

## PRESS RELEASE

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### **ELEVEN MORE TOP YOUNG SCIENTISTS AWARDED NRF RESEARCH FELLOWSHIPS TO CONDUCT CUTTING-EDGE RESEARCH IN SINGAPORE**

- *11 outstanding young scientists selected for the prestigious NRF Research Fellowship Award, out of 221 applications received from around the world*
- *Latest batch brings total number of NRF Research Fellows to 29*

1 On the recommendation of its Scientific Advisory Board (SAB) (see **Annex A** for list of members), 11 young scientists have been named National Research Foundation (NRF) Research Fellows. These Research Fellows will join the ranks of 18 others since the prestigious award was started in 2007.

2 The aim of the NRF Research Fellowship is to build a pool of young, brilliant, passionate researchers in various fields of science and technology to add to Singapore's growing research talent pool. The NRF Research Fellowship will provide each Research Fellow with up to US\$1.5 million in research funding support over three years to perform cutting-edge research in Singapore, with the possibility of receiving a second round of three-year funding (see **Annex B** for a write-up on the NRF Research Fellowship programme).

3 The NRF received a total of 221 applications from researchers of various nationalities from all over the world, including applicants from as far away as South America. These scientists are currently doing research as post-doctoral fellows in top universities such as Harvard, Cambridge, Caltech and Keio. After two rounds of stringent evaluation, 21 candidates were short-listed to come to Singapore for technical presentations and an interview by the NRF Scientific Advisory Board. Eleven were finally selected as recipients of the NRF Research Fellowship (see **Annex C** for a brief write-up on the awarded Research Fellows).

4 Mr Teo Ming Kian, Permanent Secretary (National Research & Development) said: "The NRF Research Fellowship is an important initiative that the NRF has put in place since 2006 to advance research, innovation and enterprise in Singapore. The Fellowship provides an excellent opportunity for bright young researchers to pursue their passion in scientific research in Singapore. They will be able to lead a research team as principal investigator and be part of the vibrant R&D environment here. They will also help build a vibrant research culture here and encourage more local students to take on a research career. I am pleased that as the programme enters its third year, we are seeing a significant increase in the number and calibre of applicants. The two earlier batches of 18 NRF Research Fellows have all started their research and are already showing promising results. I am sure we will see similar levels of research excellence with this third batch of awardees."

5 Nobel Laureate Prof Aaron Ciechanover, of the Technion-Israel Institute of Technology and a member of NRF's SAB said: "We are very impressed with the quality of the candidates we interviewed for the NRF Fellowship – they are easily as good as any candidates the SAB could have interviewed for the best leading universities and research institutes worldwide. I am quite sure we're going to see some very excellent scientific research coming out from their work in the coming years."

6 Dr Christian Nijhuis, who is from the Netherlands and currently a postdoctoral research fellow at Harvard University said: "To be selected for the NRF Research Fellowship programme makes it possible to perform challenging and cutting edge research. This award is the best opportunity a young investigator can wish for to pursue his ideas and to make a difference."

7 Dr Teo Yik Ying, who is from Singapore and currently a postdoctoral genetic statistician at the Wellcome Trust Centre for Human Genetics said: "It is a great privilege to be awarded the prestigious NRF Research Fellowship. This will provide vital resources for building a team with analytical expertise in the genetics and genomics of common human diseases and infectious diseases, particularly in research areas where Singapore has strategic advantages given its location in South-East Asia and the multi-racial demography."

8 This is the third group of scientists that are awarded the NRF Research Fellowship. They will begin their research shortly in their respective host universities in Singapore. The first two groups of Research Fellows have settled well into the research environment and are already producing promising results. An example is Dr Barbaros Oezylimaz, an Assistant Professor at the NUS Physics department and a NRF Research Fellow from the pioneer batch. Dr Oezylimaz has successfully demonstrated the proof-of-concept viability of using graphene as a memory device. This is an important first step towards manufacturing memory that is significantly denser and faster than the magnetic memory used in today's hard drives. This research in Singapore placed him as one of the top innovators in the world under 35 years<sup>1</sup>.

9 Another research project, led by Dr Gijsbert Grotenbreg of NUS, aims to develop a library of MHC (Major Histocompatibility Complexes) reagents specific to the South East Asian population, which hitherto, had not been extensively studied. With his NRF Fellowship grant, Dr Grotenbreg has developed 9 MHC reagents specific to Singapore in collaboration with the hospitals. This has direct implication on the development of drugs and vaccines for major diseases like SARS, Hepatitis-B and Dengue for the Asian population.

(see **Annex D** for an update of Research Fellows)

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<sup>1</sup> As identified by the MIT Technology Review Magazine in 2009

## **The National Research Foundation (NRF)**

The National Research Foundation (NRF), set up on 1 January 2006, is a department within the Prime Minister's Office.

The NRF sets the national direction for research and development (R&D) by developing policies, plans and strategies for research, innovation and enterprise, funds strategic initiatives, builds up R&D capabilities and capacities through nurturing our own and attracting foreign talent, and coordinates the research agenda of different agencies to transform Singapore into a knowledge-intensive, innovative and entrepreneurial economy. It provides secretariat support to the Research, Innovation and Enterprise Council (RIEC), chaired by the Prime Minister. A five-year budget of S\$5 billion has been allocated to the NRF in 2006 to achieve this mission.

The NRF aims to:

- Transform Singapore into a vibrant R&D hub that contributes towards a knowledge-intensive, innovative and entrepreneurial economy; and
- Make Singapore a talent magnet for scientific and innovation excellence.

For more information, please visit [www.nrf.gov.sg](http://www.nrf.gov.sg).

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## **Fact sheet on the NRF Research Fellowship**

### ***Aim***

To attract promising young scientists from all over the world to conduct independent research in Singapore.

### ***Background***

The NRF Research Fellowship is a globally competitive scheme that seeks to build up a pool of bright, passionate researchers in various fields of science and technology to augment Singapore's burgeoning research talent pool. It provides attractive funding to brilliant, young scientists to carry out independent, cutting edge research in Singapore. Appointees will be offered concurrent faculty positions at local universities or other research organisations.

### ***Terms of the NRF Research Fellowship***

1. The NRF Research Fellowship is open to all areas of science and technology with no quota on specific disciplines.
2. The NRF Research Fellowship, targeted at young talented postdoctoral fellows/researchers below the age of 40, is open to all nationalities.
3. Appointed Fellows will be given complete independence and freedom to pursue their own research directions.
4. Appointed Fellows will be free to choose the local host organisations to work in.
5. Each appointed Fellow will be provided with a research grant of up to US\$1.5 million over three years with the option of a second round of three-year funding provided at the discretion of NRF to support projects that exhibit a high likelihood of a research breakthrough.
6. The salary of an appointed Fellow will be covered over and above the research grant, pegged to that of an Assistant Professor at a local university.

### ***Identification and Selection Processes***

NRF will invite applications once a year through open advertisements in prestigious scientific publications, as well as tap on local research organisations and other contacts to identify potential candidates.

A Local Evaluation Panel comprising representations of local research organisations and universities will shortlist applicants who qualify. Short-listed candidates will be invited to Singapore to present their proposals and visit local research organisations to identify potential hosts. The NRF Scientific Advisory Board will interview the short-listed candidates and make the final selection of applicants for the awards.



**Dr Swaine CHEN**

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Since 2004, Dr Chen has been working in the lab of Scott Hultgren, Ph.D. at Washington University School of Medicine in St. Louis, studying urinary tract infections (UTIs). UTIs are extremely common bacterial infections and are mostly caused by strains of *Escherichia coli*.

Dr Chen's work on UTI, *E. coli*, and FimH has demonstrated that looking at evolutionary patterns is a powerful way to understand how bacteria cause disease. It complements existing methods (such as genetics and structural biology), it can be done completely with computer analysis, and it leverages and focuses recent increases in the ability to collect DNA sequences. He plans to combine the UTI system with the resources of the Genome Institute of Singapore (GIS) to create a full computational toolbox that performs an evolutionary analysis on entire genome sequences. New evolutionary methods will be needed to understand the importance of regulation of FimH expression during infection. Furthermore, the newly discovered function of FimH will be targeted to improve current treatment of UTIs. Finally, he will explore whether these new evolutionary methods can accelerate our understanding of other infectious diseases caused by bacteria, viruses, and other pathogens.

The daily activities of numerous sequencing centers throughout the world prove that collecting vast sequence data sets is trivial. Substantially more challenging is to improve the understanding of disease by using this sequence efficiently. Realizing the promise of technological advances (such as DNA sequencing) for human health is imperative and will require new approaches and perspectives. Singapore and the GIS provide a unique environment combining both superb technology and analytical young scientists; Singapore is thus an ideal place to lead the world in this next phase of modern, post-genomic biology.

## Annex D

### **NRF Research Fellows (2008 & 2009)**

<b>S/N</b>	<b>Research Fellow</b>	<b>Research Topic</b>	<b>Host Institution</b>
1	Dr Eugene Makeyev	Understanding molecular mechanisms of post-transcriptional control in neuronal differentiation: a link between microRNAs, alternative pre-mRNA splicing and mRNA quality control	Nanyang Technological University
2	Dr Hong Soon Hyeok	Aqueous [2+2+2] Cyclotrimerization of Alkynes as a more versatile "click" reaction	Nanyang Technological University
3	Dr Christos Panagopoulos	Novel Quantum phases on the border of Magnetism	Nanyang Technological University
4	Dr Zhou Jianrong	Asymmetric catalytic [4+1] Cycloadditions between Dienes and Carbene Precursors	Nanyang Technological University
5	Dr Gijsbert Grotenbreg	Conditional ligands for class 1 MHC products; application to epitope discovery for Dengue and respiratory syncytial virus-specific CD8+ T-cells	National University of Singapore
6	Dr He Yingxin	Morphological and molecular characterization of a bi-lobed structure required for organelle biogenesis and cytokinesis in <i>Trypanosoma brucei</i>	National University of Singapore
7	Dr Barbaros Ozyilmaz	Phase coherent charge and spin transport in nanostructured Graphene and ferromagnet hybrid devices	National University of Singapore
8	Dr Yeo Yee Chia	Strain engineering for nextgeneration semi-conductor manufacturing	National University of Singapore

9	Dr Jose Dinenny	Dissecting transcriptional networks controlling cell-type specific responses to salt stress in the root of Arabidopsis	Temasek Life Sciences Laboratory
10	Dr. Chi Yonggui, Robin	Understanding molecular mechanisms of post-transcriptional control in neuronal differentiation: a link between microRNAs, alternative pre-mRNA splicing and mRNA quality control	Nanyang Technological University
11	Dr. Chen Xiaodong	Aqueous [2+2+2] Cyclotrimerization of Alkynes as a more versatile "click" reaction	Nanyang Technological University
12	Prof. Wang Hongyan	Novel Quantum phases on the border of Magnetism	Duke-NUS Graduate Medical School
13	Dr. Lok Shee Mei	Asymmetric catalytic [4+1] Cycloadditions between Dienes and Carbene Precursors	Duke-NUS Graduate Medical School
14	Dr. Naohiko Yoshikai	Conditional ligands for class 1 MHC products; application to epitope discovery for Dengue and respiratory syncytial virus-specific CD8+ T-cells	Nanyang Technological University
15	Dr. Xiong Qihua	Morphological and molecular characterization of a bi-lobed structure required for organelle biogenesis and cytokinesis in Trypanosoma brucei	Nanyang Technological University
16	Prof. Frederique Oggier	Phase coherent charge and spin transport in nanostructured Graphene and ferromagnet hybrid devices	Nanyang Technological University
17	Dr. Edith Elkind	Strain engineering for next-generation semi-conductor manufacturing	Nanyang Technological University
18	Dr. Hilmi Volkan Demir	Dissecting transcriptional networks controlling cell-type specific responses to salt stress in the root of Arabidopsis	Nanyang Technological University

NRF RFs (2008): 1-9

NRF RFs (2009): 10-18