

**PRESS RELEASE**

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23 January 2008

**MIT-SINGAPORE PARTNERSHIP CREATES *SMART* PLATFORM AS  
INTELLECTUAL HUB FOR GLOBAL RESEARCHERS**

Dr Tony Tan, Chairman of the National Research Foundation (NRF), announced today the establishment of the Singapore-MIT Alliance for Research and Technology Centre (or SMART Centre for short). The SMART Centre is the first entity in a project called CREATE (Campus for Research Excellence And Technological Enterprise) – a complex of research centres set up by world-class research universities and corporations working collaboratively with Singapore's research community.

2 SMART is the Massachusetts Institute of Technology's (MIT) largest international research endeavour. It will undertake cutting-edge research projects in areas of interest to both Singapore and MIT.

3 Besides serving as an intellectual hub for research interactions between MIT and Singapore, the SMART Centre will also provide MIT an opportunity to perform interdisciplinary experimental, computational and translational research that presently cannot be conducted at its home campus in Cambridge, Massachusetts. The Centre, initially headed by MIT's Institute Professor and former Dean of Engineering Tom Magnanti, will be a magnet for attracting and anchoring research talent from Asia and all over the world in Singapore.

4 To mark the close collaboration between MIT, NRF and the Ministry of Education (MOE), the MOE will be matching dollar-for-dollar donations and gifts to SMART for the establishment of Singapore Research Professorship Chairs to be held by senior MIT faculty who are actively involved with research programmes in the SMART Centre. Each of these professors will interact with local universities, such as through joint appointments.

5 SMART will also create an Innovation Centre linked to the highly successful Deshpande Centre for Technological Innovation at MIT. This

Innovation Centre will identify and nurture innovative ideas from emerging technologies and accelerate their migration from laboratories to practical commercial applications that, in many cases, will occur through the creation of business enterprises with funding from external investors. The Innovation Centre activities will be seamlessly coordinated at MIT through the newly established International Innovation Initiative, or I<sup>3</sup>, that will provide a platform for establishing educational and research activities with strategic international partners by applying the best practices of MIT's Deshpande Centre.

6 Up to five interdisciplinary research groups (IRGs) will be established under SMART. The research themes will focus on problems which are of societal significance. Two IRGs have already been established – one is on Infectious Diseases, headed by Prof Jianzhu Chen, and the other is a Centre for Environmental Sensing and Modelling (CENSAM), headed by Prof Andrew Whittle. (See Annex 1 for a brief write-up on each IRG and its lead principal investigator.)

7 The IRGs will be anchored by senior MIT faculty and scientists who will be staying for extended periods at SMART. Research will be carried out in collaboration with the universities and research entities in Singapore.

8 Dr Tan said: “The launch of the SMART Centre is a significant development in Singapore’s research and innovation landscape. It is the culmination of a long and fruitful relationship over 10 years between MIT and Singapore through the Singapore-MIT Alliance (SMA). MIT’s strong commitment to marry excellent teaching and research with innovation and entrepreneurship has spawned a host of scientific breakthroughs, technological advances and high-growth companies. It is a model which our own universities seek to emulate – the development of a culture of academic entrepreneurship that will contribute significantly to the economic development of Singapore.”

9 MIT Provost Rafael Reif said: “MIT is enormously pleased to join with the NRF in establishing the SMART Centre. We are also both proud and honoured that NRF has selected MIT to be the first of several entities to be co-located at CREATE. This groundbreaking collaboration for NRF and MIT provides an excellent opportunity for MIT to engage in research with Singapore and global researchers based here. It also reflects our joint commitment to addressing critical issues and developing innovative and creative ways to solve them. We hope the research conducted at the SMART Centre will transform the development of engineering, technology and science in the decades ahead.”

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## ANNEX 1



**Prof L. Rafael Reif**  
**Massachusetts Institute of Technology**  
**Department of Electrical Engineering and Computer**  
**Science**

L. Rafael Reif received the degree of Ingeniero Electrico in 1973 from Universidad de Carabobo, Valencia, Venezuela, and the M.S. and Ph.D. degrees in Electrical Engineering from Stanford University, Stanford, CA, in 1975 and 1979, respectively.

From 1973 to 1974 he was an Assistant Professor at Universidad Simon Bolivar, Caracas, Venezuela. In 1978 he became a Visiting Assistant Professor in the Department of Electrical Engineering, Stanford University. In 1980 Dr. Reif joined the faculty of the Massachusetts Institute of Technology, where he is currently the Provost and the Maseeh Professor of Emerging Technology. He was the Director of MIT's Microsystems Technology Laboratories for the period 1990-1999, the Associate Department Head for Electrical Engineering in the Department of Electrical Engineering and Computer Science (EECS) for the period 1999-2004, and the Department Head of EECS for the period 2004-2005. He is presently working on three dimensional integrated circuit technologies, and on environmentally benign microelectronics fabrication.

Dr. Reif held the Analog Devices Career Development Professorship of MIT's Department of Electrical Engineering and Computer Science, and was awarded the IBM Faculty Fellowship of MIT's Center for Materials Science and Engineering from 1980 to 1982. He received a United States Presidential Young Investigator Award in 1984. Dr. Reif is a Fellow of The Institute of Electrical and Electronics Engineers (IEEE). His election carried the citation "*For pioneering work in the low-temperature epitaxial growth of semiconductor thin films*". Dr. Reif is also a recipient of the Semiconductor Research Corporation's (SRC) 2000 Aristotle Award "*in recognition for his commitment to the educational experience of SRC students and the profound and continuing impact he has had on their professional careers*" <<http://www.src.org/member/about/aristotle2000.asp>>. He is a member of Tau Beta Pi, the Electrochemical Society, and the IEEE.



**Prof Thomas L. Magnanti**  
**Massachusetts Institute of Technology**  
**Dean of the School of Engineering**

Thomas Magnanti is one of fourteen Institute Professors at MIT. He has just completed tenure as Dean of MIT's School of Engineering. He has devoted much of his professional career to education that combines engineering and management and to teaching and research in applied and theoretical aspects of large-scale optimization. As Dean, he focused on educational innovation, industrial and international partnerships, technology-based entrepreneurship, diversity, and innovation in emerging domains such as bioengineering, tiny technologies, information engineering, and engineering systems.

He was previously president of three professional societies and editor of a leading technical journal in his field. He has received numerous educational and research awards and honorary degrees and currently serves on several corporate and university boards. He is a member of the U.S. National Academy of Engineering and the American Academy of Arts and Sciences. Currently, he is Director of the Singapore-MIT Alliance for Research and Technology (SMART). He is also leading the development of an extension of MIT's OpenCourseWare initiative tailored for high schools.



**Prof Andrew J. Whittle**  
**Massachusetts Institute of Technology**  
**Department of Civil and Environmental Engineering**

Andrew Whittle is a Professor of Civil and Environmental Engineering at the Massachusetts Institute of Technology and a specialist in the field of geotechnical engineering. Much of his research work deals with constitutive modeling of soil behavior and applications in predicting the performance of foundations and underground construction projects. His research has been widely used in the design of foundation systems for deepwater oil production facilities in the Gulf of Mexico. He has worked extensively on problems of soil-structure interaction for urban excavation and tunneling projects including the Central Artery-Third Harbor Tunnel and MBTA South Piers Transitway projects in Boston, and Tren Urbano in San Juan, Puerto Rico. Most recently he has led research efforts in the application of wireless sensor networks for monitoring underground water supply systems and construction projects.

Dr Whittle is a Co-Editor of the International Journal of Numerical and Analytical Methods in Geomechanics, and is an editorial board member for the ASCE Journal of Geotechnical and Geoenvironmental Engineering and the Canadian Geotechnical Journal. He is an active consultant who has worked on more than 25 major onshore and offshore construction projects. In 2004 he was an expert witness for the Land Transport Authority in Singapore investigating the Collapse of the Nicoll Highway. He currently serves on two major review panels; one for the National Research Council and National Academy of Engineering (NRC/NAE) investigating the performance of hurricane protection systems in New Orleans, and the second for the Governor of Massachusetts on a 'stem-to-stern'safety review of the Big Dig tunnels in Boston.

Dr Whittle received his Sc.D in Geotechnical Engineering from MIT in 1987, where he was also a John F. Kennedy Scholar (1982-1984), and his B.Sc(Eng.) with First Class Honors in Civil Engineering from the Imperial College of Science and Technology, London in 1981. He joined the MIT faculty in 1988 and was promoted to full Professor in 2000. Dr Whittle has published more than 100 papers in refereed journals and conferences, and received several awards for his work from the American Society of Civil Engineers, including the Casagrande Award (1994), the Croes Medal (1994), Middlebrooks Prize (1997, 2002, and 2005) and Huber Research Award (1998). He is a licensed professional engineer in New York State.

## **Center for Environmental Sensing and Modeling (CENSAM)**

The grand challenge of the Center for Environmental Sensing and Modeling (CENSAM) will be to provide proof of concepts in the paradigm of pervasive monitoring, modeling and control within the highly developed and carefully managed urban environment of Singapore. The long-term goal is to develop CENSAM as a world-leading center of excellence in environmental sensing and modeling. This encompasses fundamental technology development in parallel with real-world applications in several fields vital to Singapore. Successful prototyping within Singapore will generate many opportunities to export the technology and knowledge, especially for other rapidly urbanizing economies in Asia.

### **MIT Principle Investigators:**

Professor Andrew Whittle (Lead)  
Professor Eric Adams  
Professor George Barbasthatis  
Dr. David Burke  
Professor Elfaith Eltahir  
Professor Dara Entekhabi  
Dr. Judson Harward  
Professor Charlie Harvey  
Professor Harold Hemmond  
Professor Franz Hover  
Professor Ole Madsen  
Professor Paola Rizzole  
Professor Leslie Norford  
Professor Nicholas Patrikalakis  
Dr. Peter Shanahan  
Professor Michael Triantafyllou

### **Singapore Collaborators**

Adams, Martin NTU  
Wijesoma, Wije CIM  
Chan Eng Soon, NUS  
Cheong Hin Fatt, NUS  
Chitre, Mandar NUS  
Potter, John ARL (TMSI)  
Koh Tieh Yong, NTU  
Lim Hock Beng, NTU  
Lo, Edmond NTU  
Shuy Eng Beng  
Chua, Lloyd  
Miao Jianmin, NTU  
Mueller-Wittig, Wolfgang NTU  
Seah, Harry PUB  
Wittkopf, Stephen NUS  
Wong Nyuk Hien, NUS



**Prof Jianzhu Chen**  
**Massachusetts Institute of Technology**  
**Department of Biology**

Jianzhu Chen is the professor of the Center for Cancer Research and Department of Biology at MIT where he has been a faculty member since 1994. He was the postdoctoral fellow at Columbia University and Harvard Medical School, and took up a position as an instructor at the Children's Hospital and Harvard Medical School in 1994.

Prof Chen obtained his undergraduate degree in Biology from Wuhan University in Wuhan, China in 1982, and also a degree in Biochemistry from Shanghai Institute of Biochemistry in Shanghai in 1983. In 1990, he received Doctoral degree in Genetics from Stanford University in Stanford, California in 1990.

Prof Chen has received numerous awards such as Arthritis Investigator Awards (1993), Cheryl Witlock Memorial Prize (1994), Harcourt General Charitable Foundation New Investigator Award (1995), and Latham Family Career Development Award (1997).

During the years at MIT he has participated numbers of professional activities. Prof Chen was a member of DOD Breast Cancer Research Program, Immunological Sciences Review Panel in 1998 and 2000, and from 2000 to 2004, he was a member of NIH Immunobiology Study Section. In 2006, he became the Ivan R. Cottrell Professor of Biology. He is currently an Adjunct Professor at Chinese Academy of Sciences in Beijing, China since 2002.

Presently he is leading "Chen Lab" at the MIT Center for Cancer Research to investigate cellular and molecular mechanisms underlying the development and function of the immune system. At his lab, he especially focus on i) control of antigen receptor gene assembly and dysregulation of the process in lymphoid tumorigenesis, and ii) cellular and molecular basis of immunological memory, focusing on CD8 T cell responses to virus infection in the lung and prostate cancer. We are developing novel prophylaxis and therapies against virus infection in the lung.

## **Infectious Diseases IRG**

The SMART Infectious Disease Interdisciplinary Research Group (IRG) will study cell and molecular biology of infectious disease. The IRG will develop an integrated, cutting-edge research program to study pathogen-host interactions, focusing on infectious diseases that are of particular importance in Singapore, Asia as well as the rest of the world. The major goals of the IRG are to: i) advance basic understanding of pathogen-host interactions at the cellular and molecular levels, ii) use this basic knowledge to develop diagnostics, prophylactics and therapeutics for specific infectious diseases, and iii) train a new generation of leaders for academia and pharmaceutical/biotechnology industry.

### **MIT Principle Investigators:**

Professor Jianzhu Chen (Lead)  
Professor Arup Chakraborty  
Professor Paula Hammone  
Professor Paul Matsudaira  
Professor Hidde Ploegh  
Professor Ram Sasiekharan  
Professor David Schauer  
Professor Subra Suresh

### **Singapore Collaborators:**

Bing Lim (GIS)  
Sai Kiang Lim (IMB)  
Michael Kemeny (NUS)  
Vincent Chow (NUS)  
Michael Kemeny (NUS),  
Jingyan Li (NTU)  
Jimmy Kwang (TLL)  
Markus Wenk (NUS)  
Martin Hibberd (GIS)  
Richard Surgrue (NTU)  
Jinyan Li (NTU)  
Geok Teng Seah (NUS)  
Paul MacAry (NUS)  
Lim Chwee Teck (NUS)  
Kevin Tan (NUS)  
Peter Preiser (NTU)