

NTU and NUS PhD Students win total of US\$100,000 for ground-breaking sustainability research

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PhD prizes are gift from World Future Foundation

Antibiotics, which are among the world's most widely prescribed medicines, can easily find their way into rivers and lakes because they tend not to be removed through the normal sewage process.

As global concerns persist over the possible negative effects of antibiotics on the aquatic ecosystem and human health, Dr Sally Shen, a PhD student from Nanyang Technological University (NTU) has discovered a potential way to sieve out and treat antibiotics that are present in wastewater. These are activated carbon granules specially covered with a biofilm of microbes that can break down the antibiotic chemicals into harmless products. The new technology promises to be a highly efficient way to remove antibiotics from wastewater and, once optimised, could be installed in treatment plants around the world.

Another PhD student, Dr Mano Kalaiarasan from National University of Singapore (NUS), studied how traffic-generated fine particles (PM2.5) and nitrogen dioxide (NO2) can have a great impact on environmental quality and health of the population. These fine particles can find its way into humans and exacerbate respiratory problems such as asthma, and even lead to mortality. These new findings will enable town planners, policy makers and architects to bring about better planning of township and design of naturally-ventilated buildings, which in turn reduce potential health risks of the residents.

Dr Shen and Dr Mano are among ten students from NTU and NUS this year, who have each won US\$10,000 for being among their respective university's top five completed PhD theses related to the environment, sustainability and metropolis of the future.

Awarded by World Future Foundation (WFF), these PhD Prizes are Singapore's first-of-its-kind award to recognise excellence in doctoral-level (PhD) environmental and sustainability research. This is the highest cash award among student prizes given out at Singapore universities.

Dr Feng Lun, Founder and Chairman of World Future Foundation and Chairman of Vantone Holding Investment Co Ltd was at NTU this morning to give out the PhD Prizes to the winners, in the presence of Professor Peter Rainer Preiser, NTU Associate Provost (Graduate Education), Professor Tan Thiam Soon, NUS Vice Provost (Education), Professor Mohan Kankanhalli, NUS Associate Provost (Graduate Education) and guests.

WFF, a Singapore-registered charity organisation devoted to advancing research and development of new environmental technologies, had introduced the PhD awards in 2010. Because of the success of the Prize, WFF decided to extend the award for another five years, together with NTU and NUS.

Dr Feng Lun said, "This PhD Prize is an important platform for World Future Foundation to foster innovation and inspire young scholars to be actively engaged in the area of sustainability. Their discoveries will ultimately promote sustainable development in the region and beyond. We heartily congratulate this year's winners on their success.

Looking ahead, Mr Lu Bo, Managing Director of WFF expressed that, "Apart from the cash award, WFF plans to provide more opportunities for winning students in exchange activities and networking, in order to further explore the academic research. WFF is fully confident of building up a prestigious academic prize with global impact, together with NTU and NUS.

NTU Professor Peter Rainer Preiser said, "The PhD Prize is becoming a hotly contested competition for our young researchers. It spurs our scholars to come up with innovative solutions that will contribute to a better living environment. To win the Prize is indeed recognition of excellence, innovation and commitment. The Prize is also an acknowledgement of NTU's strengths and affirms our aspiration to make a mark globally in sustainability research excellence." Sustainability is high on the University's agenda. Under the NTU 2015 plan unveiled last year, the university is putting its global stamp in five areas – sustainability, healthcare, new media, the best of East and West, and innovation.

NUS Professor Tan Thiam Soon said, "I am heartened to note that we have a winner from our Faculty of Arts and Social Sciences and this depicts a growing interest among our graduate students to pursue postgraduate research in the area of environment and sustainability. The recipients this year have continued to demonstrate high levels of creativity and innovativeness through their proposals, and their work will contribute in a positive note towards developing solutions to the challenges presented by environmental changes. NUS is committed to become a premier centre for sustainability research. We will continue to strengthen our research capabilities in this area, inspire more scholars to come

up with creative insights and effective solutions, which will have a positive impact on our future.”

This year's batch of PhD Prize winners researched into a broad span of areas, such as new technologies to enhance energy efficiency, and chemical genetic studies that could lead to better design and discovery of new drugs. The winners were assessed on several criteria, including the societal and economic relevance of their research (e.g. commercial potential), evidence of novelty (e.g. patents), and a demonstrated passion for environmental and sustainability research. The winners are:

Nanyang Technological University:

- Dr Chin Lip Ket, School of Electrical and Electronic Engineering, "Single cell refractive index measurement via Lab-on-a-chip system"
- Dr Chua Pei Juan, School of Physical and Mathematical Sciences, "Organocatalytic Asymmetric Reactions: Aminoxylation, Michael & Their Tandem Reactions"
- Dr Jenefer Alam, School of Physical and Mathematical Sciences, "Chemical Functionalization of Peptides and Proteins, Synthetic Studies Towards The Total Synthesis of Platensimycin"
- Dr Shen Liang Sally, School of Civil and Environmental Engineering, "Removal of Antibodies from Wastewater by Adsorption and Biodegradation"
- Dr Tey Ju Nie, School of Materials Science and Engineering, "Detection of biomolecules by using liquid-gated carbon nanotubes based field effect transistors"

National University of Singapore:

- Dr Wang JianJun, Faculty of Arts and Social Sciences, "Geography Satellite Remote Sensing of Suspended Sediment Concentrations in Turbid Rivers"
- Dr Babarao Ravichandar, Faculty of Engineering, "Computational Study of Adsorption and Diffusion in Metal – Organic Frameworks"
- Dr Augustine Quek Tai Yong, Faculty of Engineering, "Preparation, Characterization and Potential Applications of Pyrolytic Char Derived from Waste Tires"

- Dr Liu Hongjun, Faculty of Science, “Bicyclic Guanidine Catalyzed Enantioselective Isomerization Reactions”
- Dr Mano Kalaiarasan s/o Sellappa, School of Design and Environment, “Vertical Distribution of Traffic-Generating PM2.5 and NO2 in a Tropical Urban Environment”

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About World Future Foundation Ltd (WFF)

World Future Foundation (WFF) was set up by a group of public-spirited entrepreneurs and professionals from the Asia-Pacific region and was incorporated in Singapore on August 26, 2008. WFF was then conferred by the Government of Singapore as a charity on February 20, 2009.

WFF is a grant-making foundation, based in Singapore, for the world. It aims to financially support a number of charitable organisations and charitable programmes related to

ecological and environmental protection, city evolution, research and education and so on. These programmes will bring about changes and benefit the contemporary and future generations from different aspects. WFF is a private foundation and does not raise funds from the public. At present, its funds are mainly from the personal donation of public-spirited entrepreneurs.

WFF's motto "For Our World, For Our Future" reflects its founders' ambitions and aspirations.

For more information, visit <http://www.worldfuturefound.org>

About Nanyang Technological University

About National University of Singapore

A leading global university centered in Asia, the National University of Singapore is Singapore's flagship university. NUS offers a global approach to education and research, with a focus on Asian perspectives and expertise.

NUS has 15 faculties and schools across three campuses. Its transformative education includes a broad-based curriculum underscored by multi-disciplinary courses and cross-faculty enrichment. Over 36,000 students from 100 countries enrich the community with their diverse social and cultural perspectives.

NUS has three Research Centres of Excellence and 22 university-level research institutes and centres. It is also a partner in Singapore's 5th RCE. NUS shares a close affiliation with 16 national-level research institutes and centres. Research activities are strategic and robust, and NUS is well-known for its research strengths in engineering, life sciences and biomedicine, social sciences and natural sciences. It also strives to create a supportive and innovative environment to promote creative enterprise within its community.

More information is available at www.nus.edu.sg