

# OmniSci

Faculty of **Science**

*Cultivate passion  
Catalyze change  
Create future*

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<http://www.science.nus.edu.sg>

features:

## University & Faculty Alumni Awards



*"These awards that recognise and honour alumni put a human face to the University's considerable accomplishments and contributions in education."*

*NUS High School  
- Official Opening Ceremony*

*China:  
7000 Years of Innovation*

*National Chemistry Week 2007  
- Chemistry In Our Daily Lives*



## Dean's MESSAGE

NUS held Commencement during the first week of July. This year ceremonies for the Faculty of Science were held for 1,146 undergraduate and 296 graduate students. Our four commencement speakers challenged our graduands to dare to dream; to be prepared for change; to be true to themselves; to give back to society. We wish them every success as they commence their careers.

During the last few months, we have honoured and been honoured by the performance of our own since they have left our hallowed halls. There were the University Awards in April, the NUS Alumni Awards in July and our own NUS Science Alumni Awards in June.

Our alumni are important to us. The strength of a University (and a Faculty) is reflected in the strength of its alumni. This year we bestowed seven alumni with Distinguished and Outstanding Alumni Awards. They have used their science education in different careers, and dared to dream.

The Faculty has been collaborating with the Singapore Science Centre

to encourage the next generation of Science students. Last year's joint enterprise in the "DINOSAURS!" exhibition was extremely successful, and we look forward to more such projects. This year, we supported the SSC's exhibition "China: 7,000 Years of Innovation" with Traditional Chinese Medicine exhibits from our own Pharmacy and Food Science & Technology researchers.

Another school year has begun. Rag and Flag and Orientation are just over; and enthusiastic freshmen scurry around in a flurry of activity; they are new minds for us to engage and enthuse. We look forward to bringing you another year of happenings at the Faculty of Science.

Andrew Wee  
Dean of Science

*This issue of OmniScience  
is dedicated  
to our new alumni.*

Meet Our

# NEW Professors:

## Assistant Professor LIU Xiaogang

Department of Chemistry

- Supramolecular Chemistry
- Bioinorganic Chemistry
- Nanoparticle catalysis
- DNA nanostructures
- Scanning probe-based nanolithography

## Associate Professor Christoph WINKLER

Department of Biological Sciences

- Formation and patterning of the central nervous system
- Molecular mechanisms of neural degeneration
- Development of somites and bones
- Fish models for human neurodegenerative disorders and bone diseases

## Associate Professor Vilerio SCARANI

Department of Physics

- Quantum Cryptography
- Quantum Entanglement and Non-Localilty
- Quantum Optics
- Foundations of Physics
- Theoretical support for experiments

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## Assistant Professor He Yingxin, Cynthia

Department of Biological Sciences

- Cell and molecular biology of parasitic pathogens
- Cell cycle regulation
- Organelle biogenesis

## Assistant Professor He Wanzhong

Department of Biological Sciences

- Cellular Electron Tomography (CET);
- Endocytosis and cell dynamics in epithelial cells
- Applying cellular cryo-electron microscopy techniques

## Associate Professor Juri Benjaminowitsch HINZ

Department of Mathematics

- Asset pricing theory arising from applications to energy related commodities, services and permissions

## Associate Professor Thomas Rainer WALCZYK

Department of Chemistry

- Development and application of stable isotope techniques for studying element metabolism in humans
- Mineral and trace element metabolism in health and disease with a special focus on iron and calcium
- Analysis and modeling of tracer kinetics in human experiments
- Inorganic trace analysis and elemental speciation analysis in biological matrices
- Isotope Ratio Mass Spectrometry

## Assistant Professor Wu Jishan

Department of Chemistry

- Macromolecular Chemistry
- Materials Chemistry
- Organic Electronics
- Supramolecular Chemistry
- Supramolecular Electronics

## Assistant Professor CHEN Ying

Department of Statistics & Applied Probability

- Quantitative Finance,
- Risk Management,
- Local Parametric Estimation,
- Independent Component Analysis,
- Heavy-tailed Distribution

# Academia

## Promotions and Tenure

(May - July 2007)

### PROMOTED

Professor Ji Wei (Physics)

Professor Sodhi Navjot (Biological Sciences)

Professor Mohan K. Balasubramanian  
(Biological Sciences)

Senior Lecturer Celine Valeria Liew (Pharmacy)

Senior Lecturer Roland Su (Dean's Office)

Lecturer Ng Shao Chin (Physics)

Instructor Prabhavathy Janardhana (Chemistry)

Instructor Charu Kumar (Chemistry)

### PROMOTED AND AWARDED TENURE

Associate Professor Koh Hwee Ling (Pharmacy)

Associate Professor Wang Xuesen (Physics)

Associate Professor Lam Yulin (Chemistry)

Associate Professor Philippa Melamed  
(Biological Sciences)

### AWARDED TENURE

Professor Frank Watt (Physics)

Associate Professor Chua Seng Kee  
(Mathematics)

Associate Professor Chew Tuan Seng  
(Mathematics)

Professor Yannis Yatracos  
(Statistics & Applied Probability)



# In the Forefront

- Wang Luan Keng from the Raffles Museum of Biodiversity Research commented on the biodiversity of Pulau Semakau, an island that is used for garbage disposal (New Scientist, Apr 07, and CNN.com, 26 Jul).

“Great effort went into making sure that the impact of the landfill on Pulau Semakau’s biodiversity was minimized. In fact, biodiversity remains high and we have not lost a single species because of the landfill.”

- Professor Andrew Wee, Dean of Science explained that Science can be the basis for a lucrative career (TODAY, 23 Jul).

“(My) most immediate task is to explain to the students, parents and teachers that in this day and age, a strong scientific foundation is excellent preparation for the knowledge-based economy.”

- Hugh Tan, Professor of Biological Sciences, who heads the “Forest Regeneration Experimental Project” which was launched in 2002 was featured on the reforestation of native plant species on the Kent Ridge Campus (Lianhe Zhaobao, 31 Jul).

“95 percent of the forests in Singapore had disappeared. Only 100 species or 20% of the original figure of local species can be found in the 11-hectare forest situated at NUS’ Kent Ridge campus.”

- Ding Jeak Ling, Professor of Biological Sciences, together with colleagues in the Department of Micorbiology, have made a breakthrough in understanding how a protein found in Crab blood helps fight off bacterial infections.

The discovery was published in last month’s Journal of the European Molecular Biology Organisation (The Straits Times, 31 Jul).

- Le Hai Ahn and Micheal Yudistira, Chemistry students, are developing drugs to fight mutation of bird flu virus.

Their project is called Save The World and it is featured in a special supplement on National Chemistry Week (The New Paper, 15 Jun.).

- Chemistry Student Chau Jingqi and three friends took part in Peak Time, the largest and best-known international business student competition in the Baltic States won first place (The Business Times, 18 Jun).

- Biological Sciences Professor Peter Ng was interviewed in a special on Climate Change and on what the rising tides can do to Singapore (The Sunday Times, 24 Jun.).

“We know climate change is happening, and right now, the changes are gradual, but there will be a breaking point, and when you get to the edge of that cliff, you go straight down. Until you get to the edge though, you can still backtrack.”



- Assistant Professor Yu Hao, Ph.D. 2001, has won all the young scientist awards in Singapore – A\*STAR Young Scientist Award 2006, NUS Young Researcher Award 2007 for creating genetic transformation systems to speed up the production of orchids. This is of major economic importance to the orchid industry in Singapore.

His scientific efforts have inspired youths in Singapore. In recognition of his contribution Assistant Professor Yu Hao, from the Department of Biological Sciences, received the Singapore Youth Awards (SYA) 2007, the highest national accolade for Singapore youth whose achievements are inspirational.

Besides teaching biological sciences at NUS, Yu Hao has found time to mentor students from Innova Junior College, Singapore Polytechnic and Raffles Girls’ Secondary School on scientific projects.

“It is my great honour to win this award, a driving force to motivate me to strive for excellence in the research field as well as to generate knowledge that may lead to industrial R&D in Singapore ... My long-term goals are to achieve higher levels of scientific excellence and to nurture young talent for Singapore.”



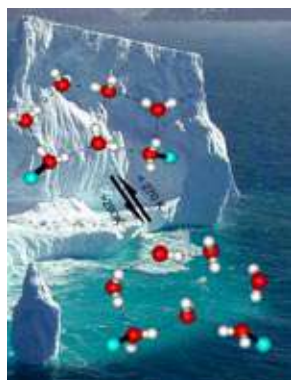
# Faculty Notes

- A recent research article on a new gold material (gold triangular ring) has been published by *Chemical Communications* (Royal Society of Chemistry of UK) the top chemistry journal. It has been selected by the Editor to be featured on the front cover. Prof Andy Hor, et al, took this opportunity to put Jurong Island on it. As a result, this is the first time in the more than 40 years history of ChemComm



that Singapore has gone to its front cover. They used the caption of the photo to tell the world about Singapore and our vigorous push in chemistry research: "This photo of an Au<sub>6</sub> triangle with Jurong Island (the "Chemical Island") in the background symbolizes Singapore's push in strategic chemistry research and its translation to economic output."

- Pulau Semakau, which is used by Singapore as a land fill, was featured in the 14 April issue of *New Scientist*. Ms Wang Luan Keng was quoted and the Raffles Museum of Biodiversity Research was mentioned in the article.
- Associate Professor Jagadese J. Vittal and his graduate student Mohammad Hedayetullah Mir from the Department of Chemistry have found a discrete cyclic water heptamer trapped inside a 3D coordination polymer in the crystal lattice. When the single crystal is cooled from 296 K to 223 K, it undergoes phase transition accompanied by structural transformation from cyclic to bicyclic water heptamer containing edge sharing pentamer and tetramer rings. This work confirms previous theoretical predictions that the cyclic ring structure will be predominant at room temperature



followed by the fused bicyclic heptamer among twelve different structures considered for (H<sub>2</sub>O)<sub>7</sub> cluster. This research work will soon appear in the August issue of *Angewandte Chemie International Edition* (DOI: 10.1002/anie.200701779), the most prestigious chemistry journal with highest impact factor, on the inside cover page.

- Physics Professor Belal Baaquie was the only Asian speaker at the Quant Congress in July 2007 which was held in New York. Quant Congress USA promotes itself as the leading showcase for the latest innovations in derivatives pricing, trading and risk management. Prof Baaquie spoke on "Beyond HJM and the Libor Market Model: Interest rate options in quantum finance".

- The Department of Statistics & Applied Probability was doubly honoured in having two of its faculty elected to prestigious associations in their fields. Professor Yannis Yatracos and Associate Professor Loh Wei Liem were elected as Fellows of the American Statistical Association and the Institute of Mathematical Statistics, respectively. Quoting Professor Anthony Kuk, Head of the department: "Their elections are richly deserved and are further indications that the Department of Statistics & Applied Probability staff are internationally recognised and highly regarded in the profession."

- The 3rd China-Singapore Joint Symposium on Research Frontiers in Physics was held successfully in Xiamen University from 25 to 27 May 2007. With generous financial support from NUS Faculty of Science, 14 NUS staff participated in the Symposium.

This is part of a series which was launched in NUS two years ago. The 2nd Symposium was held in Zhejiang University in 2006. Compared to past symposia, this one has been expanded both in scope and in participating universities. The total number of participants of the 3rd Symposium was more than 100 and 28 prestigious universities were represented. Besides NUS and mainland Chinese universities, universities in Hong Kong, Taiwan, Korea and Japan were represented for the first time. About 60 talks were presented in two parallel sessions. The quality of the symposium has been getting better and better, as reflected by the quality of the presentations, the scope of the topics, and the number of participating universities and institutes.

NUS Physics Department greatly benefited from participation in this program, since our researchers had the chance to interact with leading researchers from the top universities in China and the region and exchange ideas during the meeting, and publicize our department. The Symposium is now recognized as an important event in the region.

Suzhou University will organize the 4th Symposium next year.

# Commencement



(from Left) Robin Tan • Rosemary Chng • Natasha Kwan • Lim Chuan Poh

During the first week of July, NUS commenced more than 1,400 Bachelors of Science, Masters of Science and Doctors of Philosophy graduates of the Faculty of Science from our six departments. The sheer numbers required four graduation ceremonies.

Gracing the first ceremony as Commencement Speaker was Robin Tan BSc (Hons) 1989, who is currently the Director and Head of Life Science at Sterling Human Resource Pte Ltd, a leading executive search firm headquartered in the United States. This ceremony's valedictorian speaker was Christelle Chua who earned an honours degree in Life Sciences.

## Quotation from Robin Tan:

*"Try to develop an instinct to read people, because, it is imperative you find and choose a good boss to work with, because over the years, I've encountered both good and bad bosses. It's not the company reputation, but your immediate supervisor who really makes a significant difference whether you experience job satisfaction or not. Try your best to work with bosses who can mentor and coach you, and develop your potential. And once you become a boss yourself, learn to pay it forward. Notwithstanding, don't just say, oh, I'm a fast learner, but you'll have to give back in terms of your time, energy, effort, dedication and prove your value to your boss, because you're always being assessed. Only through very good or outstanding performance, and not mediocrity, will you be differentiated from the rest of the employees."*

Botany graduate Rosemary Chng BSc 1987, BSc (Hons) 1988, MSc 1996, was the Commencement Speaker for the second ceremony. She is director of her own social enterprise, Rosemary Chng & Associates, which initiates, manages and runs community development, volunteer and empowerment projects. The valedictorian speaker for this ceremony was Pharmacy honours graduate Lin Liang who was awarded a record-breaking nine medals and prizes!

## Quotation from Rosemary Chng:

*"This is a special occasion. It signifies maturity – a fresh step to newer challenges and exciting opportunities. It is a moment for reflection between the past and the future. It is for you to experience the transition as students to working professionals. It means now in your hands lies your destiny. You plot and chart your life from here on. It is truly a moment to savour, to know that all your hard work has led you to this point in time."*

*"As a Science graduate myself, I find it in myself to tell you a truth that we must face: Our lives will continue to change and be marked by developments in science and technology."*

*"All of us and including you have the capability and capacity to observe, analyse and calculate. But unless we use these skills to benefit the progress of humanity, these theories and logics are nothing but like dust in the wind."*

The third ceremony's Commencement Speaker was Chemistry and Biochemistry graduate Natasha Kwan BSc 1985. She entered the IT industry upon graduation and never looked back. Now Deputy General Manager of Microsoft Corporation, OEM Division Asia Region. The valedictorian for this ceremony was Benny Chew who graduated with an honours degree in Chemistry.

## Quotation from Natasha Kwan:

*"Tonight, you can justly feel very proud to call National University of Singapore, your Alma Mata, as it is one of the world's leading universities and one of Asia's top three. I am sure your moms and dads, your friends and loved ones who are here tonight are also very proud of you today. They probably in part responsible for your success, sharing your high and low moments in the 3-4 years at NUS, painstakingly seeing you burn the midnight oil, or not, (maybe you were a more efficient student than I was) and serving you essence of chicken to ensure you score the A's in your exams ... so let's hear it for the moms & dads, and loved ones ... thank them for their support & love."*

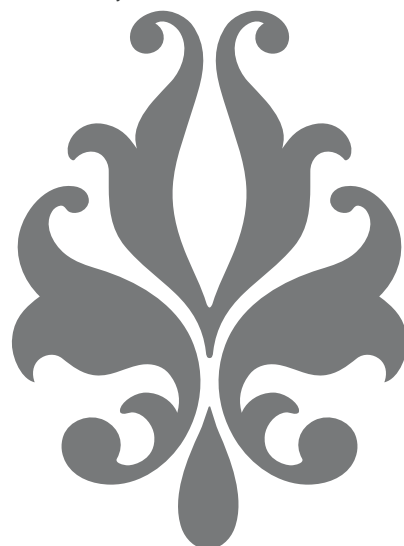
*"The good news for the class of 2007 is that with the tight job market, robust growth of the biomedical sciences, chemical and manufacturing sectors in Singapore there are needs for chemists and biologists as well as chemical engineers and life science graduates. This represents great job opportunities ahead of you. If that is your passion, go for it. And if you discover that your passion or your values lies in some other areas, Faculty of Science has similarly prepared you for the life skills you need to be successful in other sectors, may it be IT, hospitality or financial. Your keen observation, analytical skills, your curious & deductive minds are great assets to the practical real world. Give your best, and start the discovery of your passion."*



The final commencement ceremony was shared with the Lee Kwan Yew School of Public Policy. The Commencement Speaker was Lim Chuan Poh, Chairman of A\*Star and the valedictorian was Maria Anthonette Valasco-Allones from the LKYSPP.

## Quotation from Lim Chuan Poh:

*"So, let me say that I had originally wanted to come here to persuade more of you to continue to pursue science at a higher level. I will still ask you to seriously consider that and I know you will have a bright future ahead of you if you choose that path. But, as I thought about I want to say to you, I will rather leave you to reflect on what you are truly passionate about and ask yourself in 15 to 20 years time, what would you have preferred to have achieved with your life and your time. Remember, you only get to live today once, so it is useful to spend some time to think about how you want to use it to do something meaningful and impactful, for yourself and for society."*



NUS Faculty of Science sponsorship  
of the Singapore Science Centre exhibition on

# “China: 7000 Years of Innovation”

from 26 May to 26 August 2007.



By Associate Professor Koh Hwee Ling



A group of Faculty members from the Department of Pharmacy and Department of Chemistry (Food Science & Technology Programme) showcased their Traditional Chinese Medicine (TCM) research at the Singapore Science Centre in conjunction with this exhibition. The theme is:

*TCM research @ NUS  
Faculty of Science  
- Preserving and Advancing TCM  
Practice through Modern Science -*



Traditional Chinese Medicine (TCM) can be considered as a significant contribution to mankind. Throughout the history of Chinese civilization, TCM has played an important role in maintaining health and treating diseases of the Chinese population. Even today, with the advancement in Western medicine, TCM continues to be an important modality in health promotion and disease management. In fact, the practice of TCM is no longer restricted to the Eastern culture; the practice of acupuncture and Chinese herbal medicine are gaining popularity in the West.

Chinese herbal medicine and the use of herbs in food preparation and treatment of ailments constitute a major part in the practice of TCM. Multi-disciplinary research efforts at the Faculty of Science (Department of Pharmacy and Department of Chemistry, Food Science & Technology Programme) in NUS aim to apply pharmaceutical, computational, chemical and

food sciences to gain a better understanding of the efficacy and safety of Chinese herbs. The goal of these research endeavors is to preserve, modernise and advance the ancient practice of TCM for the future of mankind. Natural materials such as herbs and animal parts are consumed for their medicinal and nutritional value. Advances in Science have helped to uncover the scientific basis of this ancient practice. This exhibition highlights the scientific research of discovering the active components (drugs) in some of these natural materials, the processing and manufacture of good quality and safe products, and the efficacy and outcomes of using them.

The focus of the scientific investigations conducted by NUS Faculty of Science researchers is to use modern techniques and state-of-the-art technology to characterize active chemical components, develop databases on Chinese herbs, evaluate the quality of herbal products and



A photograph of *Panax notoginseng* root, slices and powder.

screen the herbs for potentially useful therapeutic uses and functional food ingredients.

Examples of research showcased at the exhibition include the study of a variety of Chinese herbs and components (e.g. *Panax notoginseng*, *Tripterygium wilfordii* and pachymic acid), herbal fingerprinting, safety, the goodness of tea, dragon's blood, anticancer studies and the development of evidence-based TCM functional foods (e.g. green tea bread) and TCM information database.



# The Natural Heritage of Singapore, 2ND ED.

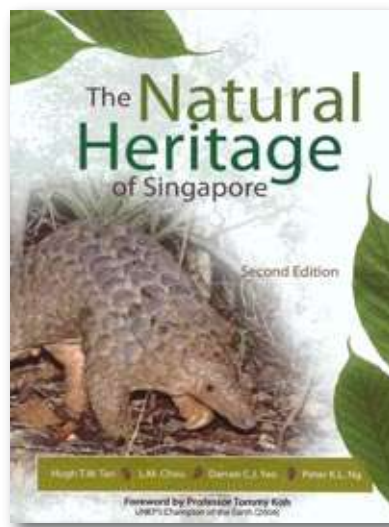
By Hugh Tan, Chou Loke Ming,  
Darren Yeo and Peter Ng  
Book review by N. Sivasothi of the  
Raffles Museum of Biodiversity Research

## A national heritage...

When I was a student, we inspected every millimetre of *The City and the Forest: Plant Life in Urban Singapore* by Wee Yeo Chin and Richard Corlett, which was published in 1987. It provided a fairly detailed account of the various plant species left in ecosystem types in Singapore today. Twenty years later, I am pleased to announce a similar volume that should be examined in detail by novice and naturalist alike, *The Natural Heritage of Singapore*. This is actually the second edition which has been published recently with colour pictures.

## The authors...

The authors are familiar names in the biodiversity circle: Hugh Tan, Chou Loke Ming, Darren Yeo and Peter Ng, all Singaporean academics at the Department of Biological Sciences, National University of Singapore, with many decades of research experience in terrestrial and aquatic ecology, botany, zoology and conservation biology of Singapore and Southeast Asia amongst them. This book was also built on the resources of the community and the many people they received help from, consulted and discussed the book with. They are listed in the acknowledgments and are equally fun to read!



### The book chapters

- Singapore's Natural Heritage
- Primary Vegetation
- Secondary Vegetation
- Waste- and Reclaimed Land
- Coastal Vegetation
- Intertidal Habitats
- Subtidal Habitats
- Managed Habitats
- Human Impacts and Conservation
- The Importance of Biodiversity in Singapore's context
- Perspectives and Challenges in Preserving Natural Heritage

## Pricing...

The Natural Heritage of Singapore, 2nd ed. is now available at the National University of Singapore's Science Co-op for S\$23.30. In major bookstores in town, e.g. Borders, Kinokuniya, MPH, Popular and Times, the cost is about \$29.50. All prices cited with GST.

## This one you will understand...

If it reads somewhat like a textbook, it is because it was inspired by the need to provide a text book for undergraduates in the National University of Singapore who took the "Singapore Studies" module. As such, the descriptions are straight-forward and several issues are discussed in an understandable manner as the text is meant for non-biologists.

This will allow a wide spectrum of readers to gain a grasp of our precious natural heritage that still survives today. When I was a child, few local resources were available. With this and others that emerged since, many a young mind will get a head start and hopefully this will lead to sensible choices about and greater enjoyment of our natural heritage in our future.

## The internet disconnect...

The book sadly has not tapped the many credible and up to date resources about Singapore natural history that have emerged online since 1999. Well, that's food for thought for the 3rd edition perhaps.



# A letter from Oxford

*Dr Teo Yik Ying is a Visiting Fellow at the Department of Statistics and Applied Probability. He is now Post-doctoral Statistician, Wellcome Trust Centre for Human Genetics, University of Oxford.*

This is an exciting time for science and mankind. The complete sequencing of the human genome in 2001, together with maps of the common patterns of genomic variation in humans from different populations, meant that scientists are able to delve deeper into the genetic causes of common diseases. The Wellcome Trust Case-Control Consortium (WTCCC), established in 2005, did exactly just that. By surveying half a million genetic markers for 17,000 participants, the Consortium seeks to identify the genetic footprints responsible for increased susceptibility or protection against the onset of 7 diseases – coronary artery disease, Crohn’s disease, bipolar disorder, type 1 and 2 diabetes, rheumatoid arthritis and hypertension. The result of this landmark study was published in the June 7th edition of Nature.

Supported by the NUS – OGS award and the LKY postgraduate scholarship, I was able to participate in this research study as a member of the analysis group that is responsible for developing analytical strategies to tackle a number of statistical challenges that arose. The complexity and the scale of the research meant that conventional mathematical methods

for data-mining are insufficient to analyse the terabytes of data, and a separate arsenal of statistical tools have to be developed to meet these challenges. These statistical tools, together with the insight of the human genome, have been vital in allowing the science of genetics and genomics to advance. Such research studies will not have been possible with the computing technology available five years ago.

Genome-wide studies of this nature truly encompass the vision of collaboration between experts of different disciplines – the geneticists and biologists formulate the problem and research hypothesis; the clinicians and medical practitioners recruit the study participants; the lawyers and ethicists ensure research integrity and ethical conduct of the scientists; the laboratory experts manage the DNA samples; the life-scientists assist in the genotyping of the DNA samples; the computer scientists manage the data; the statisticians and bioinformaticians analyse the data before finally reporting the results back to the geneticists and biologists for interpretation and publication. Genetics science is increasingly moving away from the domain of a single expert, to collaborative efforts between experts

from multiple disciplines. As Singapore embarks on the journey to become one of the leading countries in the world for scientific innovation and research, encouraging interactions between researchers of different disciplines is crucial.

The Consortium has identified several genetic variants responsible for the onset of the studied diseases for a Caucasian population. Inherent genetic differences between individuals from different populations meant that the results from this study are useful, but may not be directly applicable to non-Caucasians. Singapore is well-placed to lead the next generation of genomic studies. The multi-ethnic demographics in Singapore means we have the unique opportunity to advance this science by surveying people from the major ethnic groups in Singapore for the genetic causes of common diseases, thereby contributing to the understanding of these diseases for the rest of the world.





# NUS Science Awards

## Awards



### *Distinguished Science Alumni Award 2007*

Dr. John Yip Soon Kwong  
 PJG 1991, PBS 1996  
 BSc UM S'pore (1959)  
 BSc Hons UM S'pore (1960)

Director of Education, Ministry of Education  
 (1987-1996)  
 Exec Director/CEO, Singapore Institute of  
 Management (1997-2003)

Dr John Yip Soon Kwong received his Bachelor of Science (Hons) degree in Chemistry from the then University of Malaya in Singapore in 1960.

On graduation, Dr Yip joined the Education Service and served in various portfolios till his retirement in 1996. His last appointment was Director of Education of the Ministry of Education, a position he held for 10 years. During his tenure at the Ministry, he pursued relentlessly the development of educational excellence in both the Singapore and global

context. He received several National Day awards, including the Meritorious Service Medal (PJG) in 1991. The French Government also honoured him with the award of Officier dans l'Ordre des Palmes Academiques in 1993.

Dr Yip has done extensive research in education policies and practices. Of particular significance is the six-country collaborative research project on the nexus between education and economic development spearheaded with the University

# Alumni 2007

On 23 June 2007,  
the Faculty of Science honoured  
our own with an addition of a  
Distinguished Alumni Award and  
six Outstanding Alumni Awards.

The Distinguished Alumni Award was  
presented to

*Dr. John Yip Soon Kwong*

The Outstanding Alumni Awards  
were presented to

*Mr. Tai Cheong Hui*

*Mr. Bernard Harrison,*

*Dr. Wong Kwei Cheong*

*Dr. Chong Yoke Sin*

*Mr. Foo Hee Jug*

and

*Mrs. Chan Ching Oi*

The awards were presented during the Alumni Reunion Dinner held at Sakura Restaurant at the Singapore Science Centre's OmniTheatre. During the day, alumni and their families were treated to a visit to the special exhibition "China: 7,000 years of Innovation". The guest of honour for the evening was our former Dean, Deputy President and Provost Professor Tan Eng Chye.

*"Education empowers one  
to seek the truth and science  
illuminates the way."*

of Pennsylvania Graduate School of Education. He co-authored two books on Reflections and Renewal in Education in Singapore, one tracing the Evolution of Educational Excellence and the other the Development of Technical Education up to the tertiary level. His passion for education prompted him to move on to the Singapore Institute of Management as the Executive Director and CEO upon his retirement from the Ministry. In this position, he played a major role in conceptualizing the Singapore Management University (SMU) as well as the SIM University

(UniSIM), the latter providing working adults with a "second chance" to obtain a university degree. In 1997, he was conferred an Honorary DSc by Loughborough University, an accolade shared by several well-known personalities including NUS President Prof Shih Choon Fong. And in 2003, he received an Honorary Doctorate from the Open University of the UK.

Dr Yip is an Honorary Fellow of the Singapore National Institute of Chemistry and the Singapore Institute of Management. He

was on the Board of a number of statutory and other organizations tasked with teacher education, technical and vocational education, educational management, promotion of science, the arts and the environment, among others. He was also active in several international professional bodies. A contribution he is especially proud of is bringing to realization the Government-funded Singapore International School in Hong Kong, which is among the top international schools in the SAR.

## Outstanding Science Alumni Award 2007

Dr. Wong Kwei Cheong  
PBM (1979)  
BSc SU (1965)  
BSc Hons SU (1966)

MP (1980 to 1996) and Minister of State - Cairnhill Constituency / Ministry of Labour (1981 to 1983) and Ministry of Trade and Industry (1982 to 1985)

Dr Wong Kwei Cheong has a distinguished career with both the government of Singapore and in the private sector. He was a Member of Parliament for Cairnhill from 1980 to 1996 and has served as Minister of State in both the Ministry of Labour (1981 to 1983) and the Ministry of Trade and Industry (1982 to 1985). In addition, Dr Wong was on the board of directors of several statutory boards and public organizations, including the chairmanship of the Singapore Productivity Board and the Singapore Tourist Promotion Board, as well as being a member of the Singapore Science Centre Board. Dr Wong was awarded the Pingat Bakti Masharakat (The Public Service Medal) in 1979.

Dr Wong's experience in the private sector includes the chairmanship of Aiwa Singapore and Vicom Pte Ltd. He presently runs his own business and serves as an Independent Director on the Board of several listed companies including Vantage Corporation Ltd, Goldtron Ltd and Penton International Ltd.

Dr Wong has had experience in academia as well, first as a physics staff in the University of Singapore and later as an Associate Professor at the Faculty of Business Administration, NUS (1986 to 1996).

Dr Wong studied Physics in the University of Singapore under a State Scholarship where he graduated with a First Class Honours Degree in 1966. He continued his studies at the Imperial College of Science and Technologies, University of London under a Commonwealth Scholarship and graduated in 1969 with a Doctorate in Philosophy in Solid State Physics.

## Outstanding Science Alumni Award 2007

Mr. Bernard Harrison  
MSc (1987)

Principal Partner - Creativity & Design  
Bernard Harrison & Friends Ltd

Bernard Harrison is the 'zoo man' behind the success of the Singapore Zoological Gardens and the Night Safari. He joined the Zoo as Curator of Zoology in 1973, and swiftly ascended to positions such as Assistant Director, Executive Director, Chief Executive of the Zoo and Night Safari, and finally, Chief Executive Officer of Wildlife Reserves Singapore (WRS). Under his leadership, WRS Consultancy was setup and involved in the planning & development of zoo projects in China, India, Indonesia, Cambodia, United Arab Emirates & the Seychelles.

He set up Bernard Harrison & Friends Ltd in 2002 as a consultancy firm specializing in zoo design and management. Long involved in the international zoo scene, he currently holds several major responsibilities. He is a member of the WRS Animal Welfare & Ethics Committee, Executive Board member & Immediate Past President of South East Asian Zoos Association, member of International Union for the Conservation of Nature and Nature Resources' Conservation Breeding Specialist Group, World Council Board Member of International Association of Theme Park & Attractions and World Board Member of International Species Inventory System. He was also on the Council of the World Association of Zoos & Aquariums, & subsequently became its Secretary and Vice President.

## *Outstanding Science Alumni Award 2007*

Mr. Tai Cheong Hui  
BSc (Pharm) (1981)

Vice President, Asia Pacific Region  
Serono Singapore Pte Ltd

Mr Tai Cheong Hui enrolled into the Bachelor of Science (Pharmacy) Programme in 1979. As a student, he participated actively in student activities, especially in the National University of Singapore Pharmaceutical Society and was the President of the society for a year. Mr Tai graduated from NUS in 1981. In addition to his BSc (Pharm) degree, he also obtained two Diplomas and a Master of Business Administration from University of Hull (UK), while establishing his early career.

Mr Tai started his career as a Sales Executive with Xepa- Soul Pattinson, and worked his way through various companies, while speedily rising through the ranks. He was a Marketing Executive with Diethelm Singapore (1983-84), a Manager with Apex Pharmacy Singapore (1984-87), a Marketing Manager with Bayer Singapore (1987-88) and then to Serono starting as a Regional Manager (1988). It is at Serono that he ascended the corporate ladder, from a Regional Manager to Director of Operations (1991), to his present position as the Vice President - Asia Pacific Region of Serono Singapore (1994 till present). Distinctly, he stands as the only Asian among all the Vice-Presidents of Serono.

As the Vice President, Mr Tai started branching out Serono's network by establishing subsidiaries throughout the region, starting from Taiwan (1994), South Korea (1995), Hong Kong (1996), China (1996), and Thailand (1998). He is also actively involved in the regional management of thirteen countries, including the Indian Subcontinent, East Asia (China, Taiwan, Hong Kong, Korea, Japan and Australia/New Zealand), and South-East Asia. Apart from expanding operations and targeting higher sales, Mr Tai also assumes full P&L responsibilities with integrated responsibilities of Clinical, Regulatory, Sales and Marketing, Finance, Taxation, supply chain of all legal entities and distributors management throughout the region. Over the past 19 years, he was pivotal in many of the new and emerging markets in Asia Pacific. His leadership was instrumental to bringing the business of Serono in Asia Pacific to where it is today.

*"Persistence is the twin sister of excellence. One is a matter of quality; the other, a matter of time." - Marabel Morgan*



*NUS Science Alumni  
Awards 2007*

## Outstanding Science Alumni Award 2007

Mrs Chan Ching Oi  
BPharm SU (1961)  
BPharm (Hons) SU (1962)

CEO, ISS Education Group, ISS International School  
(Singapore)

Mrs Chan Ching Oi graduated from the Department of Pharmacy, University of Singapore in 1962. Then, there were only sixteen students in the Bachelor of Pharmacy degree class and only three students in the Honours class, of which Mrs Chan was one. In addition to her BPharm degree, Mrs. Chan also received a Masters in Pharmaceutical Chemistry from the University of California (San Francisco). In the early part of her career, she spent 28 years with the Ministry of Health in Singapore, with roles of Deputy Chief Pharmacist of Pharmaceutical Department, Ministry of Health and Pharmacy Manager of Singapore General Manager.

Mrs Chan is currently the Chief Executive Officer of ISS Education Group, which manages the ISS International School (Singapore). The school offers various levels of education in a multi-cultural environment. It celebrated its 25th anniversary in September 2006. The ISS Group started their second school, the Beijing International School of Singapore (BISS) in 1994, it was the first international school to be approved by the Beijing State Education Commission. In addition, the Center for American Education (CAE), another division under the ISS Education Group, is also appointed by the US State Department to run the United States Education Information Center since 1998.

Besides her career accomplishments, Mrs Chan is also very supportive of community work. She is a Board Member in the Ren Ci Hospital & Medicare Centre; acting as the Honorary Secretary. She also regularly supports events like Every Woman Counts!, which is organised by the University Women's Association (UWAS), by offering the use of her facilities.

*“I believe in life long learning; by continuing to be active in my work and life style, I could maintain good health and a happy spirit and feel a sense of satisfaction and contentment.”*

## Outstanding Science Alumni Award 2007

Mr. Foo Hee Jug  
BSc (1989)  
BSc Hons (1990)

Chief Operating Officer, Singapore General Hospital & Group Chief Procurement Officer, Singapore Health Services

Mr Foo was awarded a Local Merit Scholarship (Police) in 1986 and pursued his undergraduate studies at the Faculty of Science, NUS. He graduated in 1990 with a Bachelor of Science (Mathematics) with 2nd Class Honours (Upper Division).

After receiving basic training at the Police Academy, he was posted to Bedok Police Division as an investigation officer. He spent 3 fulfilling and exciting years with the Singapore Police Force. In 1993, Mr Foo joined Toa Payoh Hospital as an Operations Executive. In 1995, he took up an overseas scholarship with Toa Payoh Hospital, and graduated in 1998 with Masters in Business Administration and Masters in Public Health (Health Services Management) from the Anderson School, University of California, Los Angeles.

During his 11-year career with Toa Payoh Hospital and Changi General Hospital, Mr Foo rose swiftly through the ranks, becoming Chief Operating Officer in January 2002. In April 2004, Mr Foo left Changi General Hospital, to join Singapore General Hospital as its Chief Operating Officer. He is concurrently the Group Chief Procurement Officer (GCPO) of Singapore Health Services (SingHealth).

Mr Foo has successfully established himself in the healthcare industry, becoming the Chief Operating Officer of SGH at the age of 37, and continues to make significant contributions to Singapore's healthcare industry.

*“If you love the rainbow, you have to take the rain” - Be prepared to work hard to reach your dream.*

## Outstanding Science Alumni Award 2007

Dr. Chong Yoke Sin  
BSc SU (1978)  
BSc Hons SU (1979)  
PhD NUS (1984)

CEO, National Computer Systems (NCS)

Coming from a humble background, Dr Chong was spurred to excel in her education. She graduated with B.Sc (Hons) and PhD degrees in Chemistry from the University of Singapore and National University of Singapore in 1979 and 1984, respectively. In her quest for self improvement, she subsequently completed the Advanced Management Program at the Harvard Business School in 1998.

She joined IBM Corporation as a systems engineer where she sold and implemented solutions on mainframes to customers in the banking, government and region.

After nine years, she joined Hitachi Data Systems in 1992 where she looked after its consulting and systems implementation business for four years. Dr Chong joined the National Computer Systems (NCS) in 1996 starting as General Manager for Business Development and set up its sales and contracts processes for the newly corporatised NCS. With her commercial experience and background, she was a key member in defining the company's directions and has led the NCS teams to win and deliver major IT projects, both locally as well as overseas. She was also active in the company's branding strategy as well as its continuous company-wide initiatives, playing an instrumental role in the growth of



the company since corporatisation in 1996. She subsequently progressed to assume the position of Chief Operating Officer and head of NCS' regional IT and communications engineering group. Nine years later, in 2005, in recognition of her contributions and capabilities, Dr Chong was appointed the Chief Executive Officer of NCS, leading a team of 3000 professionals in one of Singapore's largest home grown information technology companies to become a forerunner IT and communications engineering services provider in the region. Under her successful helm, the business of NCS has grown tremendously with new major projects in Australia, Brunei, Hong Kong, Middle East, Sri Lanka, Maldives and Fiji.

A well-respected veteran in the IT industry, she is active in several IT and business associations. Dr. Chong is Vice-Chairman of the Singapore IT Federation (SITF) and also Chairman of the eGovernment Chapter of SITF. As eGov Chair, she leads Singapore companies in their forays for business with overseas Governments. She is also a member of the SICCC IT advisory committee. Dr Chong also oversees several national project implementations and is member of many steering committees. She also helps with university and polytechnic curriculum advice, and is a member of the NUS IT Advisory Council, the Ngee Ann Polytechnic School's IT advisory board and also Chairman of Innova Junior College. Recently, she was appointed to the Women's Leadership Board of the Kennedy School of Government, Harvard University where she advises on the Public policy curriculum and programs of the KSG.

*"It is not the years in your life but  
the life in your years that counts."*

Many activities of the Faculty of Science would not be possible without the help and support of our Alumni. To find out more about how you can get involved with NUS, the Faculty or your department, please contact Perry Hee at [sciheap@nus.edu.sg](mailto:sciheap@nus.edu.sg)



*NUS Science Alumni  
Awards 2007*



# NUS High School

## *Official Opening Ceremony*

By Allan Uy, College Counsellor

NUS High School of Mathematics and Science celebrated our official opening with Minister for Education Tharman Shanmugaratnam as Guest of Honour. It was on that day, 23rd April 2007, that it was announced that NUS High School's unique modular curriculum was fully accredited by NUS, making it the only high school in Singapore where students can apply directly for admission to university without the need for the "A" levels. The official opening was attended by Mr. Wong Ngit Liong, Chairman of NUS Board of Trustees, Professor Shih Choon Fong, President of NUS and Chairman of NUS High School Board of Directors, Mr. Wee Heng Tin and senior officials from NUS, MOE and other organizations.

Becoming accredited by NUS is no small feat. During a six-month long process, an accreditation committee comprising staff of NUS and MOE reviewed and evaluated coursework, examinations, student results and interviews from our school. After going through thousands of papers and materials, NUS has confidently acknowledged the rigor, quality, and depth of our curriculum.

*"The accreditation served to recognize our high school diploma as one which is comparable to that of other elite schools, and further affirms us of the quality teaching in NUS High School."*

Ang Yingzhen, Year 5 student.

At NUS High School, we pride our-

selves on our curriculum. Our curriculum was designed to reflect the theme of the school, that each child is unique with their own capabilities. Our dynamic modular system allows for students to accelerate through classes at their own pace, and take classes of their choosing. Students are given the freedom to either take a wide variety of courses in many different subjects, focus on majoring in subjects that they are passionate about, or any combination of the two.



published in an international physics journal Applied Physics B. This year students in the 2nd Student Council in collaboration with teachers published the leadership book, "50 Mathematics and Science Games for Leadership." NUS High School students venture outside the classrooms and Singapore, studying science in Japan, Brunei, Christmas Island, and even an art history study trip to Italy. Opportunities abound for our students who continue to strive for excellence in Mathematics

◀  
*Mr Tharman viewing the Science exhibits during the official opening day of NUS High School.*

In our short two-year history, NUS High School is starting to develop into a premier mathematics and science school. In 2006, Nobel Laureate, Professor Douglas Osteroff gave a talk during the International Physics Olympiad at the School. Annually over 1,800 local students apply for admission. In addition, the school actively recruits promising foreign students. Once here, students are able to apply themselves into the realm of science where they work with NUS professors and research institutes and mentors on 9 or 18 month long research programs.

Just last year, three students were

and Science. This year our students have been awarded MOE sponsored placements all over the world from Physics institutes in Canada, to science forums in the UK, to research projects in MIT and science camps in Taiwan and India.

Come join us on our journey as we forge a path to becoming a premier Mathematics and Science learning environment. The theme for our official school opening "Take Flight with Us", welcomes you to be involved in our school as we develop and nurture our young minds.

# Awards, Awards, Awards

## NUS University Awards 2007

The award winners have given their best academically and personally to put NUS on the world map and to contribute to the learning and welfare of their students

### *Outstanding Educator Award*

**Victor Tan**

Associate Professor of Mathematics, Alumnus

### *Young Researcher Award*

**Yu Hao**

Assistant Professor of Biological Sciences, Alumnus

**Chen Ping**

Assistant Professor of Chemistry & Physics

### *Outstanding Researcher Award*

**Liu Xiang-Yang**

Associate Professor of Physics

### *Outstanding Service Award*

**Lui Pao Chuen**

Alumnus

**Saw Swee Hock**

Former Professor of Statistics, Alumnus

## NUS Alumni Awards 2007

These awards that recognise and honour alumni put a human face to the University's considerable accomplishments and contributions in education.

### *Distinguished Alumni Service Award*

**Ms Olivia Lum**

Member, NUS Board of Trustees Group CEO & President Hyflux Ltd.

### *Outstanding Young Alumni Awards*

**Bernard Leong**

Research Scientist, Genome Institute of Singapore  
Adjunct Assistant Professor, NUS Entrepreneurship Centre

**Stella Tan**

Deputy Public Prosecutor/State Counsel  
Criminal Justice Division, Attorney-General's Chambers

**Kua Harn We**

Lecturer at Department of Building, NUS



# National Chemistry Week 2007

## Chemistry In Our Daily Lives

By Dr Leong Lai Peng

The first and biggest ever road show on Chemistry opened with a sizzling of solid carbon dioxide in hot coloured water on the morning of 16 June. The ceremony was officiated by the chairman of A\*STAR, Mr Lim Chuan Poh at the Faculty of Science. Over a hundred people attended the opening ceremony which was followed by the Fact or Fantasy Quiz. As the questions were fired rapidly at the participants (as well as the audience), everyone tried to answer the questions themselves. At specified intervals, the top performing groups were displayed on



the screen. Since it was quite possible for the ranking to be altered significantly after each intervals, the spirit of the participants were kept high until they were eliminated at the end of each round. Meanwhile, those who attended the opening ceremony were also entertained by exhibits from local research institutions and companies. The chemistry behind chocolate making and ice cream making were also explained.

Throughout the week, many activities were held to propagate the importance of "Chemistry in Our Daily Lives", which formed the theme of this year's National Chemistry Week. Merck and BASF, two major chemical companies in Singapore organized some hands-on workshop for school-age participants. BASF converted the chemical laboratory

into a supervised but safe play-ground for young children to discover the wonders of chemistry. The two activities held on NUS campus attracted nearly a thousand people. For the older and fans of popular TV series CSI (Crime Scene Investigations), students from NUS High School presented their findings on the chemistry behind some of the events shown in several episodes.

Chemistry students from NUS also volunteered to help in some of our activities. The 'Magical Chemistry' group was led by one of our teaching staff, who visited schools for a demonstration of a series of chemical experiments and the explanation of chemical concepts behind them. A session was also held for the public at SUNTEC City Convention Centre.

For the more adventurous, Republic Polytechnic organized the Chemistry Amazing Race. Participants of almost any age could participate in groups of 4 or 5. Throughout the race, participants had to solve chemistry related problems by conducting experiments (e.g. electro-chemistry, phase separation, chromatography, food tasting, candle-wax dyeing and making of acid-based indicators using vegetables).

There were also many workshops organized for school teachers such as a problem-based learning workshop, Chemistry for drugs, nanochemistry, project super starch, experimental and experiential chemistry, etc. It was hoped that the teachers would bring home some useful ideas for making chemistry lessons in school more interesting and attractive to students.



The organizers also arranged trips to Jurong Island, NEWater, Asia Pacific Brewery, Unicurd, and JJ Drinks. It is noteworthy that Jurong Island is not freely accessible to the general public. All participants had to be registered one week in advance. During the trip to the island participants got a tour of the Institute of Chemical and Engineering Sciences (ICES), ChemGallery@Jurong Island, and some displays specially catered for visitors during National Chemistry Week.

Our partners, the Singapore Science Centre and Victoria Junior College also held hands-on workshops suitable for students of all ages. Students got to learn about the chemistry of food, polymer, chromatography, T-shirt printing, invisible ink and many more. For the participants, chemistry is definitely a whole lot of fun.

The fun-filled chemistry week had a lot more to offer but everything with a beginning must have an end. At the closing ceremony, prizes were given away for the winners of various competitions. Singapore's first ever National Chemistry Week was officially closed by founding Chairman of SISIR, Singapore Science Council and RISIS, Dr Lee Kum Tatt, who has done so much for Chemistry in Singapore.



## DINOSAURS! A winning project



In May 2006, the Faculty of Science and the Singapore Science Centre embarked on

their first collaborative event – the exhibition “DINOSAURS! A *T. rex* named SUE and Friends” at the Singapore Science Centre Annexe. Each invested \$450,000 and made a modest profit of \$29,443. We are pleased with the results and look forward to future collaborations with the Singapore Science Centre. The exhibition consisted of travelling exhibits from The Field Museum in Chicago, U.S.A., the Monash Science Centre in Australia, and our own Raffles Museum of Biodiversity Research.

## NUS Reopens Bukit Timah Campus



The Bukit Timah campus was officially returned to NUS on 28 May 2005. On 8 July 2007, alumni and friends joined together on the Upper Quad to celebrate the first homecoming

in more than 25 years. Faculty of Science alumni who called Bukit Timah home were so eager to join in the celebrations that seats allocated to Science were quickly taken up.

At the celebrations, many who had not seen each other for years held raucous reunions with pals of old. They reminisced about hostel life and lab pranks and dating. Those were wild times at Bukit Timah!

NUS Bukit Timah Campus will be home to the Faculty of Law, Lee Kuan Yew School of Public Policy, East Asian Institute, Institute of South Asian Studies and Asian Research Institute.



## NUS • Sci Winning the Stockholm School of Economics in Riga competition Peak Time.

Chau Jinqi, B.Sc. (2007) Chemistry, joined the team uNeek to win the Stockholm School of Economics in Riga competition Peak Time. Out of more than 200 international teams, the two Singapore teams won first and third.

Jingqi's trip was supported by generous donations to the Science Student Overseas Exposure Fund (SSOEF). For more information on how you too can contribute to enriching the lives of our students with such international experiences, please contact Karen Wong at [karenwong@nus.edu.sg](mailto:karenwong@nus.edu.sg)

## Class Notes

2003 - Scott Ong, BSc (Hons) Computational Chemistry, won the Brand's® Sudoku Challenge 2007. Coincidentally, Associate Professor Helmer Aslaksen was one of the judges of that competition. Since graduation, Scott went to Australia and did a M.Sc. in Science and Technology and joined the printing industry. He has now embarked on a second career as a teacher. ■

2004 - Sia Lai Chai, BSc (Hons) Physics, won the Gold Innergy Award from the Ministry of Education ExCEL Fest. His invention enables Short Message Service (SMS) with a certain code to turn on/off electrical appliances such as air-conditioners in the school. ■

*We'd like to hear from you.  
Please send your Class Notes  
for OmniScience to Karen Wong at  
[karenwong@nus.edu.sg](mailto:karenwong@nus.edu.sg).*