Education. Their big hearts and ability to see beyond themselves was just fantastic.

NTU students, faculty and staff also flew the flag high for NTU beyond Singapore.

Around the world, our students won competitions for their innovative engineering solutions, business case studies and artistic pursuits. So did our staff, such as the Corporate Communications Office, which bagged nine international communication awards, adding to the six top global accolades they won the previous year.

Our professors are doing great work. NTU is home to the world's most most-published and most-cited scholar in the field of 3D printing, Prof Chua Chee Kai. Prof Zhang Hua is one of only two scientists from Asia ranked by Thomson Reuters among the top 17 most influential scientists in the world, while four other faculty members made the list.

Geneticist Prof Stephan Schuster secured a record sum of funding – S\$25 million – to sequence air, an important area of research. He continues NTU's track record of dominating the scene in the Ministry of Education's large Tier 3 research grants. In the previous year, Prof Daniela Rhodes won S\$24 million for her ground-breaking research related to ageing and cancer.

Q WHAT CAN WE LOOK FORWARD TO IN THE YEAR AHEAD?

Our campus is getting more beautiful. Pioneer and Crescent Halls look stunning and also add residential spaces for 1,200 more students. There are more to come in 2015 and 2016 when other halls are ready.

In addition to these new halls offering residential learning opportunities, in the next few years, we can look forward to the second learning hub, more faculty housing, a new academic complex and a lifestyle hub at the North Spine that will give our students a dedicated space for their artistic, entrepreneurial and community pursuits. These new developments will not only support our push into new ways of teaching and learning, but also add to the vibrancy of our “univer-city”.

I am also excited by the new facilities being built for our medical school that includes a 20-storey clinical sciences building at the Novena campus and a seven-storey experimental medicine building on our main campus that will be connected to the School of Biological Sciences.

We are also laying the groundwork for a new school that will contribute to our climb up the “Mount Everest” of our research peaks – the Asian School of Environment. This school will have as its pillars the two national Research Centres of Excellence, Earth Observatory of Singapore and Singapore Centre on Environmental Life Sciences Engineering.

As we build, we will do our utmost to maintain the lush tropical greenery of our campus that we are renowned for. NTU is walking the talk when it comes to sustainability and being eco-conscious. To date, 18 building projects in NTU have been Green Mark-certified, out of which eight have attained the highest Platinum status, including the new Pioneer and Crescent Halls.

The world is changing rapidly and we must ensure that NTU and indeed Singapore remains at the forefront of education, research and innovation. To this end, guided by the Board of Trustees, we are developing a new five-year strategic plan, *NTU 2020*, which will provide us with an updated blueprint to ensure our graduates can continue to excel in the global workplace, and that NTU's research can add to the betterment of society.

Board of Trustees



Mr Koh Boon Hwee (Chairman)
Chairman, Credence Partners Pte Ltd
Appointed on 28 March 2006



Mr Alwi Bin Abdul Hafiz
Sustainability Advisor
Golden Veroleum Liberia
Appointed on 28 March 2006



Mr Lim Chee Onn
Senior International Adviser
Singbridge Pte Ltd
Appointed on 25 August 2009



Mr Lim Chuan Poh
Chairman
Agency for Science, Technology and Research
Appointed on 28 March 2006



Mr Low Check Kian
Director
Cluny Park Capital Pte Ltd
Appointed on 1 April 2014



Ms Chan Lai Fung
Permanent Secretary (Education)
Ministry of Education
Appointed on 1 April 2012



Ms Jennie Chua
Chairman
Alexandra Health Systems
Appointed on 28 March 2006
**Retired from the Board on 31 March 2014*



Sir Keith O'Nions
President and Rector
Imperial College London
Appointed on 17 March 2011



Prof Haresh Shah
Professor (Emeritus)
Stanford University
Appointed on 28 March 2006



Mr Inderjit Singh
Chief Executive Officer
Solstar International Pte Ltd
Appointed on 28 March 2006



Mr Goh Sin Teck
Editor, *Lianhe Zaobao*
Consulting Editor, *MyPaper*
Appointed on 1 June 2012



Mr Kwek Leng Joo
Deputy Chairman
City Developments Ltd
Appointed on 28 March 2006



Mr Tan Kim Seng
Chairman
Kim Seng Holdings Pte Ltd
Appointed on 1 April 2014



BG (NS) Tan Meng Dui
Deputy Secretary (Technology)
Ministry of Defence
Appointed on 1 July 2012



Mr Wong Yew Meng
Board Member
People's Association
Appointed on 1 August 2010



Mrs Lee Suet Fern
Chairman and Chief Executive Officer
Stamford Law Corporation
Appointed on 15 July 2006



Ms Lien Siau-Sze
Senior Executive Coach
Mobley Group Pacific
Appointed on 28 March 2006



Mr Ernest Wong
Chairman
Fullerton Financial Holdings Pte Ltd
Appointed on 28 March 2006



Prof Alexander JB Zehnder
Chairman
Triple Z Ltd
Appointed on 25 August 2009



Prof Bertil Andersson
President
Nanyang Technological University
Appointed on 1 July 2011

Senior Management Team



Prof Bertil Andersson

President
Appointed on 1 July 2011

Prof Andersson first became Provost in 2007, where he helped to strengthen NTU's reputation as one of the fastest-growing research intensive universities in the world. He was installed as NTU's third President on 1 July 2011.

He was formerly President of Linköping University, Sweden, from 1999 to 2003, and the Chief Executive of the European Science Foundation from 2004 to 2007. At the helm of the European Science Foundation in Strasbourg, France, his last post before joining NTU, he consolidated research efforts across 30 European countries.

A world-renowned plant biochemist with a longstanding association with the Nobel Foundation, where he had also chaired its Chemistry Committee, Prof Andersson has pioneered research on the artificial leaf, a promising area of sustainable energy research that uses sunlight to produce clean, low-cost sources of energy.

He is the winner of the Wilhelm Exner Medal, awarded since 1921 to top global scientists and visionaries, including Nobel laureates, for their life-changing research. Well-regarded for championing high-impact science and engineering, he has received more than 11 honorary doctorates and serves on the boards of numerous international organisations.



Prof Freddy Boey

Provost
Appointed on 1 July 2011

Before assuming the role of Provost, Prof Boey served as the Chair of NTU's School of Materials Science & Engineering from 2005 to 2010, leading its transformation into one of the world's largest materials engineering institutions.

A dedicated educator and administrator, he also has a sterling track record of breakthrough commercial applications that have given the "made in Singapore" label pride of place on the global stage. He has won several tens of millions in competitive research funding, including a S\$10 million individual grant to develop fully biodegradable cardiovascular implants for hole-in-the-heart conditions.

Prof Boey has developed 103 patents, the majority of which have been licensed. These patents have resulted in several spin-off companies, formed to license his various life-giving biomedical solutions. His inventions include the world's smallest heart pump that can be inserted into the body without open heart surgery, a nano-based drug delivery system to treat glaucoma, and a customisable hernia mesh, the first such surgical mesh approved for sale by the US Food and Drug Administration.

NTU's role model for research, education and enterprise, Prof Boey actively champions the marriage of all three aspects on campus. For his distinguished contributions to Singapore's science and engineering landscape and his role in nurturing young research talent, he was awarded the 2013 President's Science and Technology Medal, a top national honour.

The other members of the senior management team are:

Prof Lam Khin Yong

Chief of Staff and Vice President (Research)
Appointed on 1 July 2011 and 1 May 2014 respectively

- Chief of Staff-Designate (1 April – 30 June 2011)
- Associate Provost (Graduate Education & Special Projects) (1 April 2008 – 30 June 2011)
- Chair, School of Mechanical & Aerospace Engineering (1 August 2006 – 30 April 2008)

Prof Er Meng Hwa

Vice President (International Affairs)
Appointed on 1 July 2011

- Vice President-Designate (International Affairs) (1 April – 30 June 2011)
- Senior Associate Provost (1 April 2008 – 30 June 2011)
- Associate Provost (1 April 2007 – 31 March 2008)

Prof Lee Sing Kong

Vice President (Education Strategies)
Appointed on 1 July 2014

- Director, National Institute of Education (1 November 2006 – 30 June 2014)
- Managing Director, National Institute of Education International (from 1 July 2009)
- Acting Director, National Institute of Education (16 January – 28 February 2006)
- Dean, External Programmes (Knowledge Horizon), National Institute of Education (1 October 2005 – 30 June 2009)

Prof Kam Chan Hin

Senior Associate Provost (Undergraduate Education)
Appointed on 1 April 2014

- Associate Provost (Undergraduate Education) (1 July 2011 – 31 March 2014)
- Associate Provost-Designate (Undergraduate Education) (1 April – 30 June 2011)
- Chair, School of Electrical & Electronic Engineering (1 August 2006 – 31 March 2011)

Prof Angela Goh

Associate Provost (Faculty Affairs)
Appointed on 1 July 2011

- Associate Provost-Designate (Faculty Affairs) (1 April – 30 June 2011)
- Acting Chair, School of Computer Engineering (15 October 2007 – 31 January 2010)
- Associate Chair (Academic), School of Computer Engineering (1 August 2006 – 30 November 2007)

Prof Yue Chee Yoon

Associate Provost (Graduate Education)
Appointed on 2 January 2013

- Acting Dean, Interdisciplinary Graduate School (1 September 2011 – 1 January 2013)
- Director, Institute for Sports Research (15 July 2011 – 31 May 2012)

Assoc Prof Kwok Kian Woon

Associate Provost (Student Life)
Appointed on 1 July 2011

- Associate Provost-Designate (Student Life) (1 April – 30 June 2011)
- Associate Chair (Academic), School of Humanities & Social Sciences (1 August 2006 – 30 June 2011)
- Head, Division of Sociology, School of Humanities & Social Sciences (1 June 2004 – 30 June 2013)

University Leadership

Deans of Colleges

Prof Ravi Kumar

Dean, Nanyang Business School
Appointed on 1 June 2013

Prof Ng Wun Jern

Dean, College of Engineering
Appointed on 1 July 2013

- Executive Director, Nanyang Environment & Water Research Institute (18 June 2007 – 17 June 2016)

Prof Alan Chan

Dean, College of Humanities, Arts, & Social Sciences
Appointed on 1 October 2009

Prof Ling San

Dean, College of Science
Appointed on 1 August 2011

- Chair, School of Physical & Mathematical Sciences (1 April 2008 – 31 December 2010)
- Head, Division of Mathematical Sciences, School of Physical & Mathematical Sciences (1 July 2005 – 31 March 2008)

Prof James Best

Dean, Lee Kong Chian School of Medicine
Appointed on 29 July 2014

Heads of Autonomous Institutes

Prof Tan Oon Seng

Director, National Institute of Education
Appointed on 1 July 2014

- Dean, Office of Teacher Education, National Institute of Education (1 July 2010 – 30 June 2014)
- Dean, Foundation Programmes Office, National Institute of Education (1 September 2008 – 30 June 2010)
- Head, Psychological Studies, National Institute of Education (1 July 2003 – 31 December 2008)

Ambassador Barry Desker

Dean, S Rajaratnam School of International Studies
Appointed on 1 January 2007

- Director, Institute of Defence & Strategic Studies (from 1 October 2000)

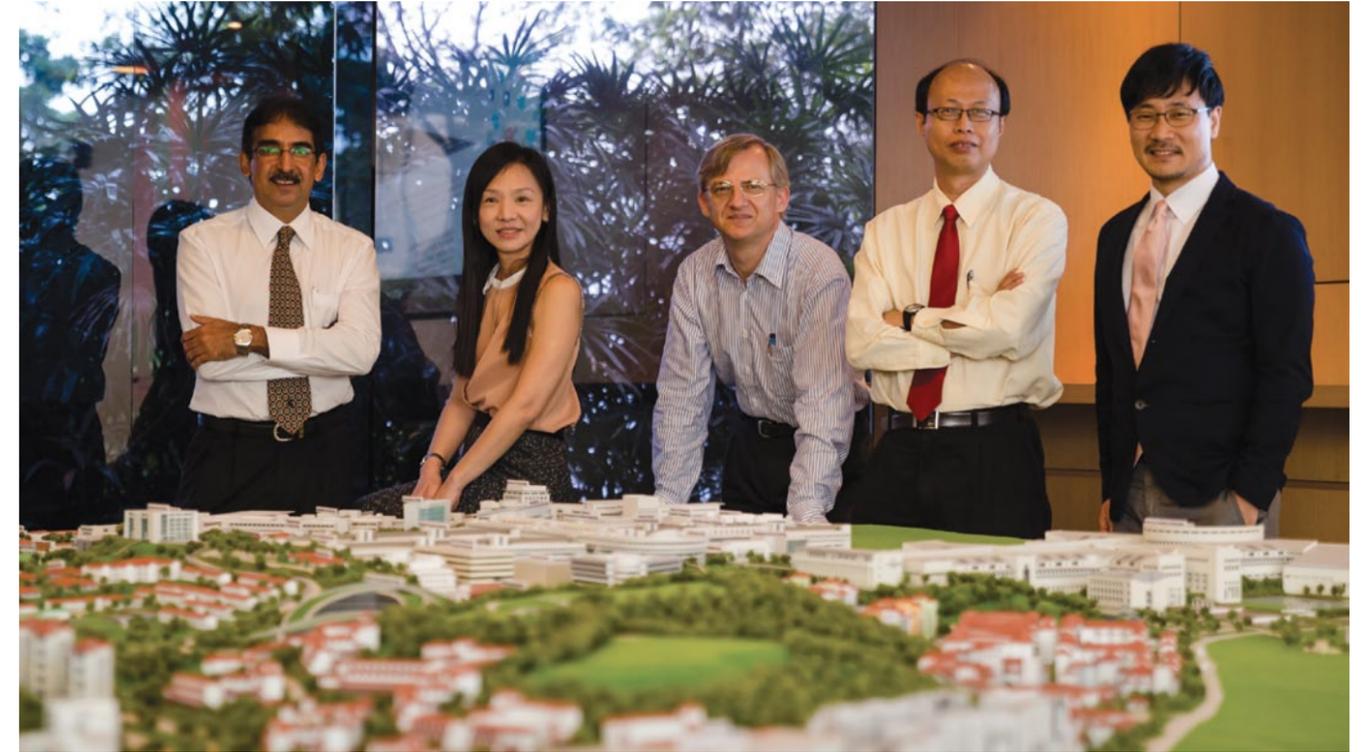
Prof Kerry Sieh

Director, Earth Observatory of Singapore
Appointed on 1 July 2008

Prof Staffan Kjelleberg

Director, Singapore Centre on Environmental Life Sciences Engineering
Appointed on 1 January 2011

Highlights



The Teaching Excellence Academy taps the experience of NTU's top professors, including College-level winners of the Nanyang Education Awards.

EDUCATION

Teaching

- The new **Teaching Excellence Academy** begins activities to raise teaching standards and spearheads the development of innovative teaching and learning pedagogies. It brings together NTU's top Nanyang Education Award winners who are responsible for aspects of faculty development such as mentoring, managing teaching research grants and providing a conduit between faculty and senior management on teaching matters.

Undergraduate

- A **record number of top A-level students accept NTU's offer of admission** – a growth of 13% over the previous academic year and 83% more compared to 2011. Acceptances by top polytechnic students also increase, by 11% over the previous academic year.

The **Renaissance Engineering Programme** remains the most popular engineering programme among Singapore's top A-level students.

- The University announces plans to launch the interdisciplinary **Bachelor of Science programme in Environmental Earth Systems Science** as the flagship course of the new **Asian School of the Environment** under the College of Science.
- The eight-storey **learning hub** at the South Spine reaches the final construction phase as the first of two buildings dedicated to NTU's new teaching pedagogy that promotes active learning in the digital age. The eco-friendly building has 56 new-generation smart classrooms and social and recreational spaces to encourage students to socialise and exchange ideas.

83%

more top A-level students enrol in NTU in 2014 compared to 2011

Highlights

- More **online and blended courses** are developed to support flipped classroom learning, where students watch lectures online and face-to-face tutorials are reserved for deeper learning and active discussions. About 20 online and blended learning courses will be developed annually at NTU.
- Targeted efforts are made to **increase the intake of high-calibre PhD students**, especially Singaporeans, in joint and dual doctoral programmes and PhD programmes with industry. One example is an international PhD scholarship for Singaporeans seeking to pursue graduate studies in humanities, arts and social sciences.
- NTU's first two **Massive Open Online Courses (MOOCs)** on Coursera – in symmetry and forensics – attract more than 100,000 enrolments from around the world, giving an international audience the chance to take courses taught by world-class NTU professors. NTU is the first university to allow credits earned from MOOC courses to be used to fulfil academic requirements for graduation.
- The **Margaret Lien Centre for Professional Success** is established with a S\$12 million donation from philanthropist Mrs Margaret Lien. Through the centre, NTU students receive comprehensive career preparation from their first year of study to gain skills for lifelong employability and professional success.

10,000

people from around the world enrol in NTU's first two Massive Open Online Courses



Tutorials are held in specially configured rooms designed to stimulate discussion and optimise learning.

Graduate

- More than 300 faculty members and 11 research centres from across NTU are involved in the activities of the **fast-growing Interdisciplinary Graduate School**.
- **New PhD programmes are set up** with Medical University of Vienna (in nanobiotechnology), Pierre and Marie Curie University (in chemical synthesis) and Linköping University (in materials and nanoscience/engineering), adding to the 21 joint and dual PhD degree programmes NTU has with prestigious universities worldwide.



One of NTU's popular courses on Coursera, *Introduction to Forensic Science*, which offers a peek into the science behind the tools used by investigators to analyse crime scene evidence.



Designed for sustainable living and to encourage social interaction, the eco-friendly Pioneer and Crescent Halls have features like tree-lined boardwalks and gazebos.



CAMPUS LIFE

- The new **Pioneer and Crescent Halls** allow NTU to expand its residential education programmes. Fresh concepts, from architecture to pedagogies and personal development, feature at the halls, which achieved Green Mark Platinum status in 2013 for environmental sustainability. The construction of two new hostels and 102 units of faculty housing is underway.
- **Student leaders** continue to be consulted and represented on university-level committees to provide input in areas such as the residential experience, health and wellbeing and campus vibrancy.
- The new **Pioneer and Crescent Halls** allow NTU to expand its residential education programmes. Fresh concepts, from architecture to pedagogies and personal development, feature at the halls, which achieved Green Mark Platinum status in 2013 for environmental sustainability. The construction of two new hostels and 102 units of faculty housing is underway.
- The **Co-operative Society of Nanyang Technological University (Co-op @ NTU)** is set up by students to encourage social enterprise and responsibility in NTU.
- A campus-wide, community approach to university health and wellbeing is implemented, with the **Student Wellbeing Centre** as a key node. The relocated **University Health Service** opens, integrating medical, dental, mental health, diagnostic and treatment services under one roof.
- Spanning close to 2,000 square metres, the **North Spine Hub** is a new and bustling development that will turn the University's North Spine into a lifestyle hangout for the NTU community. Featuring F&B kiosks and retail outlets, it is expected to open in 2015.

102

units of faculty housing along with two new hostels are under construction



When completed, the North Spine Hub will transform part of NTU's main academic complex into a lifestyle hub.



The NTU President and Provost performing the Beatles' hit, Let It Be, with students at Celebrate NTU!

- More facilities are added to the refurbished **Campus Clubhouse** to better meet the needs of the campus community. These include new dining options, a multi-purpose studio, a toddlers' room and a reading room, all easily accessible to adjoining sports and recreational facilities.
- **Multipurpose fields** at NTU are fitted with all-weather artificial turf, extending the playability of these pitches. In addition, a 2km-long rubberised running track is built along the campus boundary to enhance the jogging experience. The enhancements are part of a long-term plan to promote sports and recreation as part of a vibrant campus life.
- At the third edition of **Celebrate NTU!** in March 2014, NTU President Prof Bertil Andersson gives the State of the University Address, launches the new Teaching Excellence Academy and presents the Nanyang Awards – the University's highest honours – to deserving members of the university community. The event continued with a party at the Quad attended by more than 4,000.

Spanning close to 2,000 square metres, the **North Spine Hub** is a new and bustling development that will turn the University's North Spine into a lifestyle hangout for the NTU community.



The opening of the Toh Kian Chui Annex right beside the School's headquarters marks the completion of the first phase of the School's infrastructural developments at NTU's Novena campus in the heart of Singapore's medical district.



LEE KONG CHIAN SCHOOL OF MEDICINE

- Renowned endocrinologist **Prof James Best** is appointed the **new Dean** following an international search. He succeeds the founding Dean, Prof Dermot Kelleher.
- The School, set up jointly with Imperial College London, welcomes its **second cohort of 78 students**, selected from over 800 applicants. The new intake joins the inaugural cohort of 54 students, marking a 44% increase in students admitted.
- The **Toh Kian Chui Annex**, housing teaching and learning facilities, is officially opened at the Novena campus. It is named in honour of a S\$20 million donation from the Toh Kian Chui Foundation, which goes towards scholarships, a professorship and other research and education needs of the School.
- **The School's research strategy**, launched during the year, draws on NTU and Imperial College London's excellent track record of reaping synergies between medicine, science and technology. The strategy focuses on four main areas: infection and immunity, metabolic disorders, neuroscience and mental health, and dermatology and skin biology.

44%

increase in top students admitted to NTU's joint medical school with Imperial College London

Highlights

- **Prof Philip Ingham**, Professor of Developmental Biology, is appointed Vice-Dean, Research, to oversee the roll-out of the School's research strategy, which aims to address health challenges in Singapore and the wider region.
- The School attracts to its ranks top scientists from around the world, including **Prof Jenny Higham** (UK), **Prof Lionel Lee** (Singapore), **Prof Daniela Rhodes FRS** (UK), **Prof George Augustine** (US), **Prof Bernhard Boehm** (Germany), **Prof Michael A Ferenczi** (UK), **Prof David Becker** (UK), **Prof Annelies Wilder-Smith** (Netherlands), **Prof Walter Wahli** (Switzerland), **Prof Balazs Gulyas** (Sweden), **Prof Dean Nizetic** (Croatia), **Prof Sven Pettersson** (Sweden), **Prof Christer Halldin** (Sweden), **Prof Per-Olof Berggren** (Sweden), **Prof Roger Kneebone** (UK), **Prof Patrick Bradley** (Ireland), **Prof Eric Thomas Harvill** (US), **Prof Artur Schmidtchen** (Sweden) and **Prof John Laycock** (UK).



The 20-storey Clinical Sciences Building in Novena will have world-class teaching facilities as well as recreational and community spaces, including a sports hall and rooftop library.

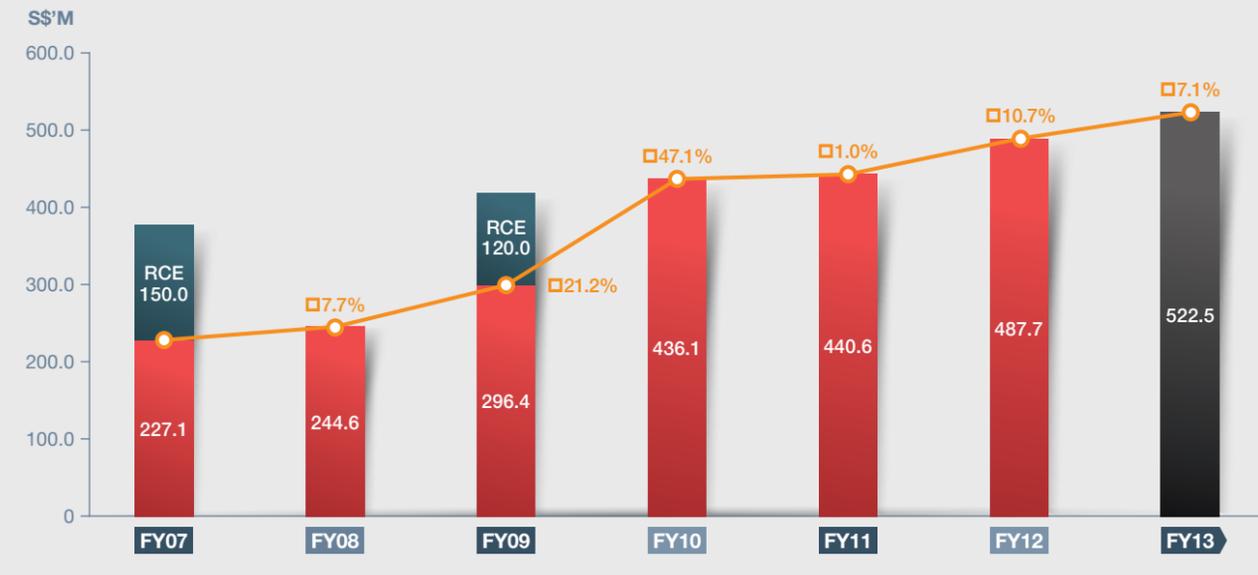
- A **postdoctoral fellowship** is launched to nurture a cadre of talented biomedical and clinical research scientists.

- The 20-storey **Clinical Sciences Building** in Novena (to be completed by mid-2016) and seven-storey **Experimental Medicine Building** at the Yunnan Garden campus (to be ready by mid-2015) will have state-of-the-art classrooms that support the School's interactive team-based learning approach. The Experimental Medicine Building, with research laboratories, will form an integral part of NTU's life sciences cluster.



The seven-storey Experimental Medicine Building at NTU's main campus will be connected to the School of Biological Sciences, encouraging a free flow of ideas, especially in the area of life sciences.

EXTERNAL COMPETITIVE GRANTS AWARDED TO NTU



Note: The RCE (Research Centre of Excellence) funding awards of S\$150 million in FY07 and S\$120m in FY09, for the Earth Observatory of Singapore and Singapore Centre on Environmental Life Sciences Engineering respectively, are disbursed over 10 years.



RESEARCH

Research funding success

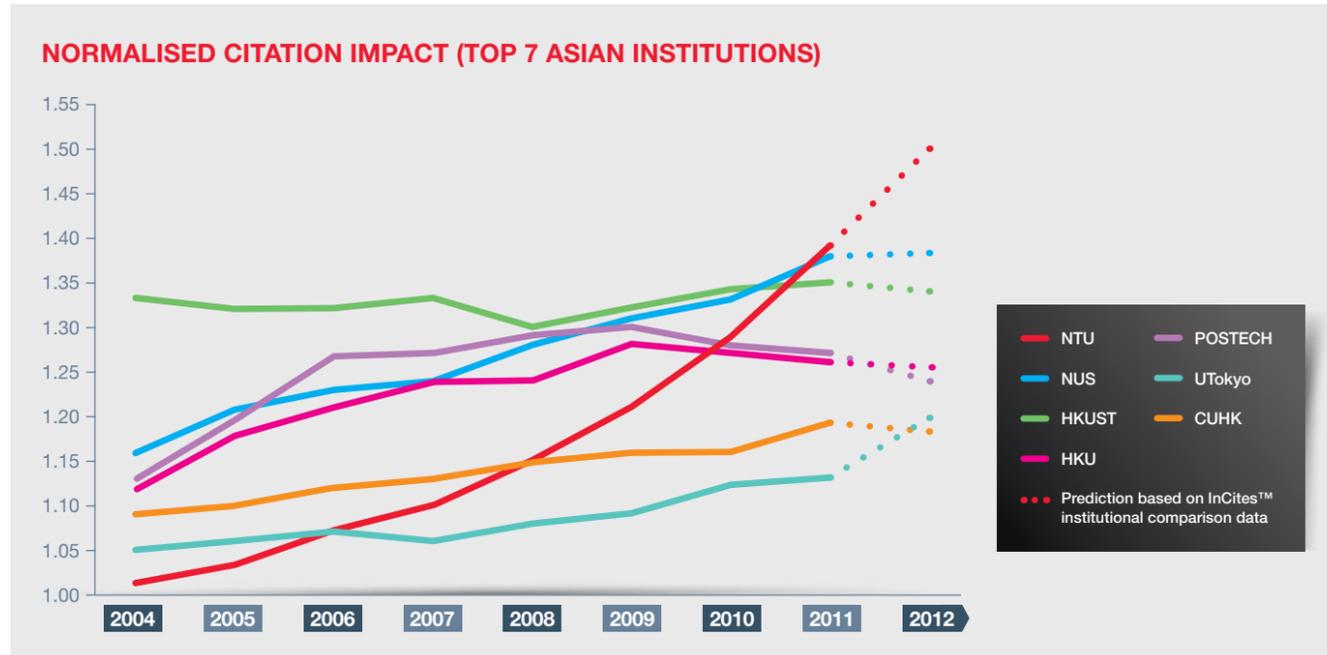
- NTU secures a **record high of S\$522.5 million in new external competitive research funding** in FY2013. This includes large grants from the Ministry of Education (MOE) and industry partners. For the second year running, *Times Higher Education* ranks NTU first for industry income-innovation, which measures income from industry per academic staff.
- NTU has secured the **most number of MOE Tier 3 awards** nationally to date totalling S\$69 million. The two Tier 3 grants received in 2013 are S\$25 million for a research project to sequence air (the largest Tier 3 award ever disbursed) and S\$10 million for research into a new kind of antibiotics.

- NTU clinches a record **58 MOE Tier 2 grants**, which is a 60% increase over the previous year. NTU maintains its foothold on the national share with 47% of these grants in both 2012 and 2013.

- NTU obtains the **biggest share of competitive funding for environmental and energy research** as the sole awardee of two grants from the National Environment Agency's Environment Technology Research Programme and the winner of half of the grants awarded by the Energy Market Authority.

- **Temasek Laboratories @ NTU**, which marked its 10th anniversary in January 2014, secures S\$36.7 million in grants for 21 projects.

S\$522.5m
- new external competitive research grants received in FY2013



Rising research impact

- A key measure of NTU's research success is the **increasing number of original research papers published by NTU scientists** in top-level international journals. This success is shown in the latest Thomson Reuters report on research citations, where NTU is placed first in Asia for normalised citation impact.

- NTU also **rockets up the global top 100 in the prestigious Nature Publishing Index**, recording a 250% increase in research output and vaulting 144 places to 73rd position internationally in 2013. NTU is ranked 12th in the Asia-Pacific region, up from 35th the previous year.

- NTU's publications in **international refereed journals** with an impact factor of more than 10 jumps from 55 in 2010 to 193 in 2013. Publications by NTU faculty in international refereed journals with an impact factor of ≥ 20 also more than doubles, from 17 in 2012 to 41 in 2013.

250%
increase in
research output

Stronger research administration

- The University **benchmarks its research productivity and future research priorities** using bibliometric analytical tools such as Elsevier SciVal Spotlight and Strata, and Thomson Reuters' InCites.
- NTU partners Elsevier to co-host the **2014 APAC Research Intelligence Conference**, a global event for research institutions to share and build on information that supports their long-term research management efforts.

New research centres, institutes and partnerships

Strategic partnerships forged with industry leaders, top universities, government agencies and national research institutes include:

- A S\$5.3 million joint laboratory with British chemicals giant **Johnson Matthey** to research new chemical materials aimed at providing renewable energy solutions.
- The S\$60 million **NTU-Northwestern Institute for Nanomedicine**, which focuses on the medical application of nanotechnology in areas such as diabetes, ophthalmology and skin therapeutics.
- The **Skin Research Institute of Singapore**, a S\$100 million collaboration between NTU, the Agency for Science, Technology & Research and National Skin Centre, to advance interdisciplinary skin research.
- The S\$30 million **NTU Additive Manufacturing Centre** to research cutting-edge 3D printing technologies for medical devices and organic tissue printing. A S\$5 million joint lab with industry leader SLM Solutions is also established for 3D printing.



NTU's joint lab with British chemicals giant Johnson Matthey aims to provide renewable energy solutions, such as breakthroughs for battery technologies and better air purification systems.



Outfitted with the latest equipment, the NTU Additive Manufacturing Centre (left and above) is leading the way in the field of 3D printing research. It was officially launched by Mr Lee Yi Shyan, Senior Minister of State for Trade and Industry and National Development.

Highlights

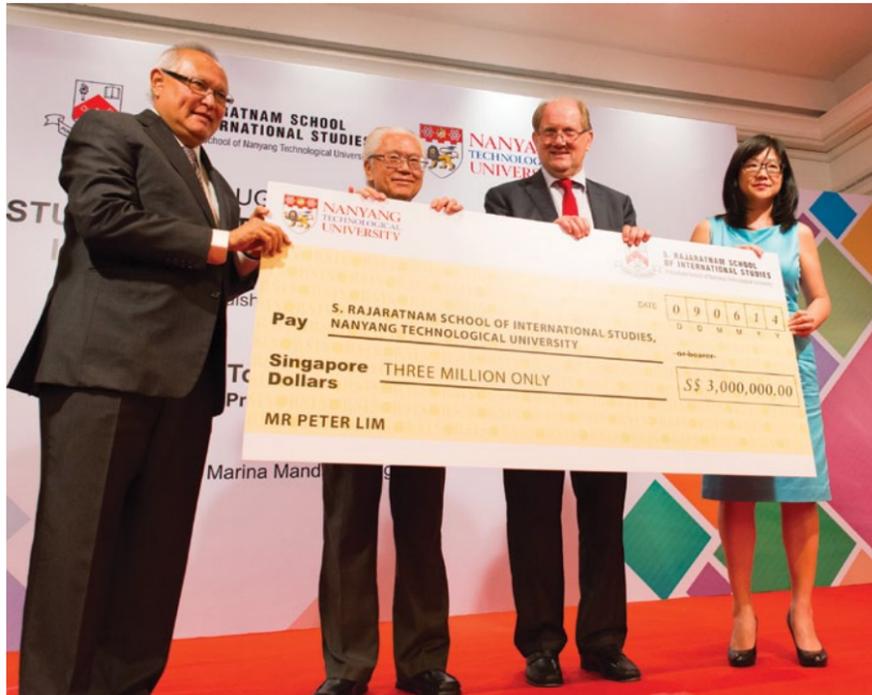
- **Sembcorp Marine Lab @ NTU**, with Sembcorp Marine, to develop sustainable solutions for the offshore and maritime industry.
- The **Sentosa Boardwalk Tidal Turbine**, with Sentosa Development Corporation, to test the viability of using tidal energy to generate electricity.
- Southeast Asia's first **Maritime Energy Test Bed**, with the Singapore Maritime Institute, to drive research on eco-friendly ship and port technologies such as alternative fuels.
- **SMG Innovation Centre @ ISR**, with Russian sports retail giant Sportmaster, to pioneer breakthrough sports technology.
- **NTU-SBF Centre for African Studies**, with the Singapore Business Federation, to help firms in Asia expand into Africa.
- The dual-facility **Visualisation and Prototyping Lab**, with the Singapore University of Technology and Design, to develop new techniques in 3D design and printing.

- A partnership with the **National Dental Centre of Singapore** to provide training in research to dental surgeons, with the aim of developing products and devices that can shape the future of oral health care.

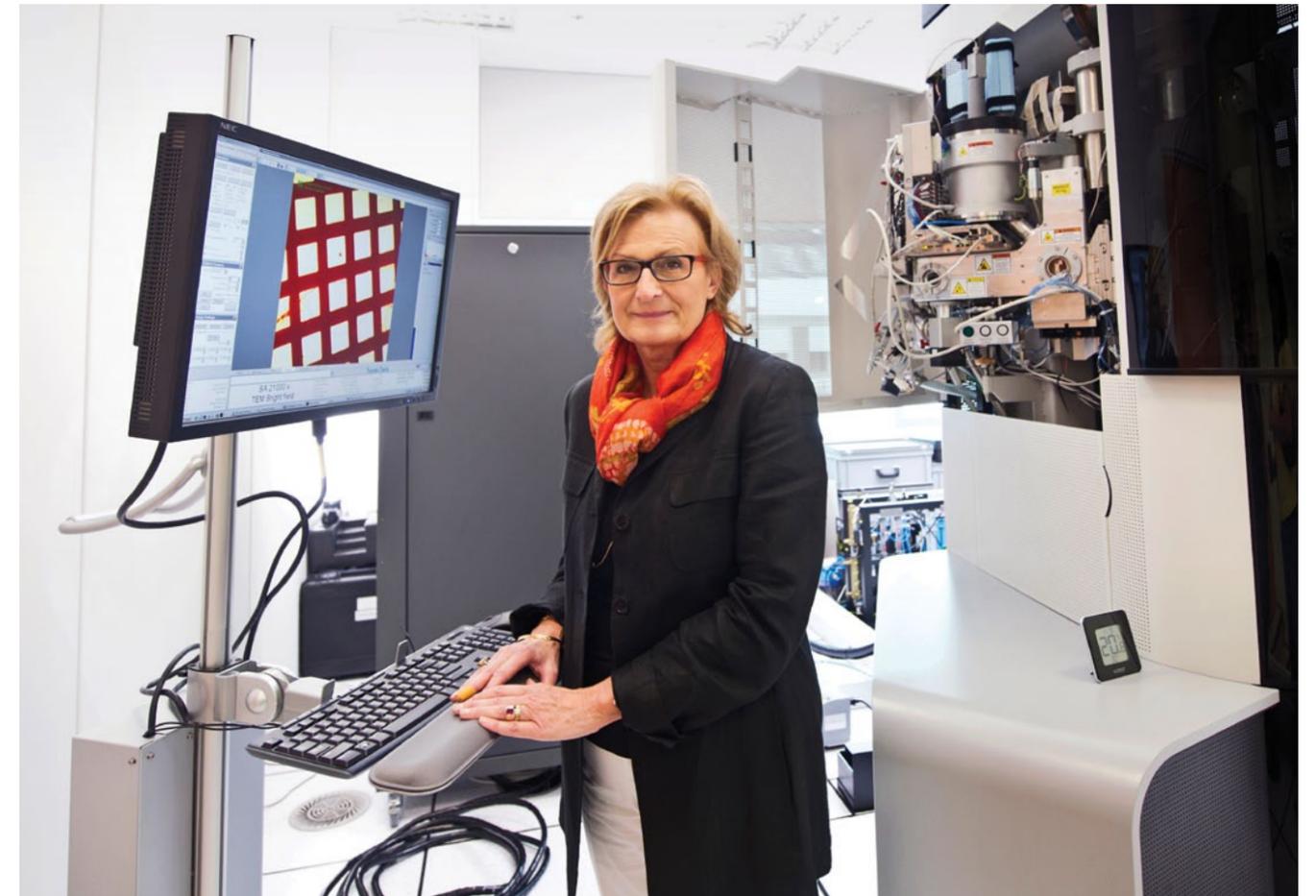


NTU will provide training in areas like bone bioengineering and 3D bio-printing to dental surgeons for the first time through a partnership with the National Dental Centre of Singapore.

- **The Peter Lim Professorship in Peace Studies**, based at the S Rajaratnam School of International Studies, to develop the School's peace studies curriculum and research strategy.



Singapore philanthropist Peter Lim's S\$3 million gift to NTU for a new professorship in peace studies will promote the creation of peaceful communities, which is essential for global progress.



The Cryo-Electron Microscopy Laboratory, led by Prof Daniela Rhodes, has top-of-the-line electron microscopes that will enable NTU scientists to push the frontiers of biomedical science and medicine, such as in cancer biology and ageing.

Research spotlight

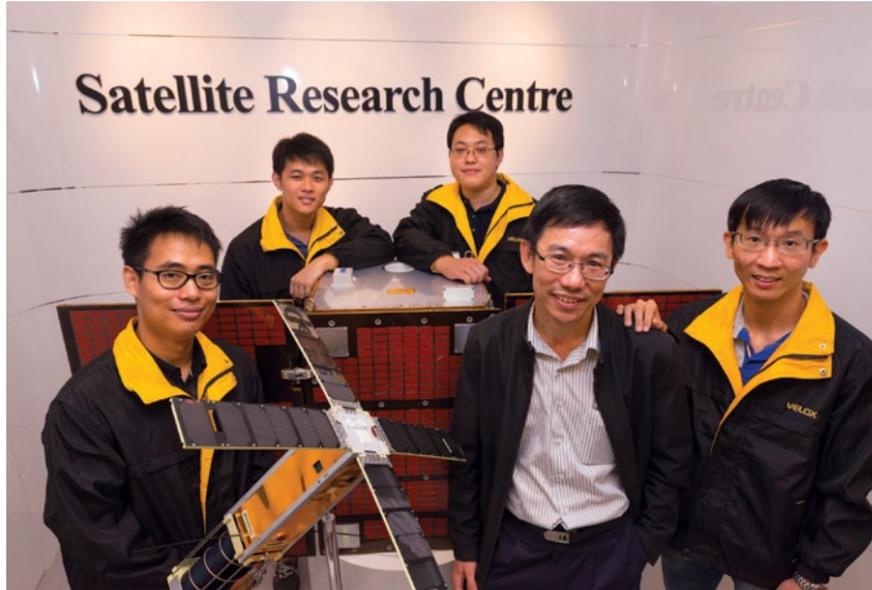
- NTU's **Cryo-Electron Microscopy Laboratory**, led by world-renowned scientist Prof Daniela Rhodes, boosts life sciences research at the University. The Laboratory is the world's first university research facility to have an advanced cryo transmission electron microscope. This allows NTU scientists to image biological structures with far greater accuracy, providing a more detailed understanding of important biological processes in human health and disease.

- **EVA**, the world's first electric taxi for tropical megacities, is unveiled at the 43rd Tokyo Motor Show. EVA is a showcase of future electromobility and its possibilities achieved at TUM CREATE, a joint research programme by Technische Universität München (TUM) and NTU, with funding from the National Research Foundation.

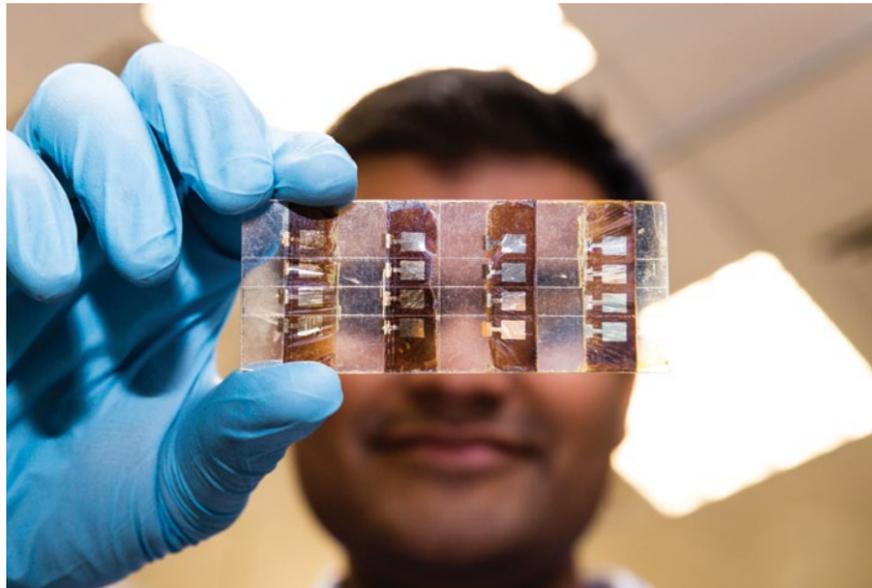
The Cryo-Electron Microscopy Laboratory is the **world's first university research facility** equipped with an advanced cryo transmission electron microscope.

Highlights

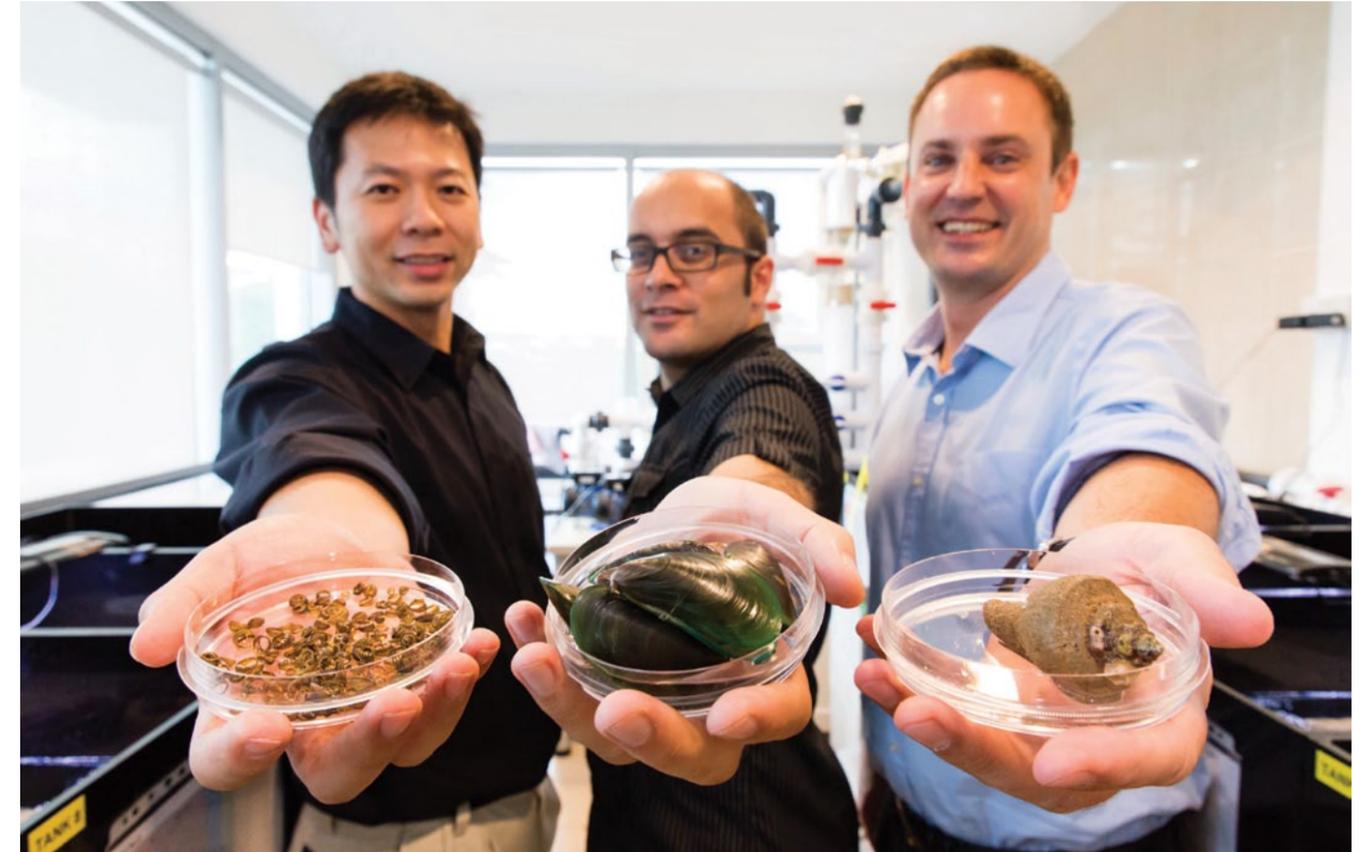
- Two NTU-built satellites – **VELOX-I** and **VELOX-PIII** – are successfully launched into space. NTU leads the way in satellite technology in Singapore with four satellites in space and two more to be launched by end-2015.
- NTU researchers develop a **new generation of solar cells** that not only converts light into electricity but also emits light. The solar cell is made from perovskite, a promising new material that may hold the key to creating highly-efficient and inexpensive solar cells.
- Trials of a new **glaucoma nanomedicine** that allows patients to do away with daily eye drops yield exceptional results, having shown to be both safe and effective.
- In two separate studies, NTU researchers work out novel ways to **specifically target cancer cells**, paving the way for more effective chemotherapy drugs.
- A team from NTU, the Singapore-MIT Alliance for Research and Technology, and KK Women's & Children's Hospital, develop a **new type of mouse** with a human immune system and human red blood cells, which could accelerate the search for new malaria treatment. The discovery of a novel way to block the malaria parasite from invading human blood cells also paves the way for a **low-cost vaccine** against the disease.



The Satellite Research Centre is now building its fifth and sixth satellites – Singapore's first climate satellite and an experimental communication satellite.



Perovskite solar cells that can both absorb and emit light could lead to touch and display screens doubling up as solar panels.



Stronger than most plastics, NTU's super biomaterials are made from squid, mussels and sea snails. They are non-toxic and biodegradable and could be used to make food packaging, drug capsules and even parts for organ implants.

- Interdisciplinary researchers from NTU and Singapore's Agency for Science, Technology & Research develop **new biomaterials** modelled after squid teeth, mussels and sea snails. These are harder and more wear-resistant than conventional plastics.
- A new study by the Institute on Asian Consumer Insight to decode the **psychological make-up of Asian consumers** finds that they value family, believe in hard work and are financially conservative.
- Singapore's first clean and green **driverless shuttle transportation system** is tested along a 2km route between NTU and JTC's CleanTech Park as part of a two-year trial of new transportation technologies.



A showcase of sustainability research, NTU's smart, driverless electric shuttle is jointly developed with JTC and Induct Technologies.

Highlights



Among recent innovations at NTU in the rapidly emerging field of 3D printing is "Blacksmith Genesis", a user-friendly 3D printer-scanner invented by Blacksmith Group, an NTU spin-off company.



INNOVATION AND ENTREPRENEURSHIP

- **NTUitive**, NTU's newly formed innovation and enterprise wing, engages with NTU faculty and researchers to identify **research with commercial potential**. In FY2013, the number of technology disclosures increases over the previous year by 12% to 320. Patent applications filed by NTU increases 25% to 407 in FY2013, with the number of patents granted increasing 16% to 51 during the year.
- The number of **licences signed with industry doubles** from nine in FY2012 to 18 in FY2013. These licences cover diverse areas from infocomm and energy to membranes and bio-technology.
- NTUitive uses four technology accelerators to bring the output of the University's research closer to the market, facilitating their adoption: **Systemed**, for life sciences; **TechBiz Xccelerator**, for infocomm; **iESE**, for engineering; and **TechBridge Ventures**, which focuses on energy and materials.
- NTU faculty demonstrate the commercial value of their research, securing **S\$2.34 million in Proof-of-Concept grants** from the National Research Foundation.

- Eight NTU spin-offs created over the year showcase innovations in areas such as infocomm, membrane technology and nanotechnology. The spin-offs include **NanoSun Pte Ltd**, which produces nanofibre membranes for water treatment, **Endomaster Pte Ltd**, which has developed a novel robotic-assisted endoscopic surgical system, and **Qiv Storage Pte Ltd**, specialising in cloud storage.
- Students, staff and alumni receive guidance from NTUitive to create their own start-ups. All **30 start-ups** founded in FY2013 are successful in their applications for start-up grants. One of the start-ups, **Blacksmith Group**, is behind the world's first compact 3D printer that can also scan items into digitised models.
- The Innovation Centre, housing an Open Innovation Lab, is a **hotbed for innovation and enterprise activities**, providing an environment for students, faculty and entrepreneurs to network and interact. There are plans to set up a satellite incubation facility at LaunchPad @ one-north to support the growth of more mature start-ups.

- NTUitive raises the profile of NTU by participating in key **entrepreneurship events** such as Activate Singapore and Techventure, where one of NTU's start-ups, CtrlWorks, is named "Most Promising Start-up". NTU is also a founding member of the World Entrepreneurship Forum and has initiated long-term studies to better understand the conditions for innovation and entrepreneurship in NTU and Singapore.

25%

increase in patent applications filed by NTU



TOP FACULTY



Distinguished endocrinologist Prof James Best.



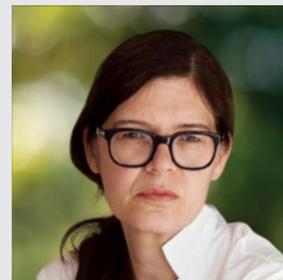
Pioneering applied physicist Prof Federico Capasso, one of the inventors of the quantum cascade laser.



Leading mobile communication researcher Prof Richard Ling.



Prof Joseph Walther, a distinguished scholar in new and emerging media studies.



International curator Prof Ute Bauer from the Massachusetts Institute of Technology.



Prof Sten Ohlson, a pioneer in cell culture engineering.



Prof Howard Cam Luong, a leader in analogue, radio frequency and millimetre-wave integrated circuits and systems for wireless and portable applications.



Prof Andrew Lim, an analytics and process optimisation expert.

- Top research leaders who joined NTU during the year include: **Prof James Best** (Dean, Lee Kong Chian School of Medicine), **Prof Federico Capasso** (Visiting Professor, School of Physical & Mathematical Sciences and School of Electrical & Electronic Engineering), **Prof Ute Bauer** (Director, Centre for Contemporary Art), **Prof Sten Ohlson** (Professor, School of Biological Sciences), **Prof Howard Cam Luong** (MediaTek Visiting Professor, School of Electrical & Electronic Engineering) and **Prof Andrew Lim** (Visiting Professor, School of Physical & Mathematical Sciences). Eminent faculty at the Wee Kim Wee of Communication & Information include **Prof Richard Ling**, Shaw Foundation Professor, and **Prof Joseph Bart Walther**, Wee Kim Wee Professor.
- NTU continues to attract outstanding young researchers through various fellowship schemes. It is the institution with the **largest share of National Research Foundation Fellows** (31 out of 61 Fellows) from 2008 to 2013. NTU's **Nanyang Assistant Professorship scheme** is now regarded as one of the most rigorous assistant professorship schemes in the world, and in 2014, the University awarded 14 professorships with the quality of applicants improving. Collectively, both groups of Fellows have secured more than S\$170 million in external competitive research grants.



NTU's latest tie-up with Wageningen University in food science and technology will help develop expertise in food processing, security and safety in Asia.



STRATEGIC ALLIANCES

- NTU students on Singapore's top engineering programme, the Renaissance Engineering Programme, can now opt to study a full year at **Imperial College London** or University of California, Berkeley, both located in two of the world's most cosmopolitan cities.
- NTU and Cornell University launch Asia's first hospitality management programme for senior professionals in the industry. The **Cornell-Nanyang Advanced Management Programme in Hospitality Management** helps senior executives further their knowledge of hospitality management in a multinational setting.
- In partnership with **Wageningen University** from the Netherlands, a world leader in food science research, NTU introduces a second major in Food Science and Technology for undergraduates pursuing Biological Sciences, Chemical and Biomolecular Engineering, and Chemistry and Biological Chemistry.
- Under NTU President Prof Bertil Andersson's leadership, the **Global Alliance of Technological Universities**, founded at NTU, continues to tap the potential of its member universities, which are united in addressing global societal issues, such as healthcare, sustainability and energy and food security.
- NTU, a member of the **ASPIRE League**, hosts the consortium's **inaugural research academy** on the theme of sustainability for undergraduates from its member universities. The ASPIRE League of Asian universities advances science and technology through activities such as academic exchange.



The upgraded NTUlearn portal for students.



ADMINISTRATIVE AND IT ENHANCEMENTS

- The **IT infrastructure is enhanced** to support higher mobility as well as NTU's video-intensive and technology-enabled learning environment that includes more online and blended learning courses. A **data centre consolidation** project is launched to cut costs and make IT operations more energy efficient. **Strategic learning applications** deployed include a learning analytics feature, the i-Ngage mobile platform and an upgraded NTUlearn portal for students.
- The new **NTU Shared Services department**, a key node in NTU's administrative excellence initiative, consolidates and streamlines transactional human resources, finance, IT and procurement services, bringing together more than 200 staff across the University to deliver greater efficiency and service excellence.

Highlights



ALUMNI

- NTU now has more than **190,000 alumni** residing in 128 countries, and a total of 33 local alumni associations and 44 overseas alumni chapters.
- The global alumni network expands with **new overseas associations** set up in the **Philippines** and **China** (Ningxia-Qinghai-Xizang). A local alumni chapter is launched for the **CN Yang Scholars Programme**.
- The **USA-West alumni association** plays host to the first batch of 35 Renaissance Engineering Programme

students doing their one-year stint at University of California, Berkeley. "Alumni hosts" help introduce these future CEOs and CTOs to the entrepreneurial and business scene in California.

- Overseas alumni (such as those in Indonesia, Vietnam and Malaysia) **share their NTU experience with prospective international students** and their parents at overseas talks organised by NTU's admissions office.
- At the **Nanyang Alumni Awards 2013**, a total of 23 alumni are honoured for their exemplary achievements. Some 1,300 alumni, faculty, staff, students and guests attend the ceremony held at NTU's annual **Alumni Homecoming**.



NTU President Prof Bertil Andersson celebrates with the Class of 2013 at their graduation party.



Dr Wee Cho Yaw, Pro-Chancellor of NTU and Chairman Emeritus and Adviser of United Overseas Bank Limited, receiving the honorary degree of Doctor of Letters.



HONORARY DOCTORATE RECIPIENTS

- **Dr Wee Cho Yaw**, Doctor of Letters
- **Prof Bengt Nordén**, Doctor of Science

44

overseas
alumni chapters



EMINENT VISITORS

- International interest in NTU grows steadily year on year, with the University receiving more than 216 overseas delegations, including the chiefs of many universities.
- In conjunction with the World Cultural Council's 30th Award Ceremony, NTU hosts the **inaugural Times Higher Education World Academic Summit**, which draws high-profile speakers such as Nobel laureate and President of the Royal Society Prof Sir Paul Nurse, and Dr Marcus Storch, former Chairman of the Nobel Foundation. The speakers focus on the economic role of universities

as partners in world trade and include the presidents of a number of world-leading universities.

- Other top international dignitaries and academics at NTU during the year include:

HSH Prince Alfred of Liechtenstein
Chairman of Advisory Board of the International Peace Foundation

Prof David Gross
Nobel Laureate in Physics 2004

Prof Freeman Dyson
Templeton Prize 2000 Laureate

Prof Edmond Fischer
Nobel Laureate in Physiology or Medicine 1992

Prof Aaron Ciechanover
Nobel Laureate in Chemistry 2004

Prof Sir Anthony James Leggett
Nobel Laureate in Physics 2003

Prof Kurt Wüthrich
Nobel Laureate in Chemistry 2002

Prof Stephen Smale
Fields Medallist 1966

Prof Arieh Warshel
Nobel Laureate in Chemistry 2013

Prof Roy Glauber
Nobel Laureate in Physics 2005

Prof Serge Haroche
Nobel Laureate in Physics 2012

Prof Michael Grätzel
Millennium Technology Prize 2010 Laureate

Prof Rudolph Marcus
Nobel Laureate in Chemistry 1992

Prof Sir John Walker
Nobel Laureate in Chemistry 1997

Prof C N Yang
Nobel Laureate in Physics 1957

Prof Carlo Rubbia
Nobel Laureate in Physics 1984



The award ceremony of the World Cultural Council (WCC) came to Southeast Asia for the first time, with NTU hosting the esteemed event that honoured highly acclaimed scientists and artists. Nobel laureate Prof Sir Paul Nurse (left), President of the Royal Society (UK), received the Albert Einstein World Award of Science 2013 from WCC Honorary President and Nobel laureate Prof Edmond Fischer (right).



Nobel laureate Prof CN Yang was one of the many distinguished speakers at the 8th OCPA International Conference on Physics Education and Frontier Physics.



Nurturing soft skills: NTU President Prof Bertil Andersson with Mrs Margaret Lien, whose S\$12 million gift established the Margaret Lien Centre for Professional Success at NTU.



GIFTS TO THE UNIVERSITY

- **Alumni giving** hits a record participation rate of 15.39% in 2013, with contributions of about S\$4 million from NTU alumni.
- The Class of 2013 sets a new milestone for **graduation giving**, raising S\$100,000 with a participation rate of 87.19%.

- The **faculty and staff giving** campaign reaches a record participation rate of 65.94% in 2013, an increase of 4.34% from 2012.
- The **business and community partners** programme attracts more than 200 companies and organisations in 2013, raising over S\$1 million in donations, which will go towards supporting NTU students in need.

Gifts of significant impact received in FY2013 (April 2013 to March 2014):

- Five gifts of S\$1 million each from five founding donor companies – **Wilmar International, Indorama Corporation, Pacific International Lines, Olam International** and **Tolaram Group** – to establish the NTU-SBF (Singapore Business Federation) Centre for African Studies at Nanyang Business School to drive thought leadership on Africa.
- S\$5 million from **Mr Kwek Leng Joo** to establish the Kwek Leng Joo Student Community Service Fund, which supports meaningful



A boost to food science and technology from Dr Michael Fam (second from right with, from left, Prof Bertil Andersson, former NTU President Prof Cham Tao Soon and NTU Board Chairman Mr Koh Boon Hwee).

engagement programmes that will ingrain in students a sense of civil and social responsibility.

- S\$12 million from **Mrs Margaret Lien** to establish the Margaret Lien Centre for Professional Success. The Centre offers a curriculum of essential career skills and values to give NTU students a competitive edge in the job market.
- Gifts totalling S\$2.68 million from **Temasek Foundation** in support of several programmes, including the LEARN programme, Public Administration Leaders Programme in Vietnam and Cambodia, Asia Journalism

Fellowship Programme, and the Training and Capacity Building Programme in the Philippines.

- S\$1.9 million from **Dr Michael Fam** to establish The Michael Fam Chair Professorship in Food Science and Technology, which supports NTU's ambition to become a top Asian university in food science and technology.
- S\$1 million from **Mr Herman Hochstadt** to establish the Hochstadt University Scholars Programme Endowment Fund and Henry David Hochstadt Early Childhood Education Fund.

S\$4m

in alumni giving – a record participation rate of 15.39%

Highlights



BENEFACTORS

(APRIL 2013 TO MARCH 2014)

S\$5 Million and Above

- Kwek Leng Joo
- Margaret Lien Wen Hsien

S\$1 Million and Above

- Michael Fam
- Herman Hochstadt
- Indorama Corporation Pte Ltd
- Mrs Ong Tiong Tat, Trustee of the Estate of Koh Choon Joo
- Olam International Limited
- Sim Yung Chong Education Fund
- Temasek Foundation CLG Limited
- Tolaram Corporation Pte Ltd
- Wilmar International Limited

S\$500,000 and Above

- Lee Foundation
- SC Wong Foundation Trust

S\$250,000 and Above

- Raffles Quay Asset Management Pte Ltd
- Toyota Motor Asia Pacific Pte Ltd
- United Way Worldwide

S\$100,000 and Above

- Absolute Kinetics Consultancy Pte Ltd
- Chew Hui Im
- Goh Bak Heng
- Hong Leong Foundation
- Jiangsu Huailong Materials Co Ltd
- Keppel Care Foundation Limited
- KMP Private Ltd
- Lian Ho Lee Construction Pte Ltd
- Lim Cheng Eng
- Lotusonwater Feng Shui Pte Ltd
- Ng Foundation Limited
- Sembcorp Marine Ltd
- Serial System Ltd
- Singapore Chinese Chamber of Commerce Foundation
- The Community Foundation of Singapore

S\$50,000 and Above

- Chew Peng Keng
- DSO National Laboratories
- ExxonMobil Asia Pacific Pte Ltd
- Hb Glass & Aluminium Pte Ltd
- JTC Corporation
- Kwok Kian Woon
- Max Lewis Scholarship Fund
- Peh Chong Eng
- Silicon Valley Community Foundation
- Tang See Chim
- Two anonymous donors

S\$25,000 and Above

- BBR Holdings (S) Ltd
- Bertil Andersson
- DNIV Int'l Pte Ltd
- DV Partners Pte Ltd
- FMC Technologies Singapore Pte Ltd
- Koh Boon Hwee
- Loren Ian Shuster
- Micro-Tech Supplies & Services Pte Ltd
- Professional Engineers Board, Singapore
- Margaret Tang Pui Fong
- Anthony Teo Soon Chye
- The Tan Chin Tuan Foundation
- Thye Hong Management & Services Pte Ltd
- Tung Mung International Pte Ltd
- Wong Kan Seng
- Woo Kok Sin

FINANCIAL REVIEW

Corporate Governance	38
Financials	40
Statements of Financial Position	41
Consolidated Statement of Comprehensive Income	43

Introduction

In April 2006 under the Nanyang Technological University (Corporatisation) Act (Cap. 192A) (“NTU Act”), NTU was corporatised from a statutory board to a not-for-profit company limited by guarantee (Reg. No. 200604393R) formed under the Companies Act (Cap. 50) of Singapore. The governance of the University takes place within the NTU Act and its key constitutive document, its Memorandum and Articles of Association.

NTU is committed to high standards of corporate governance, professionalism, integrity, transparency and commitment at all levels, underpinned by strong internal controls and risk management systems.

Governance Evaluation Checklist

In addition to the application of good governance practices as a company and registered charity (Reg. No 01955), we have, as an institution of public character (“IPC”), adopted best practices in key areas of governance that are closely aligned to the principles and guidelines in the Code of Governance for Charities and Institutions of a Public Character (the “Code”). In line with the disclosure requirement by the Charity Council that all IPCs are required to disclose the extent of their compliance with the Code, NTU’s Governance Evaluation Checklist can be found at the Charity Portal website (www.charities.gov.sg).

Board of Trustees

The NTU Board of Trustees is the highest governing organ within the University’s governance framework. The Board comprises 19 members appointed by the Minister for Education, and is chaired by Mr Koh Boon Hwee. Our Board of Trustees includes eminent business leaders, academics, alumni, entrepreneurs and professionals from the public service and private sectors. Each member is appointed on the strength of his/her calibre, experience, stature and ability to contribute to NTU, and brings with him/her independent judgment on issues of strategy, performance, resource allocation and risk and compliance, as well as valuable relationships and networks which are essential for the growth of NTU.

The Board of Trustees is responsible for ensuring that the University acts in the furtherance of its objectives in education and research, and properly accounts for and safeguards the funds and assets of the University. The Board of Trustees works closely with the Management and stakeholders of the University to shape the vision, chart the major directions, and develop programmes and initiatives to produce a strong and enduring impact for the University, and for Singapore and beyond. The Board also approves the annual budget, the use

of the University’s operating reserves and the annual audited financial statements of NTU, among other responsibilities.

The NTU Board of Trustees has in place a framework with systems and processes for an effective Board based on the following governance principles and practices:

1. Effective recruitment and induction of Trustees. The Nominating Committee is delegated the responsibility of recommending suitable candidates and has in place an induction programme comprising interactive briefing sessions. In addition, a Board Manual is available.
2. Board Committees are structured to assist the Board to fulfil its governance role, tapping each Trustee’s competencies, skills and experience.
3. The Board works with Management to set the vision, mission and strategy of NTU.
4. The Board has an executive succession plan tailored to reflect NTU’s current strategy and organisation.
5. The Board has a system for effective consultation and decision-making with executive sessions and board meetings scheduled in advance, professional expertise advice available, internal guidelines and procedures for conduct of board meetings and obtaining board approvals via circulation, and a Trustees’ portal as a secured web-based resource centre for information relevant to the Board.
6. The Board evaluates and reviews its own performance and has appointed an independent third party to collate and analyse the returns of the Trustees.
7. The Board delineates roles and responsibilities between Board and Management. All members of the Board, including the Chairman, are non-executive with the exception of President of NTU. This ensures Board independence from Management.
8. The Board has a rotation plan for continuous self-renewal, with staggering of Trustees’ terms to ensure continuity. There are policies and procedures for nomination and retirement of Trustees to ensure a formal board nomination and election.

Board Committees

Eight Board Committees and one Advisory Committee have been established to support the Board. These are the Academic Affairs Committee, Alumni and Development Committee, Audit and Risk Committee, Enterprise Committee, Finance Committee, Investment Committee, Nominating Committee, Remuneration Committee and Campus Planning Advisory Committee.

The roles of the Board and Advisory Committees are briefly described below:

- The Academic Affairs Committee provides oversight and policy guidance for and directly supports the academic concerns of the University as well as the management of faculty and related matters.
- The Alumni and Development Committee provides oversight of issues relating to the advancement of the university as a great university founded on science and technology and its relationship with its students, alumni and external communities.
- The Audit and Risk Committee oversees the University’s internal controls, financial reporting and enterprise risk management.
- The Enterprise Committee provides oversight and policy guidance for, and directly supports, the University’s strategic directions and policies on innovation, technology transfer and entrepreneurship.
- The Finance Committee provides oversight of the financial management of the University.
- The Investment Committee oversees the management and investment of the funds of the University.
- The Nominating Committee nominates suitable persons to serve on the Board and committees.
- The Remuneration Committee provides oversight and policy guidance in employee compensation matters.
- The Campus Planning Advisory Committee provides oversight and advice on the implementation of the campus master plan.

The Committees operate based on the principle of delegated authority from the Board and are required to observe their respective Terms of Reference as set by the Board. The Terms of Reference of each of these Committees set out the role, powers and rules applicable to these Committees. Where necessary, non-Board members who have expertise in their respective fields are also co-opted to enhance the deliberations and decision-making process of some of the Board Committees.

University Leadership

The President is the University’s Chief Executive Officer as well as its academic and administrative head. He is accountable to the Board for the conduct, co-ordination and quality of all of NTU’s programmes and for their future development. He has the authority to perform all acts which are necessary to give effect to the policies and statutes of the Board.

The Provost is the Chief Academic and Budget Officer of the University appointed by the President with the approval of the Board of Trustees. The Provost is responsible for

the University’s academic endeavours and development. This includes graduate and undergraduate education, research, faculty development, student life, external academic liaison and coordination of supporting administrative efforts. He deputises for the President in his absence.

Policies to Manage Conflict of Interest

Members of the Board of Trustees and staff are required in their respective capacities to act at all times in the best interest of the University. Clear policies and procedures are designed to prevent and address potential conflict-of-interest situations while promoting ethical business conduct of faculty and staff.

Trustees have a fiduciary duty not to allow themselves to get into a position where there is a conflict between what they ought to do for NTU and what they might do for themselves. The NTU Board of Trustees subscribes to a code of conduct to uphold a high standard of integrity and commitment in serving the University and in the event of a conflict of interest, members of the Board shall recuse themselves from decisions where such a conflict exists.

In addition, NTU’s Articles of Association contain provisions for the management and avoidance of conflicts of interest by members of its Board of Trustees. Such provisions include (a) permitting a Board member to be interested in any transaction with NTU provided that the member has declared the nature of the interest to the Board of Trustees and abstains from participating in the Board’s decision in respect of the transaction concerned, (b) permitting a Board member, or a firm associated with the member, to act in any professional capacity for the University and to be remunerated for professional services as if the Board member was not a Trustee, and (c) permitting a Board member to be reimbursed for out-of-pocket expenses, travelling and other expenses properly incurred by the Board member in attending and returning from meetings of the Board of Trustees, any of its committees, or any general meeting of the University or otherwise in connection with the affairs of the University. NTU’s Articles expressly stipulate that Board members shall not receive any remuneration for services rendered by them as members of the Board of Trustees.

Under the University Code of Conduct, faculty and staff owe their primary professional allegiance to the University. To protect the University and its mission, all faculty and staff must comply with policies on conflict of interest as laid down from time to time. The current Policy requires faculty and staff to ensure that their private activities and interests do not conflict with their professional obligations to the University. They should take care to avoid conflict between their own personal interests and the interests of the University and should avoid or withdraw from situations where there may be a perception of such conflict. Where there is potential violation of the Policy, the faculty or staff shall fully and frankly disclose the nature and extent of their interest to the University as soon as possible.

Financials

For the year ended 31 March 2014

Important Note

The financials as set out on pages 41 to 44 are an extract of the Statements of Financial Position and consolidated Statement of Comprehensive Income for the University Company and its subsidiaries (referred to as the "Group") for the year ended 31 March 2014. The attached financials do not contain sufficient information to allow for a full understanding of the results and the state of affairs of the Group. However, readers may wish to view the full audited financial statements of the Group at the University's website: <http://www.ntu.edu.sg/AboutNTU/pages/annualreport.aspx>

Statements of Financial Position

31 March 2014

	Group		University Company	
	2014	2013	2014	2013
	\$'000	\$'000	\$'000	\$'000
ASSETS				
Non-current assets				
Property, plant and equipment	1,222,831	1,141,779	1,221,599	1,140,490
Prepaid lease	41,416	3,267	41,416	3,267
Subsidiaries	-	-	791	791
Joint venture	198	-	-	-
Student loans	2,420	4,018	2,420	4,018
Finance lease receivables	21,038	21,706	21,038	21,706
	1,287,903	1,170,770	1,287,264	1,170,272
Current assets				
Derivative financial instruments	5,919	1,011	5,919	1,011
Student loans	2,290	2,721	2,290	2,721
Trade and other receivables	191,047	327,575	188,673	324,648
Financial assets at fair value through profit or loss	1,796,859	1,462,564	1,796,859	1,462,564
Finance lease receivables	668	652	668	652
Cash and cash equivalents	1,351,051	1,181,113	1,330,238	1,161,810
	3,347,834	2,975,636	3,324,647	2,953,406
Total assets	4,635,737	4,146,406	4,611,911	4,123,678
LIABILITIES				
Current liabilities				
Derivative financial instruments	2,578	12	2,578	12
Other payables and accruals	146,060	109,768	140,610	105,113
Provisions	97,856	75,070	97,695	74,933
Grant received in advance				
- Operating grants	1,210	499	-	-
Grant received in advance				
- Information technology and furniture and equipment ("IT and F&E")	39,234	35,035	39,234	35,035
Sinking fund received in advance	6,600	-	6,600	-
Short-term borrowings	81,600	90,900	81,600	90,900
Deferred tuition and other fees	69,995	64,467	69,995	64,467
Research grants received in advance	127,382	77,441	127,228	76,881
Income tax payable	366	475	-	-
	572,881	453,667	565,540	447,341
Non-current liabilities				
Deferred capital grants	812,549	821,503	811,622	820,162
Other non-current liabilities	3,431	3,324	3,431	3,324
Sinking fund received in advance	234,228	205,529	234,228	205,529
	1,050,208	1,030,356	1,049,281	1,029,015
Total liabilities	1,623,089	1,484,023	1,614,821	1,476,356
Net assets	2,523,317	2,287,051	2,508,857	2,274,540

Statements of Financial Position (cont'd)

31 March 2014

	Group		University Company	
	2014 \$'000	2013 \$'000	2014 \$'000	2013 \$'000
FUNDS AND RESERVES				
Capital account	200,858	200,858	200,858	200,858
Endowment fund	1,510,050	1,266,322	1,510,050	1,266,322
Accumulated surplus				
- General fund	660,630	561,930	642,293	545,840
- Other restricted fund	503,857	494,207	506,576	495,837
Funds and reserves	2,875,395	2,523,317	2,859,777	2,508,857
Funds managed on behalf of the Government Ministry Represented by:				
Net assets managed on behalf of the Government Ministry	211,794	219,864	211,794	219,864
	211,794	219,864	211,794	219,864

Consolidated Statement of Comprehensive Income

Year ended 31 March 2014

	General fund		Endowment fund		Other restricted fund		Total	
	2014 \$'000	2013 \$'000	2014 \$'000	2013 \$'000	2014 \$'000	2013 \$'000	2014 \$'000	2013 \$'000
Group								
Income								
Tuition and other fees	260,384	244,439	-	-	36,892	28,785	297,276	273,224
Rental income	824	1,602	-	-	40,109	35,035	40,933	36,637
Research grants	268,349	231,068	-	-	-	-	268,349	231,068
Interest income	3,600	3,759	41	-	568	582	4,209	4,341
Donations	740	773	-	-	22,401	28,786	23,141	29,559
Other grants	2,808	2,956	-	-	7,016	15,032	9,824	17,988
Sundry income	53,887	56,886	-	-	17,726	21,314	71,613	78,200
Deferred capital grants amortised (non-ministry)	6,773	7,584	-	-	8,429	6,730	15,202	14,314
Total income before profit on investments and share of joint venture's results	597,365	549,067	41	-	133,141	136,264	730,547	685,331
Profit on investments	26,380	18,113	113,803	75,715	192	139	140,375	93,967
Share of joint venture's results	(10)	-	-	-	-	-	(10)	
Total income after profit on investments and share of joint venture's results	623,735	567,180	113,844	75,715	133,333	136,403	870,912	779,298
Expenditure								
Expenditure on manpower	599,168	583,240	1,028	999	106,884	90,003	707,080	674,242
Teaching/research	132,462	118,519	-	-	40,589	52,256	173,051	170,775
Administration	65,131	66,794	-	-	45,949	44,466	111,080	111,260
Scholarship expenses	91,337	81,664	-	-	64,691	61,237	156,028	142,901
Maintenance	63,106	76,484	-	-	16,832	12,704	79,938	89,188
Library books and periodicals	4,532	4,644	-	-	-	-	4,532	4,644
Depreciation of property, plant and equipment	159,937	157,055	-	-	21,934	16,655	181,871	173,710
Amortisation of prepaid lease	816	166	-	-	-	-	816	166
Balance carried forward	1,116,489	1,088,566	1,028	999	296,879	277,321	1,414,396	1,366,886

Consolidated Statement of Comprehensive Income (cont'd)

Year ended 31 March 2014

	General fund		Endowment fund		Other restricted fund		Total	
	2014 \$'000	2013 \$'000	2014 \$'000	2013 \$'000	2014 \$'000	2013 \$'000	2014 \$'000	2013 \$'000
Group (cont'd)								
Balance brought forward	1,116,489	1,088,566	1,028	999	296,879	277,321	1,414,396	1,366,886
Capital expenditure not capitalised	22,167	21,937	-	-	1,328	2,203	23,495	24,140
Loss on disposal of property, plant and equipment	750	720	-	-	83	60	833	780
Other expenses	181	41	2,293	2,074	27,692	23,523	30,166	25,638
Total expenses	1,139,587	1,111,264	3,321	3,073	325,982	303,107	1,468,890	1,417,444
(Deficit)/Surplus before grants from ministries	(515,852)	(544,084)	110,523	72,642	(192,649)	(166,704)	(597,978)	(638,146)
Grants from ministries								
Development grants	21,717	23,369	-	-	-	-	21,717	23,369
Operating grants	509,465	503,000	-	-	-	-	509,465	503,000
Other grants	4,937	3,215	-	-	108,316	107,655	113,253	110,870
Deferred capital grants amortised	148,011	144,984	-	-	6,660	5,032	154,671	150,016
Total grants from ministries	684,130	674,568	-	-	114,976	112,687	799,106	787,255
Surplus/(Deficit) after grants from ministries	168,278	130,484	110,523	72,642	(77,673)	(54,017)	201,128	149,109
Taxation	203	347	-	-	-	-	203	347
Surplus/(Deficit) for the year	168,075	130,137	110,523	72,642	(77,673)	(54,017)	200,925	148,762
Other comprehensive income, net of tax	-	-	-	-	-	-	-	-
Total comprehensive income/(loss) for the year	168,075	130,137	110,523	72,642	(77,673)	(54,017)	200,925	148,762

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